Appendix A

No Recording Fees Needed per Government Code §6103

Development Services – Planning
8401 Laguna Palms Way • Elk Grove, California 95758
Tel: 916.683.7111 • Fax: 916.691.3175 • www.elkgrovecity.org

NOTICE OF PREPARATION
Summer Flats Project
Draft Environmental Impact Report

Date: October 11, 2024

To: Public Agencies and Interested Parties

From: City of Elk Grove

Subject: Notice of Preparation of a Draft Environmental Impact Report for the Summer Flats Project (PLNG23-006)

The City of Elk Grove (City) will prepare a Draft Environmental Impact Report (EIR), compliant with the California Environmental Quality Act (CEQA), for the Summer Flats Project (Project). Because the City has determined that an EIR will be prepared for the Project, an Initial Study will not be prepared (CEQA Guidelines Section 15063[a]). In accordance with Section 15082 of the CEQA Guidelines, this Notice of Preparation (NOP) provides a Project description, location, and the probable environmental effects of construction and implementation of the Project. The NOP is circulated for a public review and comment period that begins on **October 11, 2024** and ends on **November 12, 2024.**

The City is soliciting comments regarding the scope and content of the EIR as they relate to other agencies' statutory responsibilities in connection with the Project, as well as comments from interested members of the public. The City will rely on responsible and trustee agencies to provide information relevant to the analysis of resources falling within the jurisdiction of such agencies. Specifically, input is required on:

1. **Scope of Environmental Analysis** – guidance on the scope of analysis for this EIR, including identification of specific issues that will require closer study due to the location, scale, and character of the Project;
2. **Mitigation Measures** – ideas for feasible mitigation, including mitigation that would avoid, offset, eliminate, or reduce potentially significant or significant impacts; and
3. **Alternatives** – suggestions for alternatives to the Project that could reduce or avoid potentially significant or significant impacts.

The City welcomes input during the review and comment period. If the City has not received a response (or a well-justified request for additional time) from a responsible or trustee agency by the end of the review period, the City may presume that the responsible or trustee agency has no response (CEQA Guidelines Section 15082[b][2]). Please provide any written comments that you would like the City to consider, along with the name of the appropriate contact person in your agency and their contact information, to the address shown below by **5:00 PM** on **November 12, 2024.**

City of Elk Grove Development Services Department
c/o Sarah Kirchgessner
8401 Laguna Palms Way
Elk Grove, CA 95758
Email: skirchgessner@elkgrovecity.org

SCOPING MEETING

CEQA provides for a lead agency to facilitate one or more scoping meetings, which provide additional opportunity for informing the scope and content of an EIR. The City will host a scoping meeting on **Wednesday, October 30, 2024**, at **6:00 PM.** Information related to the Project, including how to access Project documents and how to participate in the public review process, will be provided at the scoping meeting.

PROJECT LOCATION AND SETTING

The approximately 27.6-acre Project site (site) is located immediately northeast of the Waterman Road/Rancho Drive intersection, within the East Elk Grove Sub-Area of the Eastern Elk Grove Community Plan, in the City of Elk Grove, California (see Figure 1 and Figure 2). The site, comprised of three parcels identified by Assessor's Parcel Numbers (APNs) 127-0150-001, -002, and -009, is bounded by Waterman Road along the site's western boundary. The City of Elk Grove General Plan designates the site as Low Density Residential (LDR) and Resource Management and Conservation (RMC). The site is zoned Low Density Residential – Maximum Four Dwelling Units per Acre (RD-4) and Open Space (O).

The site currently consists of flat to gently sloping grassland, with an elevation ranging from 50 to 65 feet above mean sea level (amsl). Within the grassland are depressions that allow for pooling. Aboveground distribution power lines and utility poles, as well as barbed wire fencing, proceed in a north-to-south direction along Waterman Road, parallel to the site's western boundary. In addition, transmission towers and overhead power lines extend through the site in a north-to-south direction within easements located in the eastern half of the site. Although the interior of the site is devoid of trees, three trees occur along the western boundary.

SURROUNDING LAND USES

As previously discussed, the site is bounded by Waterman Road to the west. Adjacent to the north of the site is flat to gently sloping grassland owned by the Cosumnes Community Services District (CCSD), which is interspersed with depressions, similar to the landscape of the site. Wright Park is located on the CCSD property north of the site. Surrounding existing land uses include a single-unit residential neighborhood immediately to the east; scattered single-unit residences to the south; a Bel Air grocery store and smaller commercial businesses (El Jardin restaurant and Cold Stone Creamery) further to the south; and a single-unit residential neighborhood, the Hilltop Cemetery, and Jack E. Hill Park to the west, across Waterman Road. Table 1 summarizes the General Plan land use designations and zoning of the parcels surrounding the site.

Table 1 Surrounding General Plan Land Use Designations and Zoning		
Parcel Location	**General Plan Land Use Designations**	**Zoning**
North of the site	Parks and Open Space (P/OS)	O
East of the site	LDR	Low Density Residential – Maximum Five Dwelling Units per Acre (RD-5) and Low Density Residential – Maximum Seven Dwelling Units per Acre (RD-7)
South of the site	LDR, RMC, and P/OS	RD-4, O, and Parks and Recreation (PR)
West of the site	Estate Residential (ER) and Public Services (PS)	Low Density Residential – Maximum Three Dwelling Units per Acre (RD-3) and O

Figure 1
Regional Vicinity Map

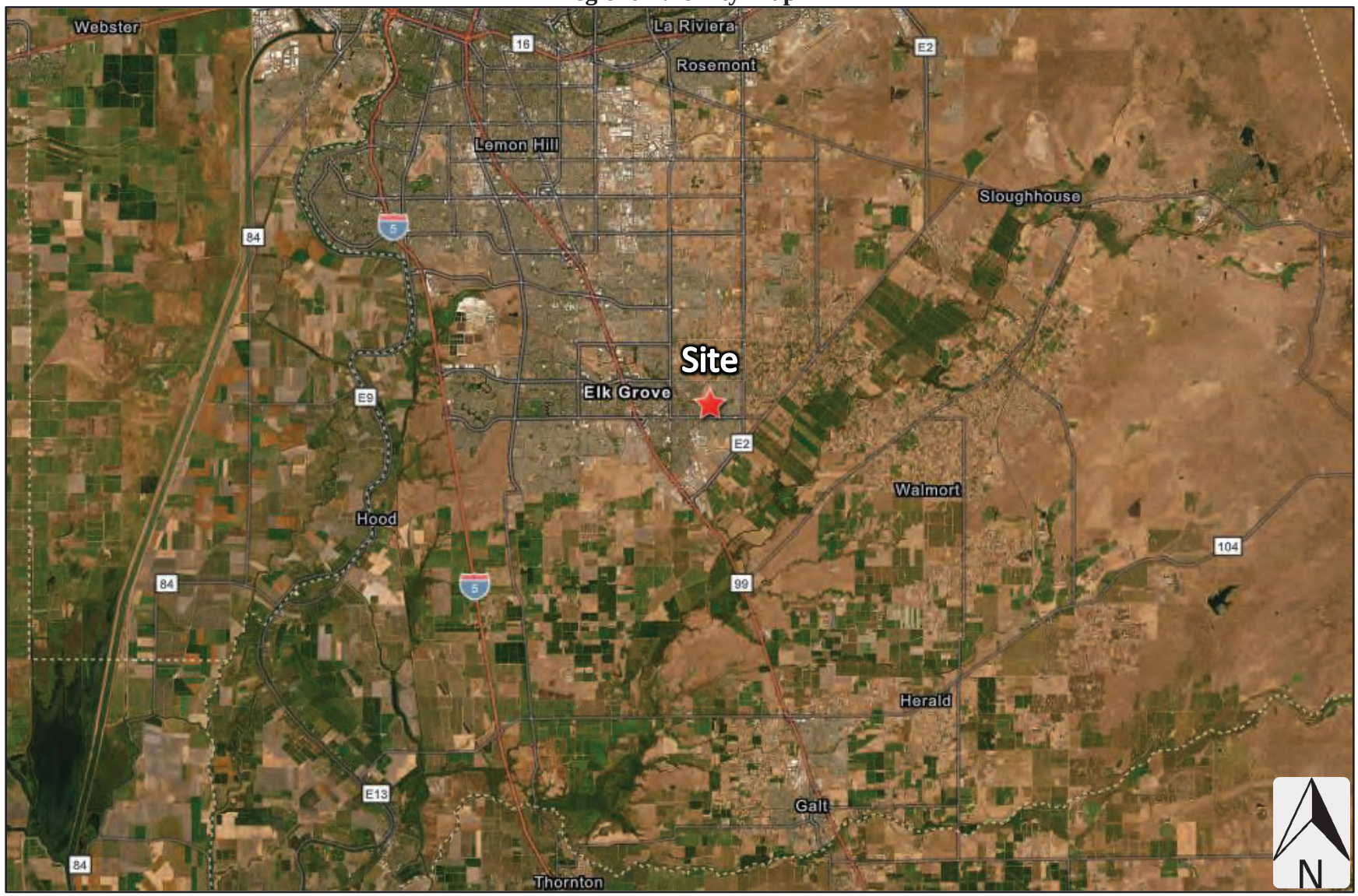


Figure 2
Project Site Boundaries

PROJECT DESCRIPTION

PROJECT COMPONENTS

The proposed project would consist of a subdivided single-unit residential community, comprised of 120 residential lots, as well as new internal roadways and frontage improvements, associated utility improvements, 14.7 acres of open space, an open space trail and pedestrian paseo, and new landscaping. The Applicant is requesting City approval of a General Plan Amendment, Community Plan Amendment, Rezone, Small Lot Tentative Subdivision Map, Subdivision Design Review, and Master Home Plan Design Review. The Project includes a Design Exception for two (2) dead end stub streets. The proposed project components, including the required discretionary approvals, are described in further detail below.

General Plan Amendment, Community Plan Amendment, And Rezone

The site is currently designated LDR and RMC by the City of Elk Grove. In accordance with Elk Grove Municipal Code Section 23.16.120, the Project would require City approval of a General Plan Amendment and Community Plan Amendment to redesignate the site Medium Density Residential (MDR) and RMC (see Figure 3). Similarly, in accordance with Elk Grove Municipal Code Section 23.16.110, the Project would require City approval of a Rezone to modify the site's zoning designations from RD-4 and O to Medium Density Residential – Maximum 12 Dwelling Units per Acre (RD-12) and O (see Figure 4).

Small Lot Tentative Subdivision Map

The Project would include a Small Lot Tentative Subdivision Map, prepared in accordance with Elk Grove Municipal Code Section 22.20.010, to subdivide the site into a total of 132 lots located in two general areas. The western portion of the site would include a 9.6-acre single-unit residential community, comprised of 120 single-unit residential lots, and 10 landscape lots totaling 1.8 acres (see Figure 5). The proposed residences would be constructed in accordance with four layouts (i.e., Plans 1, 2, 3, and 4), with each structure featuring two floors (see Figure 6 and Figure 7 for typical structure plans).

The eastern portion of the site would include two open space lots, containing 13 acres and 1.7 acres, respectively. The two open space lots and proposed landscaping are discussed further under the Open Space and Landscaping subheading below.

Figure 3
General Plan Amendment

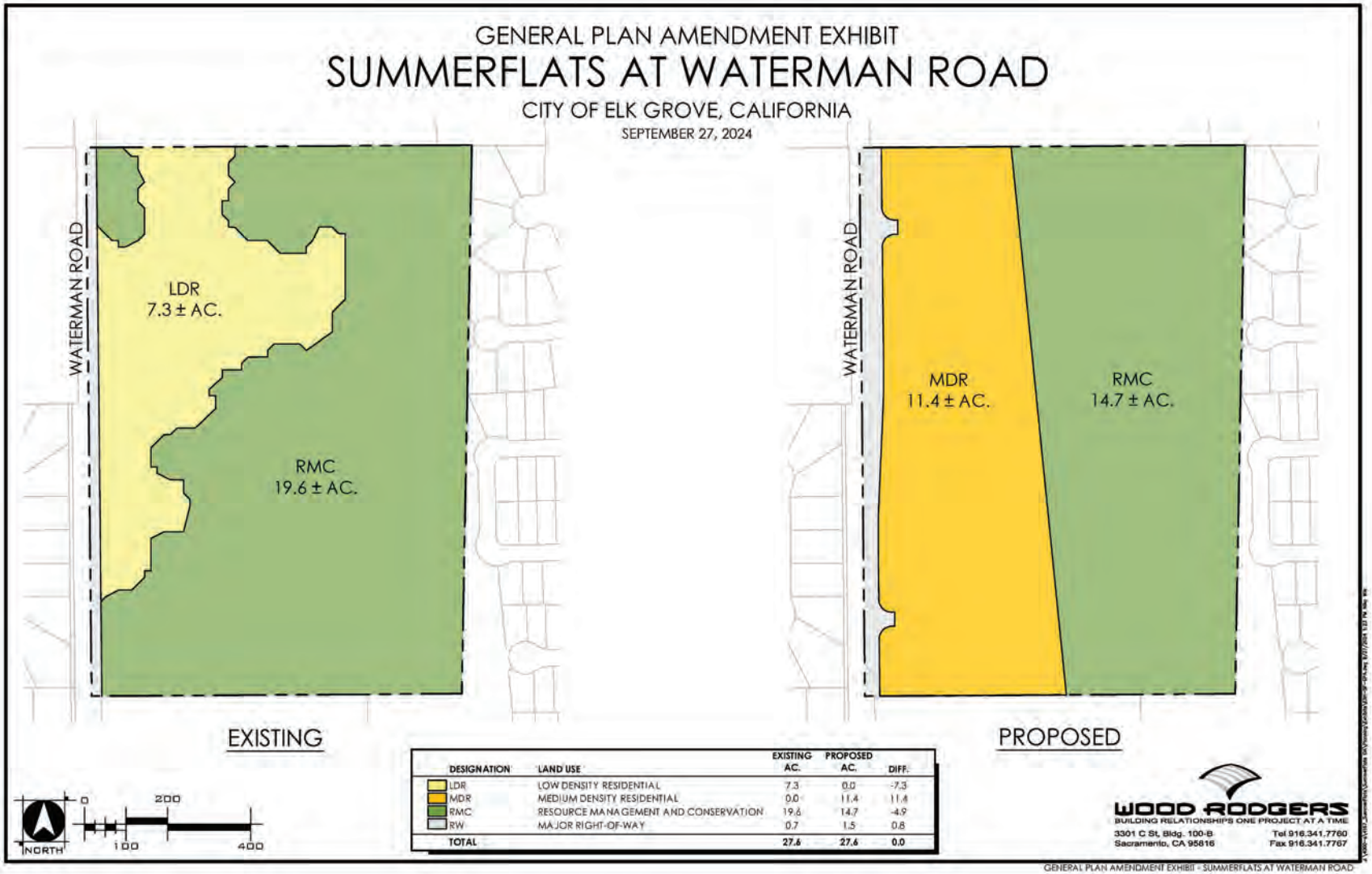


Figure 4
Rezone

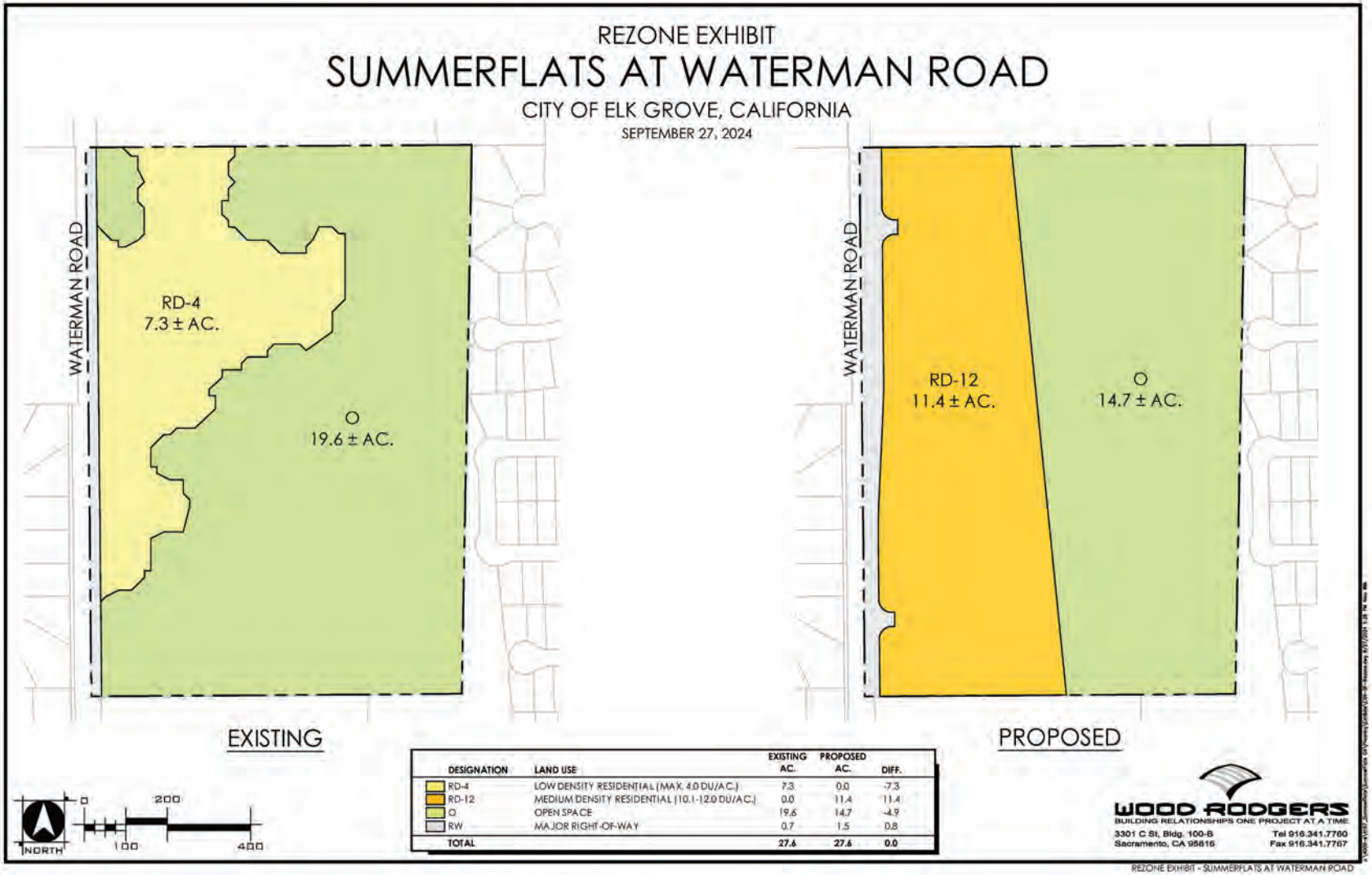


Figure 5
Small Lot Tentative Subdivision Map

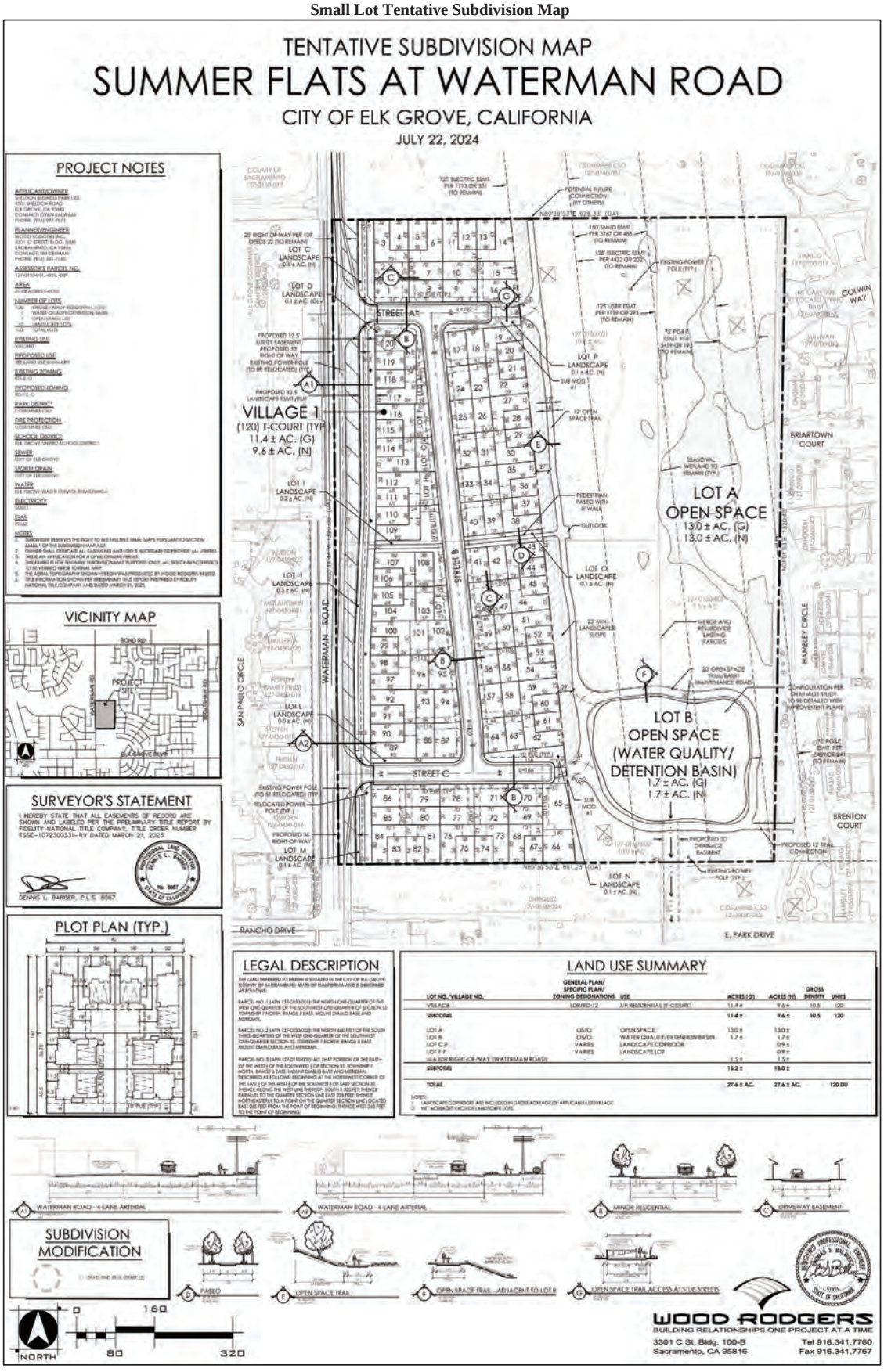


Figure 6
Plan 1 Elevations

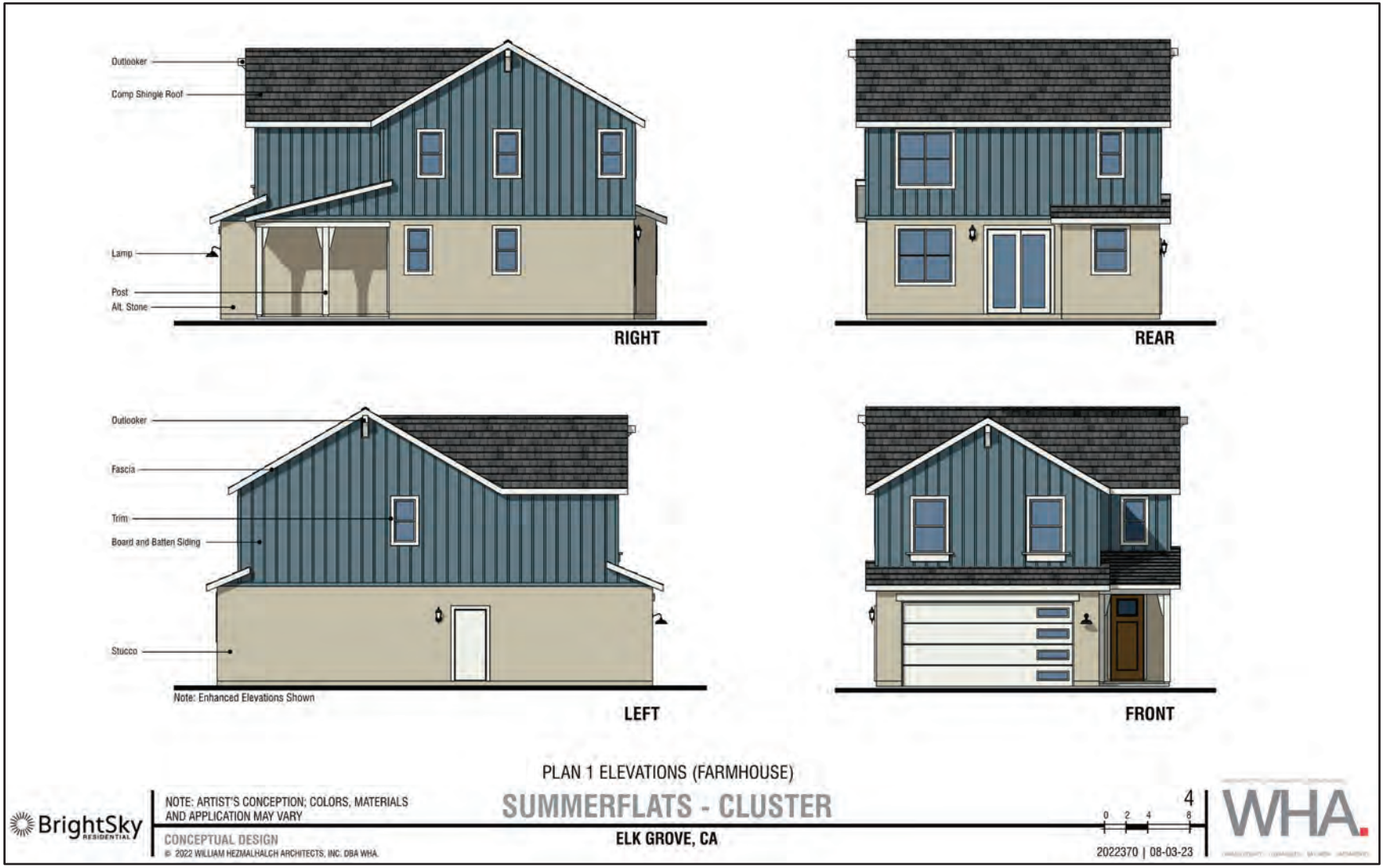
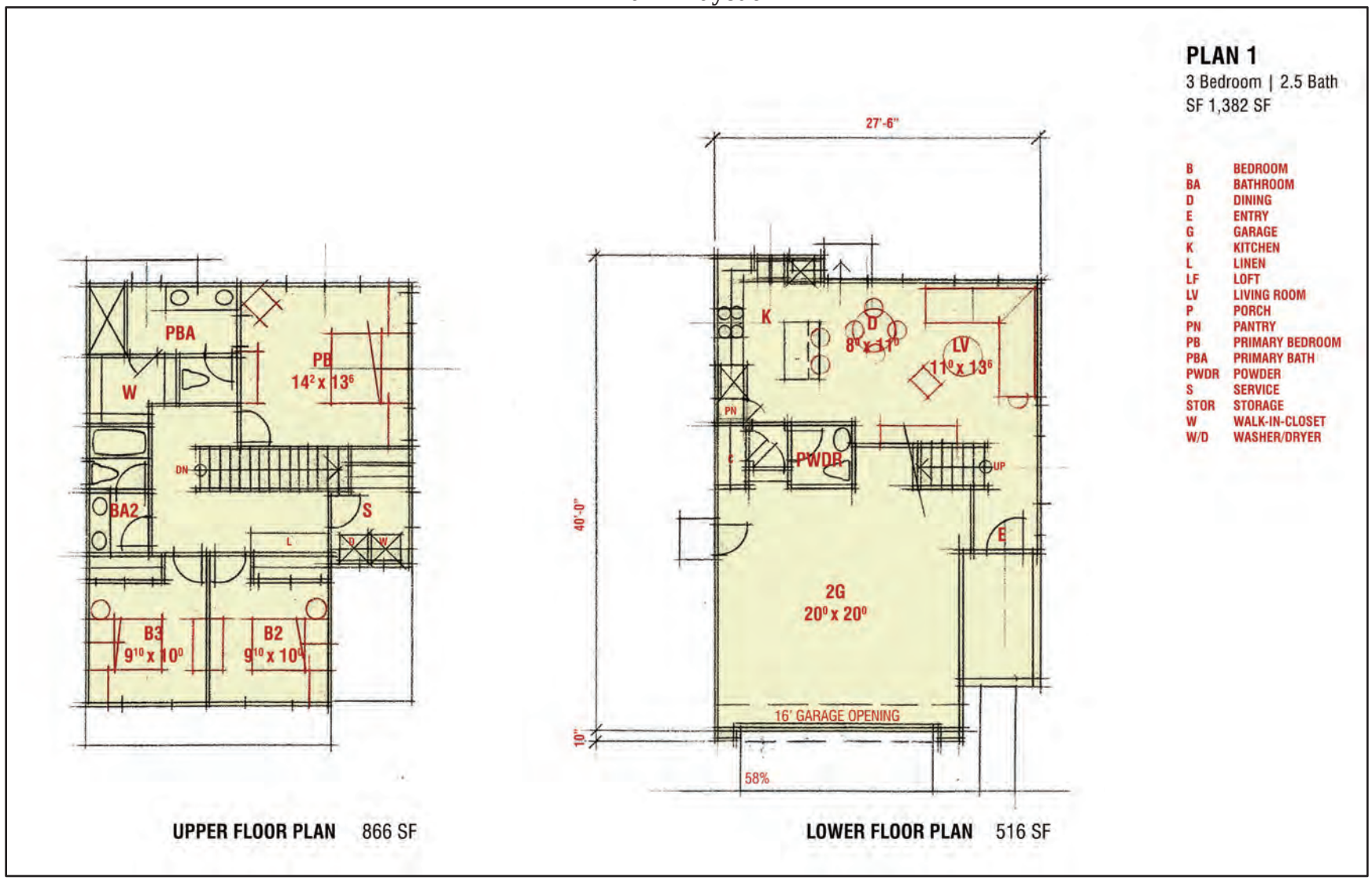


Figure 7
Plan 1 Layout



Access, Circulation, and Parking

Access to the site would be provided by way of two newly constructed streets (i.e., Streets A and C), which would extend eastward into the site from Waterman Road (see Figure 5). In addition, Street B would be constructed within the site in a north-to south direction to connect to Street A to the north and Street C to the south, with the three streets combining to form a looped interior road system that would provide access to all proposed residences.

Streets A, B, and C would each consist of a 44-foot-wide right-of-way (ROW), comprised of two 14-foot-wide vehicle lanes, a three-foot-wide curb and gutter on each side of the road, and two attached five-foot-wide sidewalks. Additionally, the Project includes frontage improvements along Waterman Road to expand the road's existing 50-foot-wide ROW. The proposed Waterman Road ROW expansion would range in width from 72 to 73 feet and consist of the following: four vehicle travel lanes, two in each direction; an 11-foot-wide median/two-way left-turn lane; five-foot-wide shoulders; and attached curbs and gutters. The proposed frontage improvements would also include a 32.5-foot-wide landscape corridor, featuring a 10-foot-wide multi-use path in between eight-foot-wide and 14.5-foot-wide landscape strips.

Utilities

The site is located within the Sacramento County Water Agency (SCWA) Zone 40 service area; SWCA is the wholesale water supplier and the Elk Grove Water District is the retail water purveyor. An existing 16-inch water line is located within Waterman Road (see Figure 8). From the existing water line, new eight-inch water lines would extend into the site within the new roads, to which each proposed residence would connect by way of new laterals.

With respect to wastewater, the Project would be provided sanitary sewer conveyance services by Sacramento Area Sewer District (SacSewer). Similar to the proposed water infrastructure, new eight-inch sewer lines would extend into the site within the new roads, to which each proposed residence would connect through new laterals. The new sewer lines would ultimately connect to an existing eight-inch sewer line in Waterman Road.

With respect to storm drainage facilities, the Project would be provided storm drain services by the City of Elk Grove Public Works Department. Stormwater runoff from new impervious surfaces within the developed site would be directed to drain inlets within paved areas and convey through new 12- to 24-inch storm drain lines installed within Streets A, B, and C to a new water quality basin in the southeastern portion of the site within Lot B (see Figure 9 and Figure 10). Following treatment in the water quality basin, flows would be discharged to an existing drainage ditch through a new outfall constructed at the southern end of the water quality basin.

Figure 8
Summer Flats Preliminary Sewer and Water Exhibit

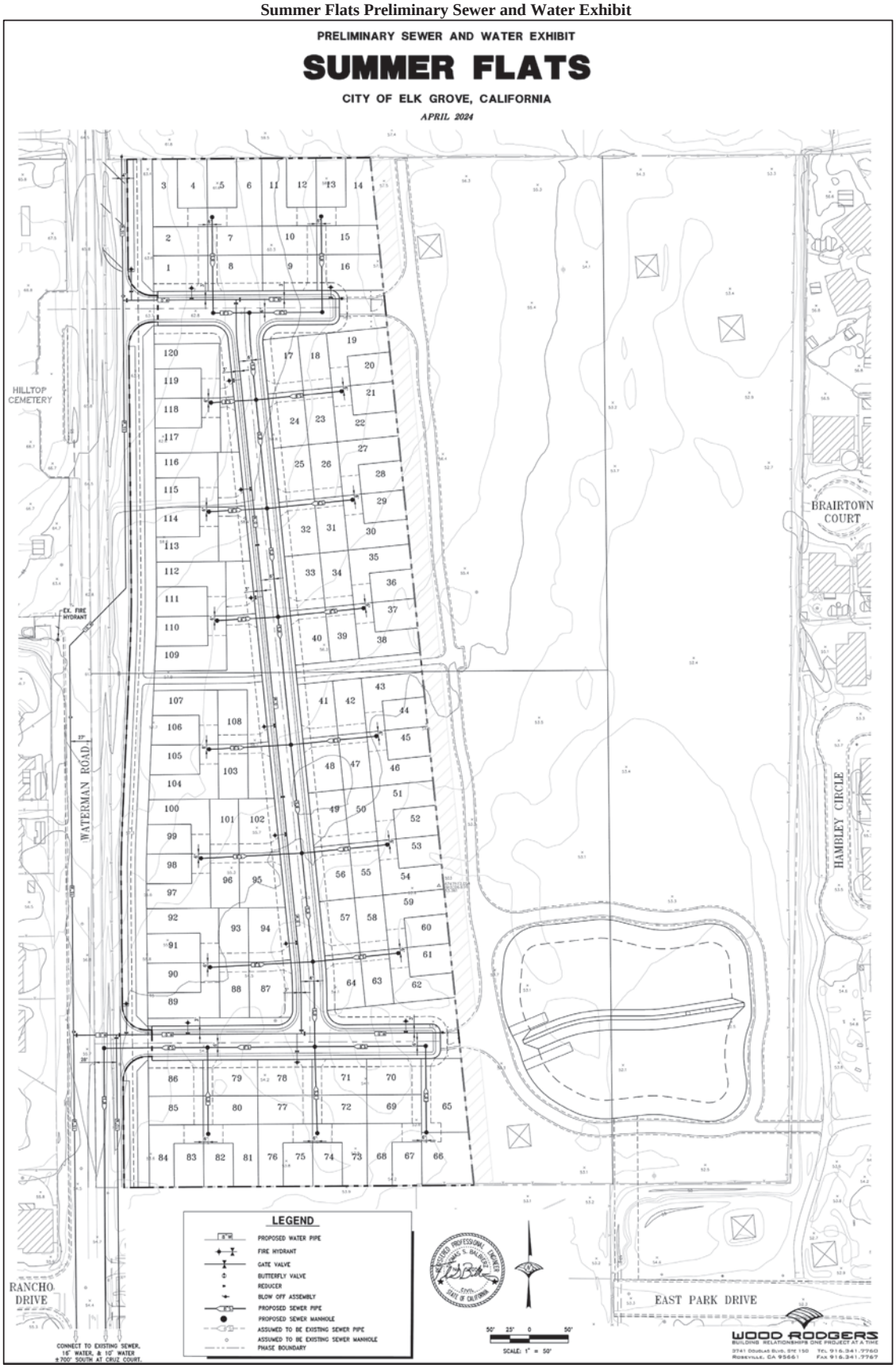


Figure 9
Preliminary Grading and Drainage Exhibit

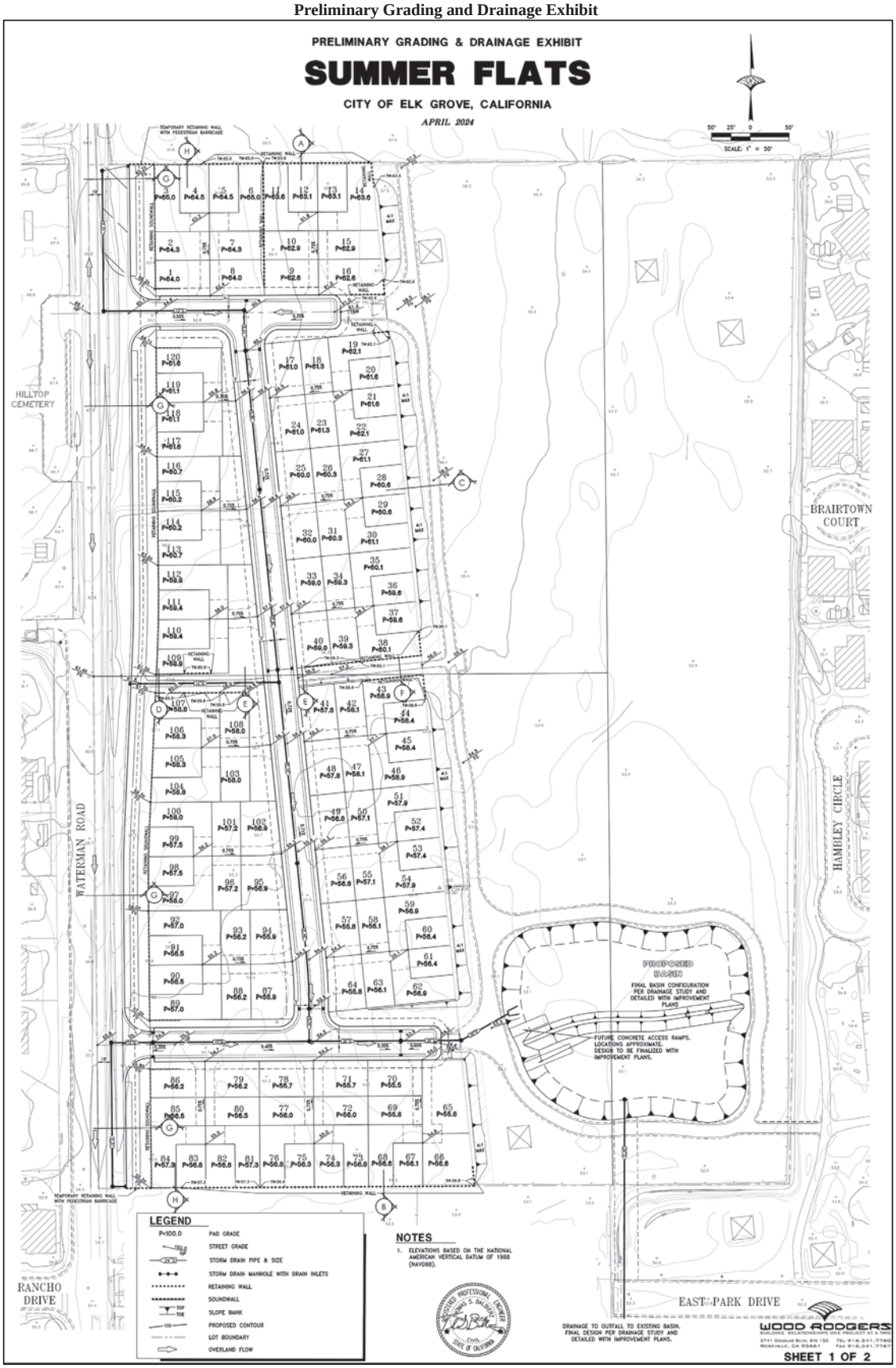
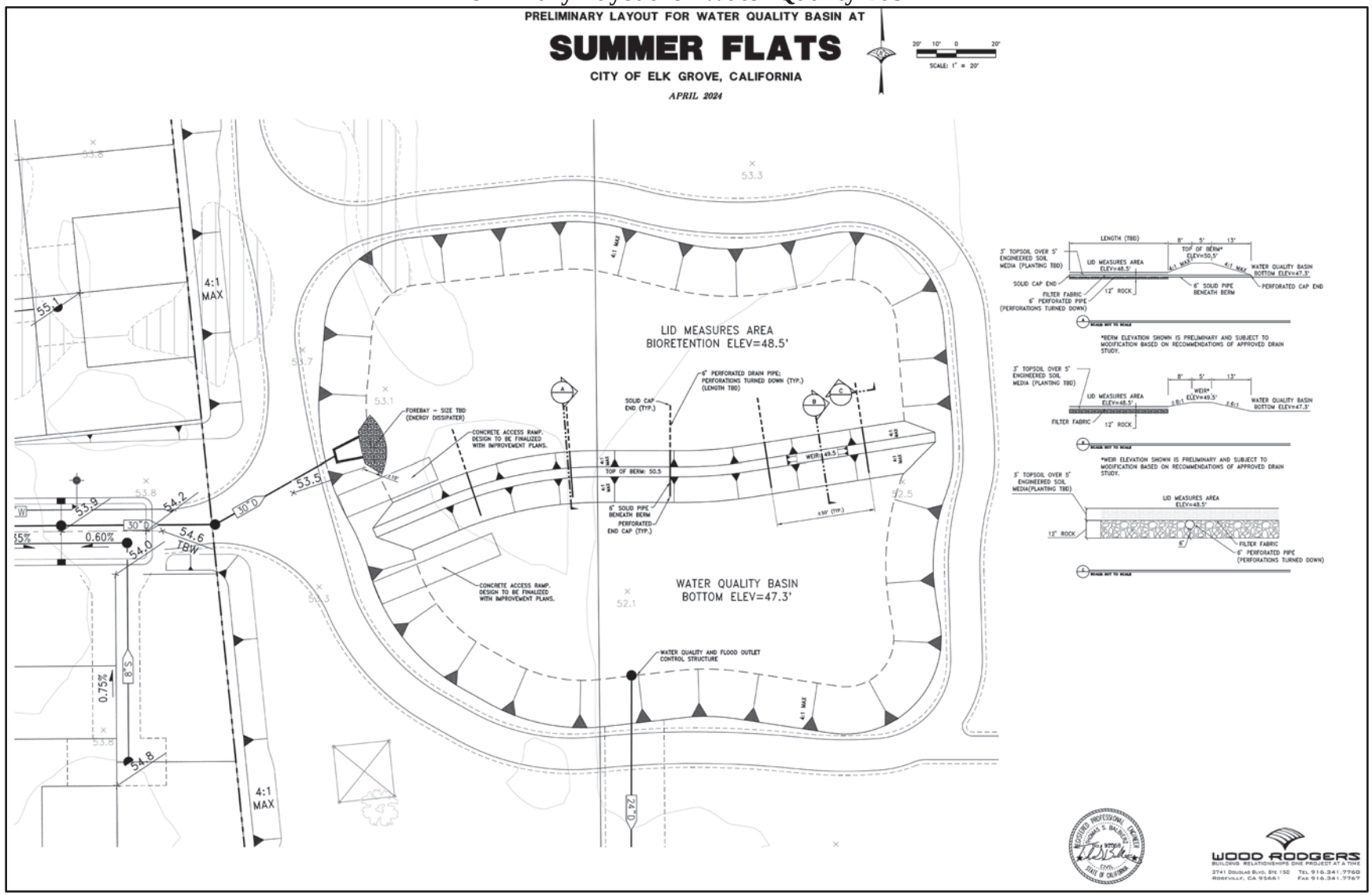


Figure 10
Preliminary Layout for Water Quality Basin



The site is within the service area of Sacramento Municipal Utility District (SMUD) for electricity service and Pacific Gas & Electric Company (PG&E) for natural gas service. The existing overhead utility lines, which include both 12 kilovolt (kV) and 69kV power lines, will remain and will provide electricity service to the Project.

Open Space and Landscaping

The Project would include a 13-acre open space lot (Lot A), which would retain the existing transmission towers and overhead power lines currently in place (see Figure 11). Lot B (1.7-acres) contains the proposed water quality basin. A new meandering 10-foot-wide multi-use path would be installed in the lot and primarily proceed in a north-to-south direction to the east of the proposed residences. The path would pivot towards the east along the southern site boundary and include a potential connection to an existing multi-use path to the east of the site.

In addition, as previously, discussed, the proposed frontage improvements would include a landscape corridor, featuring a multi-use path parallel to Waterman Road. A pedestrian paseo, which would extend in an east-to-west direction would include new landscaping trees and would connect the street-side paths to the open space path. All landscaping planted within the community would be consistent with the requirements set forth by Elk Grove Municipal Code Section 23.54.040.

Subdivision Design Review and Master Home Plan Design Review

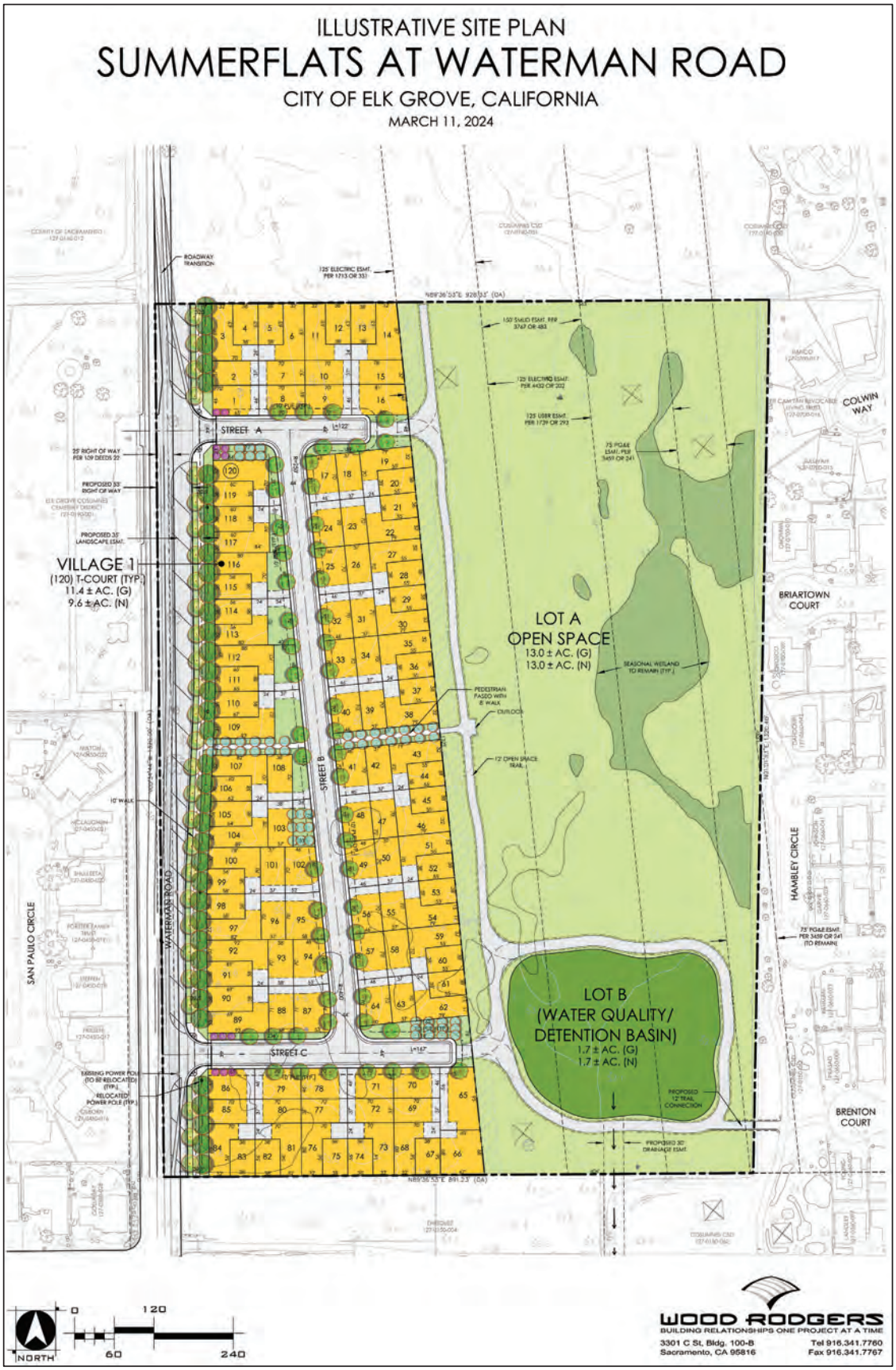
As established by Elk Grove Municipal Code Section 23.29.020, the purpose of the Design Review process is to promote the orderly and harmonious growth of the City; to encourage development in keeping with the desired character of the City; to ensure physical, visual, and functional compatibility between uses; and to help prevent the depreciation of land values by ensuring proper attention is given to site and architectural design. A Subdivision Design Review is required for any Tentative Subdivision Map. The Project also includes Master Home Design Review for the approval of the Master Homes Plans.

PROJECT APPROVALS

The City of Elk Grove has discretionary authority and is the lead agency for the Project. The Project would require City approval of the following discretionary actions:

- General Plan Amendment/Community Plan Amendment from LDR (7.3 acres) and RMC (19.6 acres) to MDR (11.4 acres) and RMC (14.7 acres);
- Rezone from RD-4 (7.3 acres) and O (19.6 acres) to RD-12 (11.4 acres) and O (14.7 acres);
- Small Lot Tentative Subdivision Map;
- Subdivision Design Review;
- Design Exception for two (2) dead end stub streets; and
- Master Home Plan Design Review.

Figure 11
Illustrative Site Plan



REVIEW OR APPROVALS BY OTHER AGENCIES

A number of other agencies will serve as Responsible and Trustee Agencies, pursuant to CEQA Guidelines Section 15381 and Section 15386, respectively. This EIR will provide environmental information to the aforementioned agencies and other public agencies, which may be required to grant approvals or coordinate with other agencies, as part of Project implementation. The agencies could include, but may not be limited to, the following:

- Cosumnes Community Service District (CCSD);
- Regional Water Quality Control Board (RWQCB) – Central Valley Region (National Pollutant Discharge Elimination System [NPDES] Construction General Permit and Phase I MS4 General Permit);
- SacSewer;
- Sacramento Metropolitan Air Quality Management District (SMAQMD);
- SCWA/EGWD; and
- U.S. Army Corps of Engineers (USACE) (Section 404 Nationwide Permit).

APPROACH TO ENVIRONMENTAL REVIEW

As required by CEQA, the EIR will describe existing conditions and evaluate the potential environmental effects of the proposed Summer Flats Project and a reasonable range of alternatives, including the No Project Alternative. The EIR will also address direct, indirect, cumulative, and growth inducing effects. The EIR will identify feasible mitigation measures, if available, to reduce significant and potentially significant impacts. Consistent with Appendix G of the CEQA Guidelines, the City anticipates that the EIR will contain the following chapters:

- Aesthetics
- Air Quality, Greenhouse Gas Emissions, and Energy
- Biological Resources
- Cultural and Tribal Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning/Population and Housing
- Noise
- Public Services and Utilities
- Transportation
- Effects Not Found to be Significant
- Statutorily Required Sections
- Alternatives Analysis

POTENTIAL ENVIRONMENTAL EFFECTS

Each chapter of the EIR will include identification of the thresholds of significance, identification of Project-level and cumulative impacts, and the development of mitigation measures and monitoring strategies, as required. The proposed EIR will reference the City of Elk Grove General Plan, the City's General Plan EIR, and the City's Municipal Code, where applicable. In addition to the foregoing documents, project-specific technical studies are being prepared by technical experts.

The following environmental topic areas are preliminarily anticipated to be evaluated in the EIR:

- **Aesthetics** — The EIR will describe existing regional and Project area aesthetics and visual conditions. To the extent applicable, the chapter will describe Project-specific impacts on scenic vistas, visual character, or quality of the Project area, as well as effects of light and glare. Pursuant to Appendix G of the CEQA Guidelines, the analysis will focus on the Project's potential impacts and whether the Project would substantially degrade the existing visual character or quality of public views.

- **Air Quality, Greenhouse Gas Emissions, and Energy** — The EIR will include an air quality impact analysis, including a quantitative assessment of short-term (i.e., construction) and long-term (i.e., operational) increases of criteria air pollutant emissions of primary concern (i.e., ROG, NO_X, and PM_{10}). The greenhouse gas emissions analysis will be required to demonstrate results consistent with the City's Climate Action Plan. This chapter will also evaluate whether the Project could result in any potentially significant effects related to wasteful, inefficient, or unnecessary consumption of energy resources during Project construction or operation. The discussion will incorporate any potential conflicts with State or local plans regarding renewable energy.

- **Biological Resources** — The Biological Resources chapter of the EIR will summarize potential effects on sensitive natural communities and special-status species. The chapter will feature a habitat assessment survey and a review of all special-status species with the potential to occur on-site. Mitigation measures for all identified impacts will be developed consistent with applicable laws and regulations.

- **Cultural and Tribal Cultural Resources** — The EIR will describe the potential effects to historical and archaeological resources from the Project. Any input from tribes who were alerted and consulted, as required by the passage of Assembly Bill 52, Senate Bill 18, and the associated amendments to Public Resources Code Section 21080.3.1, will be incorporated into the analysis of potential impacts to tribal cultural resources.

- **Geology and Soils** — The Geology and Soils chapter of the EIR will summarize the geological setting and describe the potential effects from soil erosion, earthquakes, liquefaction, expansive/unstable soils, as well as identify any known paleontological resources or unique geological features within the site. The chapter will be based primarily on a site-specific Geotechnical Report.

- **Hazards and Hazardous Materials** — The Hazards and Hazardous Materials chapter will include a description of any potential for existing or possible hazardous materials within the Project area. The chapter will also assess the potential for the Project to create a significant hazard to the public or environment through the routine transport, use, or disposal of hazardous materials.

  Impacts of the environment on a project (as opposed to impacts of a project on the environment) are beyond the scope of required CEQA review. The California Supreme Court has held that, "CEQA does not generally require an agency to consider the effects of existing environmental

conditions on a proposed project's future users or residents. What CEQA does mandate… is an analysis of how a project might exacerbate existing environmental hazards." As such, the mere presence of possible hazardous materials at the site or in the vicinity, should such exist, would be considered an existing environmental condition and, thus, would not be considered an impact under CEQA. Rather, the Project could have the potential to result in an impact associated with possible hazardous materials should the Project exacerbate the existing conditions (e.g., contaminated soils become airborne during ground-disturbing activities and expose construction workers or future residents of the Project). The chapter will primarily be based on a site-specific Phase I Environmental Site Assessment.

- **Hydrology and Water Quality** — The EIR will summarize setting information and identify potential impacts on stormwater drainage, flooding, groundwater, and water quality, including stormwater runoff water quality. Mitigation measures for all identified impacts will be developed consistent with applicable laws and regulations.

- **Land Use and Planning/Population and Housing** — This chapter of the EIR will evaluate the consistency and compatibility of the Project with the plans and policies adopted by the City of Elk Grove. In addition, the chapter will include an evaluation of the potential for any significant unplanned population growth in the area, either directly or indirectly.

- **Noise** — The Noise chapter of the EIR will be based on a Project-specific Noise Study. The chapter will address potential noise impacts resulting from Project construction and operation, including existing and future traffic noise levels on the local road. Noise-sensitive land uses or activities in the Project vicinity will be identified and examined. Furthermore, ambient noise and vibration level measurements on, and in the vicinity of, the site will be conducted to quantify existing background noise and vibration levels for comparison to the predicted Project-generated levels. Noise exposure levels will then be compared to applicable significance criteria of the City of Elk Grove and CEQA.

- **Public Services and Utilities** — The EIR will evaluate whether the Project could significantly increase demands upon local service providers (e.g., fire, police, schools). In accordance with Appendix G, the focus of the analysis will be on whether the Project's demand would require physical alteration of, or need for new governmental facilities, to maintain acceptable service ratios, response times, or other performance objectives, the construction of which could cause significant environmental impacts.

  Additionally, the chapter will evaluate the Project's increase in water supply demand and wastewater generation to determine whether the existing water and sewer infrastructure systems can accommodate demands from the Project, or if system upgrades would be required. Evaluation of the proposed sewer and water improvements will also be included in the chapter. The chapter will also evaluate the receiving landfill's capacity to accommodate the increase in solid waste, the electricity usage, and the natural gas service associated with the Project.

- **Transportation** — The Transportation chapter of the EIR will be based on a Transportation Impact Analysis (TIA) prepared specifically for the Project, which will include an evaluation of potential

impacts related to vehicle miles traveled (VMT). The EIR chapter will also include an analysis of the Project's potential to conflict with the City's programs, policies, ordinances, or policies addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

- **Effects Not Found to be Significant** — Section 15128 of the CEQA Guidelines states that an EIR shall contain a brief statement indicating the reasons that various possible significant effects of a project were determined not to be significant and were, therefore, not discussed in detail in the EIR. Accordingly, the Effects Not Found to be Significant chapter of the EIR is anticipated to potentially include abbreviated discussions on agricultural and forestry resources, mineral resources, and wildfire.

- **Statutorily Required Sections** — Pursuant to CEQA Guidelines Section 15126.2, the Statutorily Required Sections chapter of the EIR will address the potential for significant growth-inducing impacts of the Project, and whether removal of any impediments to growth would occur with the Project. Any significant and unavoidable impacts identified within the EIR will be included in this chapter, as well as a discussion of significant irreversible environmental changes. The chapter will generally describe the cumulative setting for the Project.

- **Alternatives Analysis** — In accordance with Section 15126.6 of the CEQA Guidelines, the EIR will include an analysis of a range of alternatives, including a No Project Alternative. The Project alternatives will be selected when more information related to Project impacts is available. The alternatives will be limited to those that would avoid or substantially lessen any of the significant effects of the Project, while potentially attaining most of the basic objectives of the Project. The Alternatives Analysis chapter will describe the Project alternatives and identify the environmentally superior alternative. The alternatives will be analyzed at a level of detail less than that of the Project; however, the analyses will include sufficient detail to allow a meaningful comparison of the impacts.

Appendix B

California Department of Transportation
DISTRICT 3
703 B STREET | MARYSVILLE, CA 95901-5556
(530) 821-8401 | www.dot.ca.gov

November 08, 2024

GTS # 03-SAC-2024-02009
SCH # 2024100487

Sarah Kirchgessner, Senior Planner
City of Elk Grove Development Services
8401 Laguna Palms Way,
Elk Grove, CA 95758

Summer Flats (NOP DEIR)

Dear Ms. Kirchgessner;

The California Department of Transportation (Caltrans) was included in the review process for the project referenced above. We reviewed this local development for impacts to the State Highway System (SHS) in keeping with our mission, vision, and goals, some of which includes addressing equity, climate change, and safety, as outlined in our statewide plans such as the California Transportation Plan, Caltrans Strategic Plan, and Climate Action Plan for Transportation Infrastructure.

The project is located on Waterman Road, south of Bond Rd., north of Rancho Dr. and is approximately 2.08 miles east of State Route (SR) 99. The project is proposing to subdivide approximately 27.6-acres (APN # 127-0150-001, 127-0150-002 & 127-0150-009). 14.7-acres will be designated as open space with trails and pedestrian pathways. The remaining 12.9-acres will be split into 120-unit lots for a single-family residential community. Based on the Draft Environmental Impact Report review, Caltrans has the following requests and recommendations:

Freeway Operations

Currently, the Southbound SR 99 / Elk Grove Blvd off-ramp is experiencing ramp storage shortage. Per the City of Elk Grove's request, Caltrans is adding storage capacity on the subject off-ramp with project EA 03-1H630.

Based on the Trip Generation, it is anticipated the addition of this project would further exacerbate the existing ramp storage. The project sponsor needs to identify mitigations on this issue.

To reduce VMT, a Multimodal Transportation Plan is required. If the project sponsor would like to adopt the plan from the city, please provide a copy of the plan with improvements/changes that mitigate the VMT impacts.

Traffic Safety

Please identify how the additional trip generation will affect Caltrans' current planned improvements, project 03-1H630, to the storage shortage on the Elk Grove Blvd Southbound off ramp.

Forecasting & Modeling

The project is in an area that is generating residential VMT between 100% and 115% of that of the regional residential average VMT, per the VMT HEX Map of the Sacramento Area Council of Governments (SACOG).

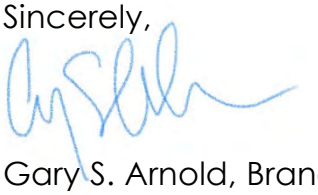
Either an analysis must show that the project will not induce a significant amount of VMT, see Senate Bill (SB) 743/California Environmental Quality Act (CEQA) guidelines, or providing VMT mitigation measures proposed.

Transportation Impact Fees

Please identify project-generated travel demand and estimate the costs of transit and active transportation improvements necessitated by the proposed project; viable funding sources such as development and/or transportation impact fees should also be identified. We encourage a sufficient allocation of proportionate share contributions toward multi-modal and regional transit improvements to fully mitigate cumulative impacts to regional transportation. We also strongly support measures to increase sustainable mode shares, thereby reducing VMT.

If you have any question regarding these comments or require additional information, please contact Angelina Healy, Local Development Review Coordinator, by phone (530) 790-8138 or via email at D3.Local.Development@dot.ca.gov.

Sincerely,



Gary S. Arnold, Branch Chief
Local Development Review and Complete Streets
Division of Planning, Local Assistance, and Sustainability
Caltrans District 3

12 November 2024

Sarah Kirchgessner
City of Elk Grove Development Services
8401 Laguna Palms Way
Elk Grove, CA 95758
skirchgessner@elkgrovecity.org

COMMENTS TO REQUEST FOR REVIEW FOR THE NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT, SUMMER FLATS PROJECT, SCH#2024100487, SACRAMENTO COUNTY

Pursuant to the State Clearinghouse's 11 October 2024 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Notice of Preparation for the Draft Environmental Impact Report* for the Summer Flats Project, located in Sacramento County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

I. Regulatory Setting

Basin Plan

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board has adopted a Basin Plan amendment in noticed public hearings, it must be approved by

the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases, the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues. For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website:
http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Implementation Policy is available on page 74 at:
https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf

In part it states:

Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.

This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

II. Permitting Requirements

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit), Construction General Permit Order No. 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). For more information on the Construction General Permit, visit the State Water Resources Control Board website at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACE). If a Section 404 permit is required by the USACE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements. If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications. For more information on the Water Quality Certification, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_certification/

Waste Discharge Requirements – Discharges to Waters of the State

If USACE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation. For more information on the Waste Discharges to Surface Water NPDES Program and WDR processes, visit the Central Valley Water Board website at:https://www.waterboards.ca.gov/centralvalley/water_issues/waste_to_surface_water/

Projects involving excavation or fill activities impacting less than 0.2 acre or 400 linear feet of non-jurisdictional waters of the state and projects involving dredging activities impacting less than 50 cubic yards of non-jurisdictional waters of the state may be eligible for coverage under the State Water Resources Control Board Water Quality Order No. 2004-0004-DWQ (General Order 2004-0004). For more information on the General Order 2004-0004, visit the State Water Resources Control Board website at:

https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2004/wqo/wqo2004-0004.pdf

Dewatering Permit

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Threat General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Threat Waiver) R5-2018-0085. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at: http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Threat Waiver and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2018-0085.pdf

Limited Threat General NPDES Permit

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Limited Threat Discharges to Surface Water* (Limited Threat General Order). A complete Notice of Intent must be submitted to the Central Valley Water Board to obtain coverage under the Limited Threat General Order. For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2016-0076-01.pdf

NPDES Permit

If the proposed project discharges waste that could affect the quality of surface waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit. For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/help/permit/

If you have questions regarding these comments, please contact me at (916) 464-4684 or Peter.Minkel2@waterboards.ca.gov.

Peter G. Minkel
Engineering Geologist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento

Department of Toxic Substances Control

Yana Garcia
Secretary for
Environmental Protection

Katherine M. Butler, MPH, Director
8800 Cal Center Drive
Sacramento, California 95826-3200
https://dtsc.ca.gov

Gavin Newsom
Governor

SENT VIA ELECTRONIC MAIL

October 24, 2024

Sarah Kirchgessner
Senior Planner
City of Elk Grove Development Services
8401 Laguna Palms Way
Elk Grove, CA 95758
skirchgessner@elkgrovecity.org

RE: NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR SUMMER FLATS PROJECT DATED OCTOBER 11, 2024, STATE CLEARINGHOUSE NUMBER 2024100487

Dear Sarah Kirchgessner,

The Department of Toxic Substances Control (DTSC) received a Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) for the Summer Flats Project (Project). The proposed project would consist of a subdivided single-unit residential community, comprised of 120 residential lots, as well as new internal roadways and frontage improvements, associated utility improvements, 14.7 acres of open space, an open space trail and pedestrian paseo, and new landscaping. After reviewing the project, DTSC recommends and requests consideration of the following comments:

1. When agricultural crops and/or land uses are proposed or rezoned for residential use, a number of contaminants of concern (COCs) can be present. The Lead Agency shall identify the amounts of Pesticides and Organochlorine Pesticides (OCPs) historically used on the property. If present, OCPs

requiring further analysis are dichloro-diphenyl-trichloroethane, toxaphene, and dieldrin. Additionally, any level of arsenic present would require further analysis and sampling and must meet HHRA NOTE NUMBER 3, DTSC-SLs approved thresholds. If they are not, remedial action must take place to mitigate them below those thresholds.

Additional COCs may be found in mixing/loading/storage areas, drainage ditches, farmhouses, or any other outbuildings and should be sampled and analyzed. If smudge pots had been routinely utilized, additional sampling for Polycyclic Aromatic Hydrocarbons and/or Total Petroleum Hydrocarbons may be required.

2. DTSC recommends that all imported soil and fill material should be tested to assess any contaminants of concern meet screening levels as outlined in DTSC's Preliminary Endangerment Assessment (PEA) Guidance Manual. Additionally, DTSC advises referencing the DTSC Information Advisory Clean Imported Fill Material Fact Sheet if importing fill is necessary. To minimize the possibility of introducing contaminated soil and fill material there should be documentation of the origins of the soil or fill material and, if applicable, sampling be conducted to ensure that the imported soil and fill material are suitable for the intended land use. The soil sampling should include analysis based on the source of the fill and knowledge of prior land use. Additional information can be found by visiting DTSC's Human and Ecological Risk Office (HERO) webpage.

DTSC appreciates the opportunity to comment on the NOP of a DEIR for the Summer Flats Project. Thank you for your assistance in protecting California's people and environment from the harmful effects of toxic substances. If you have any questions or would like clarification on DTSC's comments, please respond to this letter or via email for additional guidance.

Sincerely,

Tamara Purvis
Associate Environmental Planner
HWMP - Permitting Division – CEQA Unit
Department of Toxic Substances Control
Tamara.Purvis@dtsc.ca.gov

cc: (via email)

Governor's Office of Planning and
Research State Clearinghouse
State.Clearinghouse@opr.ca.gov

Dave Kereazis
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STATE OF CALIFORNIA Gavin Newsom, *Governor*

NATIVE AMERICAN HERITAGE COMMISSION

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November 8, 2024

Sara Kirchgessner
City of Elk Grove
Development Services Department
8401 Laguna Palms Way
Elk Grove CA 95758

Re: 2024100487 Summer Flats Project, Sacramento County

Dear Ms. Kirchgessner:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project 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. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements**. If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

- **a.** A brief description of the project.
- **b.** The lead agency contact information.
- **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
- **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

- **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- **a.** Alternatives to the project.
- **b.** Recommended mitigation measures.
- **c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

- **a.** Type of environmental review necessary.
- **b.** Significance of the tribal cultural resources.
- **c.** Significance of the project's impacts on tribal cultural resources.
- **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

- **a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
- **b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (https://ohp.parks.ca.gov/?page_id=30331) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. 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.

b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:

a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.

b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.

b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.

c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Pricilla.Torres-Fuentes@NAHC.ca.gov.

Sincerely,

Pricilla Torres-Fuentes

Pricilla Torres-Fuentes
Cultural Resources Analyst

cc: State Clearinghouse

Sarah Kirchgessner

From: Chris Dugan <dpconcord@outlook.com>
Sent: Tuesday, November 12, 2024 3:21 PM
To: Sarah Kirchgessner
Subject: Notice of Preparation of a Draft EIR for the Summer Flats Project (PLNG23-006)

You don't often get email from dpconcord@outlook.com. Learn why this is important

[EXTERNAL EMAIL]

To whom it may concern:

Below please find my comments on the scope and content of the Draft EIR the City is preparing for the Summer Flats Project (PLNG23-006):

- Project Description: A clear and stable project description is key to the preparation of an adequate EIR. Please ensure the EIR's project description clearly defines and describes the proposed project's characteristics, including existing site features, proposed development features, and construction activities.
- Air Quality: The Draft EIR should fully evaluate potential emissions of criteria air pollutants, toxic air contaminants, and fugitive dust that could be generated during the construction and operation of the proposed project. As part of this evaluation, the Draft EIR should clearly disclose the assumptions made to estimate potential emissions, such as routes and distances associated with construction hauling activities, and VMT estimates. Given the site's proximity to a former landfill, the Draft EIR should fully disclose the potential for the project to exacerbate any existing conditions that could lead to the release and entrainment of contaminated soil, dust, etc.
- Greenhouse Gases: The Draft EIR should fully evaluate potential GHG emissions that could be generated during construction and operation of the proposed project. Should the Draft EIR attempt to streamline the analysis of GHG emissions using the City's Climate Action Plan, the Draft EIR must provide sufficient information to demonstrate the City's Climate Action Plan is on track to achieve the City's GHG-related goals.
- Noise: The Draft EIR should fully evaluate the proposed project's potential construction and operational noise impacts. The analysis should be based on comprehensive long-term ambient noise monitoring of the site and vicinity and project-specific increases in noise from potential construction and operational activities. The evaluation should fully disclose potential changes in traffic noise levels based on current (2024 or 2025), current plus project, and cumulative traffic volumes, observed fleet characteristics, and travel speeds. As a resident of the Waterman Meadows neighborhood, I have observed vehicles travelling much faster than the posted 35 and 45 mile per hour speed limits (see also "indirect effects" below).
- Traffic hazards: The safety of traffic operations at the intersection of Waterman Road and Rancho Road should be fully evaluated and disclosed in the Draft EIR. South of this intersection, northbound Waterman Road merges from two to one lane and increases in speed from 35 to 45 miles per hour, while southbound Waterman Road increases from one lane to two lanes and decreases in speed from 45 miles per hour to 35 miles per hour. As a resident of Waterman Meadows, I regularly witness southbound vehicles travelling faster than posted speed limits

crossing into the northbound turning pocket for Rancho Road to “go around” a southbound vehicle turning right onto Rancho Road. Left hand turns from Rancho Road to Waterman Road are currently very challenging. The addition of new intersections for Street A and Street C may substantially exacerbate the hazards associated with turning movements onto and from Waterman Road.

- Traffic Operations: While CEQA no longer mandates that changes in the level of service (LOS) at an intersection or road segment require evaluation, the Draft EIR should include the results of a traffic operations analysis as this study is essential to enable full review of the Draft EIR’s evaluation of potential traffic hazards.

Thank you

C. Dugan
Waterman Meadows resident

MARK FORSTER
REAL ESTATE Trust • Diligence • Integrity

November 12,2024

Sarah Kirchfessner
City of Elk Grove, Planning Division

Mark A Forster
9454 San Paulo Circle
Elk Grove, CA 95624
916-416-8600

This is in response to the proposed Summer Flats Project on Waterman Road of which I am against for various reasons.

1) As I pointed out in the Oct 11th meeting the traffic issues have gotten worse since waterman road has been adjusted in a lane shift and a speed adjustment. Coming out of Rancho Drive is a nightmare for our Waterman Meadow neighbors. Because the traffic has gotten so bad on Elk Grove Blvd. at Waterman, we now have drivers cutting down Rancho from Waterman only to turn on school St. and connect back to Elk Grove Blvd. And now it's sending more traffic to the Waterman Meadows neighborhood.
2) As the Elliott subdivision on Waterman builds out to its 800 plus homes that will cause more congestion on bond road and Waterman. This summer flat projects will be 240 cars roughly (120 homes &2 cars per household) Just adding to the traffic issues we currently have.
3) Waterman meadows has always been one of the better subdivisions to live in Elk Grove. Pricing has held firmly and always appreciated through the years. Building these cracker Jack box homes next door to us will do nothing for the value except flatline them. You don't see the wild hawk area of nice homes being affected by small affordable housing because there is an in built in that area. Unfortunately this is a situation of the city needing affordable housing and sticking it wherever it can fit. Straight from the developers mouth, when asked why he doesn't build a development like he did on Sheldon Rd., his comment was because the city once affordable housing.

4) Affordable housing always brings with it crime issues and at this time I'm proud to say that we have had 1 criminal act on my street in 32 years and recently our mailboxes were broken into. I only see this as an increasing situation if this development goes through.
5) Regarding the location of this project I'm concerned about my personal residence. Any lightning this added to the streets will be impacting my rear yard. Anymore traffic or residence behind me will add to the already ever growing noise issues and appreciate the value of my home more. We just had a neighbors house go on the market and had to be offered at about a $60,000 reduction from the going dollar per square foot sales in the area, because of Waterman Rd. I know that the city doesn't care about the Livelihood of its residents because they always seem to be more concerned With more housing.
6) Is the city going to increase the height of my back wall to give myself the privacy that I've had for years? I moved to the east side of Elk Grove to give myself The suburban lifestyle that my family wanted. Through the years the same Elk Grove has taken that away little by little to where now it sounds like a stream of trucks running behind my house all the time. Sure if they lived in my house they would be saying the same thing and complaining in the same way that I complain.

Unfortunately the city is going to end up making the east side of Elk Grove no different from the West side of Elk Grove, Commercial jungle full of traffic congestion. Unfortunately with the Old Town being what it is the east side will always be a traffic madhouse from Waterman down passed Elk-Grove Florin Rd. Bond Rd. At Waterman going towards Elk Grove florin Rd. Is also going to be an area of traffic congestion, worse than it is now. Expanding Waterman road to four lanes between bond and Elk Grove Blvd. is going to do nothing more than double the amount of traffic in that area. Once it moves farther down north or South on Waterman to narrow our roads it will just create more traffic congestion.

At this time all I can do is throw my hands up in the air, cause the city's gonna do what the city's gonna do!

Respectfully,

Mark A Forster

Mark Forster • Email mark@markaforster.com • Ph 916-416-8600 • Fx 888-228-4126
www.MarkAForster.RemaxGold.com • 9280 W. Stockton Blvd. #111 • Elk Grove, CA 95758

RE/MAX
The Real Estate Leaders

Sarah Kirchgessner

From: Osborn, Geordie <Geordie.Osborn@bayalarm.com>
Sent: Monday, November 4, 2024 12:12 PM
To: Sarah Kirchgessner
Subject: Summer Flats at Waterman Road Project

You don't often get email from geordie.osborn@bayalarm.com. Learn why this is important

[EXTERNAL EMAIL]

Good Afternoon Sarah,

I am reaching out regarding the Summer Flats Project currently in Environmental Review by the city.
I reside at 942 San Paulo Circle, directly behind the proposed project across from Waterman Road and have a few initial concerns.
My main concern is the traffic impact on Waterman Road. Currently the 3-way intersection at Waterman and Rancho has become heavily congested and quite dangerous to navigate during the morning and evening commute hours.
There is no traffic light or stop sign in this intersection. After reading through the proposal and design, it appears Waterman road will be changed from a 2-lane road to a 4-lane road.
Can you let me know what changes will be made to this intersection if any? I have serious concerns for the traffic safety in this intersection.

Thank you for your consideration.

BAY ALARM SINCE 1946
WE GOT YOU.

Geordie Osborn
Director – North Central Region

Bay Alarm Company
3475 Orange Grove Ave | N. Highlands, CA 95660
(916) 484-2188

BayAlarm.com

Sarah Kirchgessner

From: Katie Williams <redrose_65101@yahoo.com>
Sent: Monday, November 11, 2024 5:23 PM
To: Sarah Kirchgessner
Subject: Opposition to Summerflats at Waterman Road Project

You don't often get email from redrose_65101@yahoo.com. Learn why this is important

[EXTERNAL EMAIL]

Hello,

We received a notice about providing input in regard to rezoning the Waterman Flats Area into subdivisions. We oppose this rezoning. We believe it is in the best interest of the environment to maintain this open space, and it is illegal and a monstrosity to develop any wetlands. There have already been numerous developments built all around Elk Grove, pushing animals and nature out for the sake of money. Open space is important for not only the ecosystem that is trying to thrive there, but for its citizens to enjoy the beauty of Elk Grove.

Traffic is already a problem, schools are already overloaded, and Elk Grove is losing its spacious feel to subdivisions that unnecessary.

Please take care of our environment and the natural beauty of Elk Grove.
Thank you.

~Residents of Elk Grove

Summer Flats Project
NOP Scoping Meeting Comment Summary

Date: November 12, 2024
Time: 5:00 PM
Location: Elk Grove City Council Chambers

I. Presentation by Senior Planner Sarah Kirchgessner and CEQA Consultant, Rod Stinson

II. Verbal Comments (arranged in order of "appearance" of commenter):

In Person
(Please note that the names of residents were not recorded, and multiple comments could be recorded separately for the same individual. Also please note that not all comments were recorded.)

Elk Grove Residents

- Requested that a traffic report addressing operations analysis be conducted
- Remarked that Waterman Road should be four lanes
- Expressed concern related to roadway infrastructure including specific concerns about:
    - Site access
    - Roadway capacity
    - Safety hazards on Waterman Road from Porto Rosa on Rancho Drive and at other access points
    - Utility infrastructure off-site on Sheldon Road and construction associated with this infrastructure off-site

Elk Grove Resident

- Expressed concern about light trespass from streetlights, noise, and speeding traffic
- Requested a traffic light at Rancho Drive
- Expressed concern about existing sight distance issues at the Rancho Drive intersection
- Remarked that the distance to major intersection is short and will cause unsafe traffic movements
- Asked why all state and local agencies are not required to submit a comment on the project
- Expressed concern about traffic impacts on Elk Grove Boulevard and Bond Road
- Expressed concern about electromagnetic field emittance from high-voltage towers

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Summer Flats Unmitigated Run Custom Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Summer Flats Unmitigated Run
Construction Start Date	8/3/2026
Operational Year	2027
Lead Agency	City of Elk Grove
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	36.6
Location	38.41453582900188, -121.35165723425942
County	Sacramento
City	Elk Grove
Air District	Sacramento Metropolitan AQMD
Air Basin	Sacramento Valley
TAZ	711
EDFZ	13
Electric Utility	Sacramento Municipal Utility District
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.30

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Single Family Housing	120	Dwelling Unit	13.6	234,000	10,000	0.00	336	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	15.3	15.1	29.9	29.8	0.07	1.24	19.8	21.1	1.14	10.1	11.3	—	8,332	8,332	0.41	0.31	3.86	8,437
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	15.4	15.1	30.1	29.5	0.07	1.15	9.81	11.0	1.06	3.81	4.87	—	8,307	8,307	0.41	0.31	0.10	8,408
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.87	5.77	6.79	7.16	0.02	0.26	2.20	2.46	0.24	0.91	1.16	—	1,817	1,817	0.09	0.06	0.41	1,837
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.07	1.05	1.24	1.31	< 0.005	0.05	0.40	0.45	0.04	0.17	0.21	—	301	301	0.01	0.01	0.07	304

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	3.89	3.21	29.9	29.8	0.07	1.24	19.8	21.1	1.14	10.1	11.3	—	8,332	8,332	0.41	0.31	3.86	8,437

2027	15.3	15.1	10.9	17.0	0.03	0.36	0.62	0.98	0.33	0.15	0.48	—	3,453	3,453	0.13	0.09	2.66	3,486
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	15.4	15.1	30.1	29.5	0.07	1.15	9.81	11.0	1.06	3.81	4.87	—	8,307	8,307	0.41	0.31	0.10	8,408
2027	15.3	15.1	11.0	16.3	0.03	0.36	0.62	0.98	0.33	0.15	0.48	—	3,389	3,389	0.14	0.09	0.07	3,420
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.56	1.40	6.79	7.16	0.02	0.26	2.20	2.46	0.24	0.91	1.16	—	1,817	1,817	0.09	0.06	0.38	1,837
2027	5.87	5.77	3.96	5.90	0.01	0.13	0.22	0.35	0.12	0.05	0.17	—	1,224	1,224	0.05	0.03	0.41	1,236
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.28	0.26	1.24	1.31	< 0.005	0.05	0.40	0.45	0.04	0.17	0.21	—	301	301	0.01	0.01	0.06	304
2027	1.07	1.05	0.72	1.08	< 0.005	0.02	0.04	0.06	0.02	0.01	0.03	—	203	203	0.01	0.01	0.07	205

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	10.9	10.5	3.81	31.9	0.06	0.14	4.09	4.22	0.13	1.04	1.17	51.6	7,299	7,351	4.74	0.26	17.1	7,565
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	9.77	9.43	4.18	23.3	0.05	0.13	4.09	4.22	0.13	1.04	1.17	51.6	6,863	6,915	4.79	0.29	2.07	7,122
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	10.2	9.86	4.03	26.8	0.05	0.14	3.99	4.13	0.13	1.01	1.15	51.6	6,961	7,012	4.76	0.27	8.32	7,221
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.86	1.80	0.73	4.90	0.01	0.02	0.73	0.75	0.02	0.19	0.21	8.55	1,152	1,161	0.79	0.05	1.38	1,196

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.50	4.25	2.56	24.5	0.05	0.04	4.09	4.12	0.03	1.04	1.07	—	4,978	4,978	0.28	0.24	15.4	5,070
Area	6.24	6.21	0.07	6.81	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	18.2	18.2	< 0.005	< 0.005	—	18.3
Energy	0.14	0.07	1.19	0.51	0.01	0.10	—	0.10	0.10	—	0.10	—	2,295	2,295	0.17	0.01	—	2,301
Water	—	—	—	—	—	—	—	—	—	—	—	9.04	8.57	17.6	0.03	0.02	—	24.3
Waste	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Total	10.9	10.5	3.81	31.9	0.06	0.14	4.09	4.22	0.13	1.04	1.17	51.6	7,299	7,351	4.74	0.26	17.1	7,565
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.02	3.75	2.99	22.8	0.04	0.04	4.09	4.12	0.03	1.04	1.07	—	4,560	4,560	0.33	0.26	0.40	4,646
Area	5.61	5.61	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Energy	0.14	0.07	1.19	0.51	0.01	0.10	—	0.10	0.10	—	0.10	—	2,295	2,295	0.17	0.01	—	2,301
Water	—	—	—	—	—	—	—	—	—	—	—	9.04	8.57	17.6	0.03	0.02	—	24.3
Waste	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Total	9.77	9.43	4.18	23.3	0.05	0.13	4.09	4.22	0.13	1.04	1.17	51.6	6,863	6,915	4.79	0.29	2.07	7,122
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.03	3.77	2.79	21.7	0.05	0.04	3.99	4.03	0.03	1.01	1.05	—	4,645	4,645	0.30	0.25	6.64	4,733
Area	6.04	6.02	0.04	4.67	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	12.5	12.5	< 0.005	< 0.005	—	12.5
Energy	0.14	0.07	1.19	0.51	0.01	0.10	—	0.10	0.10	—	0.10	—	2,295	2,295	0.17	0.01	—	2,301
Water	—	—	—	—	—	—	—	—	—	—	—	9.04	8.57	17.6	0.03	0.02	—	24.3
Waste	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149

Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Total	10.2	9.86	4.03	26.8	0.05	0.14	3.99	4.13	0.13	1.01	1.15	51.6	6,961	7,012	4.76	0.27	8.32	7,221
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.74	0.69	0.51	3.95	0.01	0.01	0.73	0.74	0.01	0.19	0.19	—	769	769	0.05	0.04	1.10	784
Area	1.10	1.10	0.01	0.85	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	2.06	2.06	< 0.005	< 0.005	—	2.07
Energy	0.03	0.01	0.22	0.09	< 0.005	0.02	—	0.02	0.02	—	0.02	—	380	380	0.03	< 0.005	—	381
Water	—	—	—	—	—	—	—	—	—	—	—	1.50	1.42	2.92	0.01	< 0.005	—	4.02
Waste	—	—	—	—	—	—	—	—	—	—	—	7.05	0.00	7.05	0.70	0.00	—	24.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28	0.28
Total	1.86	1.80	0.73	4.90	0.01	0.02	0.73	0.75	0.02	0.19	0.21	8.55	1,152	1,161	0.79	0.05	1.38	1,196

3. Construction Emissions Details

3.1. Site Preparation (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.74	3.14	29.2	28.8	0.05	1.24	—	1.24	1.14	—	1.14	—	5,298	5,298	0.21	0.04	—	5,316
Dust From Material Movement	—	—	—	—	—	—	19.7	19.7	—	10.1	10.1	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.09	0.80	0.79	< 0.005	0.03	—	0.03	0.03	—	0.03	—	145	145	0.01	< 0.005	—	146
Dust From Material Movement	—	—	—	—	—	—	0.54	0.54	—	0.28	0.28	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.15	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	—	24.0	24.0	< 0.005	< 0.005	—	24.1
Dust From Material Movement	—	—	—	—	—	—	0.10	0.10	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.05	0.99	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	195	195	< 0.005	0.01	0.70	198
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.86	4.86	< 0.005	< 0.005	0.01	4.93
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.81	0.81	< 0.005	< 0.005	< 0.005	0.82
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Grading (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.62	3.04	27.2	27.6	0.06	1.12	—	1.12	1.03	—	1.03	—	6,599	6,599	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	—	9.21	9.21	—	3.66	3.66	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.62	3.04	27.2	27.6	0.06	1.12	—	1.12	1.03	—	1.03	—	6,599	6,599	0.27	0.05	—	6,621

Dust From Material Movement	—	—	—	—	—	—	9.21	9.21	—	3.66	3.66	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.60	0.50	4.48	4.53	0.01	0.18	—	0.18	0.17	—	0.17	—	1,085	1,085	0.04	0.01	—	1,088
Dust From Material Movement	—	—	—	—	—	—	1.51	1.51	—	0.60	0.60	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.09	0.82	0.83	< 0.005	0.03	—	0.03	0.03	—	0.03	—	180	180	0.01	< 0.005	—	180
Dust From Material Movement	—	—	—	—	—	—	0.28	0.28	—	0.11	0.11	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.05	1.13	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	223	223	< 0.005	0.01	0.80	226
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.18	0.04	2.63	1.05	0.01	0.03	0.40	0.42	0.03	0.11	0.13	—	1,511	1,511	0.14	0.24	3.06	1,590

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.07	0.83	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	198	198	< 0.005	0.01	0.02	200
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.18	0.04	2.84	1.06	0.01	0.03	0.40	0.42	0.03	0.11	0.13	—	1,510	1,510	0.14	0.24	0.08	1,587
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.14	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	33.3	33.3	< 0.005	< 0.005	0.06	33.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.03	0.01	0.46	0.17	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	248	248	0.02	0.04	0.22	261
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.52	5.52	< 0.005	< 0.005	0.01	5.60
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.08	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	41.1	41.1	< 0.005	0.01	0.04	43.2

3.5. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.75	0.99	< 0.005	0.03	—	0.03	0.03	—	0.03	—	183	183	0.01	< 0.005	—	184
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.14	0.18	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	30.3	30.3	< 0.005	< 0.005	—	30.4
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.16	0.14	1.79	0.00	0.00	0.44	0.44	0.00	0.10	0.10	—	427	427	0.01	0.02	0.04	432
Vendor	0.04	0.01	0.67	0.24	< 0.005	0.01	0.10	0.10	0.01	0.03	0.03	—	363	363	0.02	0.05	0.02	380
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.14	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	33.4	33.4	< 0.005	< 0.005	0.06	33.9
Vendor	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27.7	27.7	< 0.005	< 0.005	0.03	29.1
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.54	5.54	< 0.005	< 0.005	0.01	5.61
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.59	4.59	< 0.005	< 0.005	< 0.005	4.81
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.44	0.37	3.36	4.63	0.01	0.12	—	0.12	0.11	—	0.11	—	858	858	0.03	0.01	—	861
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.07	0.61	0.85	< 0.005	0.02	—	0.02	0.02	—	0.02	—	142	142	0.01	< 0.005	—	143

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17	0.17	0.11	2.29	0.00	0.00	0.44	0.44	0.00	0.10	0.10	—	472	472	0.01	0.02	1.56	479
Vendor	0.04	0.01	0.59	0.23	< 0.005	< 0.005	0.10	0.10	< 0.005	0.03	0.03	—	355	355	0.02	0.05	0.79	372
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.14	0.14	1.68	0.00	0.00	0.44	0.44	0.00	0.10	0.10	—	419	419	0.01	0.02	0.04	425
Vendor	0.04	0.01	0.63	0.24	< 0.005	0.01	0.10	0.10	0.01	0.03	0.03	—	355	355	0.02	0.05	0.02	371
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.04	0.62	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	154	154	< 0.005	0.01	0.24	156
Vendor	0.01	< 0.005	0.22	0.08	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	127	127	0.01	0.02	0.12	133
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	25.5	25.5	< 0.005	< 0.005	0.04	25.9
Vendor	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	21.1	21.1	< 0.005	< 0.005	0.02	22.0
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	0.76	7.12	9.94	0.01	0.32	—	0.32	0.29	—	0.29	—	1,511	1,511	0.06	0.01	—	1,516
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.20	0.27	< 0.005	0.01	—	0.01	0.01	—	0.01	—	41.4	41.4	< 0.005	< 0.005	—	41.5
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.85	6.85	< 0.005	< 0.005	—	6.88
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.05	0.62	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	148	148	< 0.005	0.01	0.02	150
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.17	4.17	< 0.005	< 0.005	0.01	4.23
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.69	0.69	< 0.005	< 0.005	< 0.005	0.70
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134

Architectural Coating	13.7	13.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.04	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.53	6.53	< 0.005	< 0.005	—	6.55
Architectural Coatings	0.67	0.67	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.08	1.08	< 0.005	< 0.005	—	1.09
Architectural Coatings	0.12	0.12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.03	0.36	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	85.4	85.4	< 0.005	< 0.005	0.01	86.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.29	4.29	< 0.005	< 0.005	0.01	4.35
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.71	0.71	< 0.005	< 0.005	< 0.005	0.72
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	13.7	13.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	13.7	13.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.32	0.43	< 0.005	0.01	—	0.01	0.01	—	0.01	—	51.5	51.5	< 0.005	< 0.005	—	51.6
Architectural Coatings	5.29	5.29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.52	8.52	< 0.005	< 0.005	—	8.55
Architectural Coatings	0.97	0.97	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.46	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	94.4	94.4	< 0.005	< 0.005	0.31	95.8

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.03	0.34	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	83.9	83.9	< 0.005	< 0.005	0.01	85.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	33.2	33.2	< 0.005	< 0.005	0.05	33.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.49	5.49	< 0.005	< 0.005	0.01	5.57
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	4.50	4.25	2.56	24.5	0.05	0.04	4.09	4.12	0.03	1.04	1.07	—	4,978	4,978	0.28	0.24	15.4	5,070
Total	4.50	4.25	2.56	24.5	0.05	0.04	4.09	4.12	0.03	1.04	1.07	—	4,978	4,978	0.28	0.24	15.4	5,070
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	4.02	3.75	2.99	22.8	0.04	0.04	4.09	4.12	0.03	1.04	1.07	—	4,560	4,560	0.33	0.26	0.40	4,646
Total	4.02	3.75	2.99	22.8	0.04	0.04	4.09	4.12	0.03	1.04	1.07	—	4,560	4,560	0.33	0.26	0.40	4,646
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.74	0.69	0.51	3.95	0.01	0.01	0.73	0.74	0.01	0.19	0.19	—	769	769	0.05	0.04	1.10	784
Total	0.74	0.69	0.51	3.95	0.01	0.01	0.73	0.74	0.01	0.19	0.19	—	769	769	0.05	0.04	1.10	784

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	782	782	0.04	< 0.005	—	784
Total	—	—	—	—	—	—	—	—	—	—	—	—	782	782	0.04	< 0.005	—	784
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	782	782	0.04	< 0.005	—	784
Total	—	—	—	—	—	—	—	—	—	—	—	—	782	782	0.04	< 0.005	—	784
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	129	129	0.01	< 0.005	—	130
Total	—	—	—	—	—	—	—	—	—	—	—	—	129	129	0.01	< 0.005	—	130

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.14	0.07	1.19	0.51	0.01	0.10	—	0.10	0.10	—	0.10	—	1,513	1,513	0.13	< 0.005	—	1,517
Total	0.14	0.07	1.19	0.51	0.01	0.10	—	0.10	0.10	—	0.10	—	1,513	1,513	0.13	< 0.005	—	1,517
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.14	0.07	1.19	0.51	0.01	0.10	—	0.10	0.10	—	0.10	—	1,513	1,513	0.13	< 0.005	—	1,517
Total	0.14	0.07	1.19	0.51	0.01	0.10	—	0.10	0.10	—	0.10	—	1,513	1,513	0.13	< 0.005	—	1,517
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.03	0.01	0.22	0.09	< 0.005	0.02	—	0.02	0.02	—	0.02	—	250	250	0.02	< 0.005	—	251
Total	0.03	0.01	0.22	0.09	< 0.005	0.02	—	0.02	0.02	—	0.02	—	250	250	0.02	< 0.005	—	251

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	5.01	5.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.60	0.60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.63	0.60	0.07	6.81	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	18.2	18.2	< 0.005	< 0.005	—	18.3
Total	6.24	6.21	0.07	6.81	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	18.2	18.2	< 0.005	< 0.005	—	18.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	5.01	5.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.60	0.60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	5.61	5.61	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	0.91	0.91	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.11	0.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.08	0.07	0.01	0.85	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.06	2.06	< 0.005	< 0.005	—	2.07
Total	1.10	1.10	0.01	0.85	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	2.06	2.06	< 0.005	< 0.005	—	2.07

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	9.04	8.57	17.6	0.03	0.02	—	24.3
Total	—	—	—	—	—	—	—	—	—	—	—	9.04	8.57	17.6	0.03	0.02	—	24.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	9.04	8.57	17.6	0.03	0.02	—	24.3

Total	—	—	—	—	—	—	—	—	—	—	—	9.04	8.57	17.6	0.03	0.02	—	24.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1.50	1.42	2.92	0.01	< 0.005	—	4.02
Total	—	—	—	—	—	—	—	—	—	—	—	1.50	1.42	2.92	0.01	< 0.005	—	4.02

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149
Total	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149
Total	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	7.05	0.00	7.05	0.70	0.00	—	24.7
Total	—	—	—	—	—	—	—	—	—	—	—	7.05	0.00	7.05	0.70	0.00	—	24.7

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28	0.28
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28	0.28

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	8/3/2026	8/14/2026	5.00	10.0	—
Grading	Grading	8/17/2026	11/6/2026	5.00	60.0	—
Building Construction	Building Construction	11/23/2026	7/2/2027	5.00	160	—

Paving	Paving	11/9/2026	11/20/2026	5.00	10.0	—
Architectural Coating	Architectural Coating	12/7/2026	7/16/2027	5.00	160	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	14.3	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.80	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	14.3	LDA,LDT1,LDT2
Grading	Vendor	—	8.80	HHDT,MHDT
Grading	Hauling	20.8	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	43.2	14.3	LDA,LDT1,LDT2
Building Construction	Vendor	12.8	8.80	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	14.3	LDA,LDT1,LDT2
Paving	Vendor	—	8.80	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	8.64	14.3	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.80	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	473,850	157,950	0.00	0.00	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	—	—	15.0	0.00	—
Grading	10,000	—	180	0.00	—
Paving	0.00	0.00	0.00	0.00	1.32

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Single Family Housing	1.32	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	279	0.01	< 0.005

2027	0.00	267	0.01	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	1,132	1,132	1,132	413,034	5,763	5,763	5,763	2,103,635

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Single Family Housing	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	120
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

473850	157,950	0.00	0.00	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	1,068,987	267	0.0129	0.0017	4,719,737

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	4,231,080	170,700

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	79.0	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

8. User Changes to Default Data

Screen	Justification
Land Use	Lot acreage adjusted to represent overall acreage of the project site.
Construction: Construction Phases	Based on typical construction practices, architectural coating assumed to start two weeks after the start of building construction and last for the same number of days. Demolition not required for the proposed project. Phase timing adjusted based on project-specific information provided by the applicant.
Operations: Vehicle Data	Trip Rates and VMT adjusted to be consistent with traffic project-specific traffic data prepared by Fehr and Peers.

Summer Flats Mitigated Run Custom Report

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3.12. Architectural Coating (2026) - Mitigated

3.13. Architectural Coating (2027) - Unmitigated

3.14. Architectural Coating (2027) - Mitigated

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

4.1.2. Mitigated

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

4.2.2. Electricity Emissions By Land Use - Mitigated

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

4.2.4. Natural Gas Emissions By Land Use - Mitigated

4.3. Area Emissions by Source

4.3.1. Unmitigated

4.3.2. Mitigated

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

4.4.2. Mitigated

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

4.5.2. Mitigated

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

4.6.2. Mitigated

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

4.7.2. Mitigated

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

4.8.2. Mitigated

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

4.9.2. Mitigated

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.2.2. Mitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.3.2. Mitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.9.2. Mitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.10.4. Landscape Equipment - Mitigated

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.11.2. Mitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.12.2. Mitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.13.2. Mitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.14.2. Mitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.15.2. Mitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1.2. Mitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.1.2. Mitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

5.18.2.2. Mitigated

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Summer Flats Mitigated Run
Construction Start Date	8/3/2026
Operational Year	2027
Lead Agency	City of Elk Grove
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	36.6
Location	38.41453582900188, -121.35165723425942
County	Sacramento
City	Elk Grove
Air District	Sacramento Metropolitan AQMD
Air Basin	Sacramento Valley
TAZ	711
EDFZ	13
Electric Utility	Sacramento Municipal Utility District
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.30

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Single Family Housing	120	Dwelling Unit	13.6	234,000	10,000	0.00	336	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-5	Use Advanced Engine Tiers
Energy	E-1	Buildings Exceed 2019 Title 24 Building Envelope Energy Efficiency Standards
Water	W-7	Adopt a Water Conservation Strategy

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	15.3	15.1	29.9	29.8	0.07	1.24	19.8	21.1	1.14	10.1	11.3	—	8,332	8,332	0.41	0.31	3.86	8,437
Mit.	15.1	14.9	29.6	29.8	0.07	1.24	19.8	21.1	1.14	10.1	11.3	—	8,332	8,332	0.41	0.31	3.86	8,437
% Reduced	2%	1%	1%	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	15.4	15.1	30.1	29.5	0.07	1.15	9.81	11.0	1.06	3.81	4.87	—	8,307	8,307	0.41	0.31	0.10	8,408
Mit.	15.1	14.9	29.8	29.4	0.07	1.11	9.81	10.9	1.02	3.81	4.83	—	8,307	8,307	0.41	0.31	0.10	8,408
% Reduced	2%	2%	1%	< 0.5%	—	4%	—	< 0.5%	4%	—	1%	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.87	5.77	6.79	7.16	0.02	0.26	2.20	2.46	0.24	0.91	1.16	—	1,817	1,817	0.09	0.06	0.41	1,837
Mit.	5.77	5.69	6.62	7.14	0.02	0.25	2.20	2.45	0.23	0.91	1.14	—	1,817	1,817	0.09	0.06	0.41	1,837

% Reduced	2%	1%	3%	< 0.5%	—	6%	—	1%	6%	—	1%	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.07	1.05	1.24	1.31	< 0.005	0.05	0.40	0.45	0.04	0.17	0.21	—	301	301	0.01	0.01	0.07	304
Mit.	1.05	1.04	1.21	1.30	< 0.005	0.04	0.40	0.45	0.04	0.17	0.21	—	301	301	0.01	0.01	0.07	304
% Reduced	2%	1%	3%	< 0.5%	—	6%	—	1%	6%	—	1%	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	3.89	3.21	29.9	29.8	0.07	1.24	19.8	21.1	1.14	10.1	11.3	—	8,332	8,332	0.41	0.31	3.86	8,437
2027	15.3	15.1	10.9	17.0	0.03	0.36	0.62	0.98	0.33	0.15	0.48	—	3,453	3,453	0.13	0.09	2.66	3,486
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	15.4	15.1	30.1	29.5	0.07	1.15	9.81	11.0	1.06	3.81	4.87	—	8,307	8,307	0.41	0.31	0.10	8,408
2027	15.3	15.1	11.0	16.3	0.03	0.36	0.62	0.98	0.33	0.15	0.48	—	3,389	3,389	0.14	0.09	0.07	3,420
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.56	1.40	6.79	7.16	0.02	0.26	2.20	2.46	0.24	0.91	1.16	—	1,817	1,817	0.09	0.06	0.38	1,837
2027	5.87	5.77	3.96	5.90	0.01	0.13	0.22	0.35	0.12	0.05	0.17	—	1,224	1,224	0.05	0.03	0.41	1,236
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.28	0.26	1.24	1.31	< 0.005	0.05	0.40	0.45	0.04	0.17	0.21	—	301	301	0.01	0.01	0.06	304
2027	1.07	1.05	0.72	1.08	< 0.005	0.02	0.04	0.06	0.02	0.01	0.03	—	203	203	0.01	0.01	0.07	205

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	3.82	3.21	29.6	29.8	0.07	1.24	19.8	21.1	1.14	10.1	11.3	—	8,332	8,332	0.41	0.31	3.86	8,437
2027	15.1	14.9	10.5	16.8	0.03	0.32	0.62	0.94	0.29	0.15	0.44	—	3,453	3,453	0.13	0.09	2.66	3,486
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	15.1	14.9	29.8	29.4	0.07	1.11	9.81	10.9	1.02	3.81	4.83	—	8,307	8,307	0.41	0.31	0.10	8,408
2027	15.0	14.8	10.6	16.0	0.03	0.32	0.62	0.94	0.29	0.15	0.44	—	3,389	3,389	0.14	0.09	0.07	3,420
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.50	1.35	6.62	7.14	0.02	0.25	2.20	2.45	0.23	0.91	1.14	—	1,817	1,817	0.09	0.06	0.38	1,837
2027	5.77	5.69	3.79	5.79	0.01	0.11	0.22	0.33	0.11	0.05	0.16	—	1,224	1,224	0.05	0.03	0.41	1,236
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.27	0.25	1.21	1.30	< 0.005	0.04	0.40	0.45	0.04	0.17	0.21	—	301	301	0.01	0.01	0.06	304
2027	1.05	1.04	0.69	1.06	< 0.005	0.02	0.04	0.06	0.02	0.01	0.03	—	203	203	0.01	0.01	0.07	205

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	10.7	10.4	3.39	29.1	0.05	0.12	3.47	3.59	0.11	0.88	1.00	51.6	6,356	6,408	4.70	0.24	14.8	6,611
Mit.	10.7	10.4	3.25	29.0	0.05	0.11	3.47	3.58	0.10	0.88	0.99	50.7	6,173	6,224	4.68	0.24	14.8	6,426

% Reduced	< 0.5%	< 0.5%	4%	< 0.5%	—	10%	—	< 0.5%	10%	—	1%	2%	3%	3%	< 0.5%	1%	—	3%
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	9.64	9.34	3.71	21.3	0.04	0.11	3.47	3.59	0.11	0.88	0.99	51.6	5,984	6,035	4.75	0.26	2.01	6,234
Mit.	9.63	9.33	3.57	21.2	0.04	0.10	3.47	3.58	0.10	0.88	0.98	50.7	5,800	5,851	4.73	0.26	2.01	6,048
% Reduced	< 0.5%	< 0.5%	4%	< 0.5%	—	10%	—	< 0.5%	10%	—	1%	2%	3%	3%	< 0.5%	1%	—	3%
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	10.1	9.77	3.58	24.7	0.05	0.12	3.39	3.51	0.11	0.86	0.98	51.6	6,068	6,120	4.72	0.25	7.32	6,319
Mit.	10.1	9.76	3.44	24.6	0.04	0.10	3.39	3.50	0.10	0.86	0.96	50.7	5,885	5,936	4.70	0.25	7.32	6,134
% Reduced	< 0.5%	< 0.5%	4%	< 0.5%	—	10%	—	< 0.5%	10%	—	1%	2%	3%	3%	< 0.5%	1%	—	3%
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.84	1.78	0.65	4.50	0.01	0.02	0.62	0.64	0.02	0.16	0.18	8.55	1,005	1,013	0.78	0.04	1.21	1,046
Mit.	1.84	1.78	0.63	4.49	0.01	0.02	0.62	0.64	0.02	0.16	0.18	8.40	974	983	0.78	0.04	1.21	1,016
% Reduced	< 0.5%	< 0.5%	4%	< 0.5%	2%	10%	—	< 0.5%	10%	—	1%	2%	3%	3%	< 0.5%	1%	—	3%

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.39	4.17	2.31	21.8	0.04	0.03	3.47	3.51	0.03	0.88	0.91	—	4,262	4,262	0.26	0.21	13.1	4,344
Area	6.24	6.21	0.07	6.81	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	18.2	18.2	< 0.005	< 0.005	—	18.3
Energy	0.12	0.06	1.01	0.43	0.01	0.08	—	0.08	0.08	—	0.08	—	2,068	2,068	0.15	0.01	—	2,074

Water	—	—	—	—	—	—	—	—	—	—	—	9.04	8.57	17.6	0.03	0.02	—	24.3
Waste	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Total	10.7	10.4	3.39	29.1	0.05	0.12	3.47	3.59	0.11	0.88	1.00	51.6	6,356	6,408	4.70	0.24	14.8	6,611
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	3.91	3.67	2.70	20.9	0.04	0.03	3.47	3.51	0.03	0.88	0.91	—	3,907	3,907	0.31	0.23	0.34	3,985
Area	5.61	5.61	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Energy	0.12	0.06	1.01	0.43	0.01	0.08	—	0.08	0.08	—	0.08	—	2,068	2,068	0.15	0.01	—	2,074
Water	—	—	—	—	—	—	—	—	—	—	—	9.04	8.57	17.6	0.03	0.02	—	24.3
Waste	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Total	9.64	9.34	3.71	21.3	0.04	0.11	3.47	3.59	0.11	0.88	0.99	51.6	5,984	6,035	4.75	0.26	2.01	6,234
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	3.92	3.69	2.52	19.6	0.04	0.03	3.39	3.43	0.03	0.86	0.89	—	3,979	3,979	0.28	0.22	5.65	4,058
Area	6.04	6.02	0.04	4.67	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	12.5	12.5	< 0.005	< 0.005	—	12.5
Energy	0.12	0.06	1.01	0.43	0.01	0.08	—	0.08	0.08	—	0.08	—	2,068	2,068	0.15	0.01	—	2,074
Water	—	—	—	—	—	—	—	—	—	—	—	9.04	8.57	17.6	0.03	0.02	—	24.3
Waste	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Total	10.1	9.77	3.58	24.7	0.05	0.12	3.39	3.51	0.11	0.86	0.98	51.6	6,068	6,120	4.72	0.25	7.32	6,319
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.72	0.67	0.46	3.57	0.01	0.01	0.62	0.63	0.01	0.16	0.16	—	659	659	0.05	0.04	0.93	672
Area	1.10	1.10	0.01	0.85	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	2.06	2.06	< 0.005	< 0.005	—	2.07
Energy	0.02	0.01	0.18	0.08	< 0.005	0.01	—	0.01	0.01	—	0.01	—	342	342	0.03	< 0.005	—	343
Water	—	—	—	—	—	—	—	—	—	—	—	1.50	1.42	2.92	0.01	< 0.005	—	4.02
Waste	—	—	—	—	—	—	—	—	—	—	—	7.05	0.00	7.05	0.70	0.00	—	24.7

Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28	0.28
Total	1.84	1.78	0.65	4.50	0.01	0.02	0.62	0.64	0.02	0.16	0.18	8.55	1,005	1,013	0.78	0.04	1.21	1,046

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.39	4.17	2.31	21.8	0.04	0.03	3.47	3.51	0.03	0.88	0.91	—	4,262	4,262	0.26	0.21	13.1	4,344
Area	6.24	6.21	0.07	6.81	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	18.2	18.2	< 0.005	< 0.005	—	18.3
Energy	0.10	0.05	0.87	0.37	0.01	0.07	—	0.07	0.07	—	0.07	—	1,885	1,885	0.14	0.01	—	1,891
Water	—	—	—	—	—	—	—	—	—	—	—	8.14	7.69	15.8	0.03	0.02	—	21.9
Waste	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Total	10.7	10.4	3.25	29.0	0.05	0.11	3.47	3.58	0.10	0.88	0.99	50.7	6,173	6,224	4.68	0.24	14.8	6,426
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	3.91	3.67	2.70	20.9	0.04	0.03	3.47	3.51	0.03	0.88	0.91	—	3,907	3,907	0.31	0.23	0.34	3,985
Area	5.61	5.61	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Energy	0.10	0.05	0.87	0.37	0.01	0.07	—	0.07	0.07	—	0.07	—	1,885	1,885	0.14	0.01	—	1,891
Water	—	—	—	—	—	—	—	—	—	—	—	8.14	7.69	15.8	0.03	0.02	—	21.9
Waste	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Total	9.63	9.33	3.57	21.2	0.04	0.10	3.47	3.58	0.10	0.88	0.98	50.7	5,800	5,851	4.73	0.26	2.01	6,048
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	3.92	3.69	2.52	19.6	0.04	0.03	3.39	3.43	0.03	0.86	0.89	—	3,979	3,979	0.28	0.22	5.65	4,058
Area	6.04	6.02	0.04	4.67	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	12.5	12.5	< 0.005	< 0.005	—	12.5

Energy	0.10	0.05	0.87	0.37	0.01	0.07	—	0.07	0.07	—	0.07	—	1,885	1,885	0.14	0.01	—	1,891
Water	—	—	—	—	—	—	—	—	—	—	—	8.14	7.69	15.8	0.03	0.02	—	21.9
Waste	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Total	10.1	9.76	3.44	24.6	0.04	0.10	3.39	3.50	0.10	0.86	0.96	50.7	5,885	5,936	4.70	0.25	7.32	6,134
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.72	0.67	0.46	3.57	0.01	0.01	0.62	0.63	0.01	0.16	0.16	—	659	659	0.05	0.04	0.93	672
Area	1.10	1.10	0.01	0.85	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	2.06	2.06	< 0.005	< 0.005	—	2.07
Energy	0.02	0.01	0.16	0.07	< 0.005	0.01	—	0.01	0.01	—	0.01	—	312	312	0.02	< 0.005	—	313
Water	—	—	—	—	—	—	—	—	—	—	—	1.35	1.27	2.62	< 0.005	< 0.005	—	3.62
Waste	—	—	—	—	—	—	—	—	—	—	—	7.05	0.00	7.05	0.70	0.00	—	24.7
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28	0.28
Total	1.84	1.78	0.63	4.49	0.01	0.02	0.62	0.64	0.02	0.16	0.18	8.40	974	983	0.78	0.04	1.21	1,016

3. Construction Emissions Details

3.1. Site Preparation (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.74	3.14	29.2	28.8	0.05	1.24	—	1.24	1.14	—	1.14	—	5,298	5,298	0.21	0.04	—	5,316
Dust From Material Movement	—	—	—	—	—	—	19.7	19.7	—	10.1	10.1	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.09	0.80	0.79	< 0.005	0.03	—	0.03	0.03	—	0.03	—	145	145	0.01	< 0.005	—	146
Dust From Material Movement	—	—	—	—	—	—	0.54	0.54	—	0.28	0.28	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.15	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	—	24.0	24.0	< 0.005	< 0.005	—	24.1
Dust From Material Movement	—	—	—	—	—	—	0.10	0.10	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.05	0.99	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	195	195	< 0.005	0.01	0.70	198
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.86	4.86	< 0.005	< 0.005	0.01	4.93
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.81	0.81	< 0.005	< 0.005	< 0.005	0.82
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.2. Site Preparation (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.74	3.14	29.2	28.8	0.05	1.24	—	1.24	1.14	—	1.14	—	5,298	5,298	0.21	0.04	—	5,316
Dust From Material Movement	—	—	—	—	—	—	19.7	19.7	—	10.1	10.1	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.09	0.80	0.79	< 0.005	0.03	—	0.03	0.03	—	0.03	—	145	145	0.01	< 0.005	—	146
Dust From Material Movement	—	—	—	—	—	—	0.54	0.54	—	0.28	0.28	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.15	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	—	24.0	24.0	< 0.005	< 0.005	—	24.1
Dust From Material Movement	—	—	—	—	—	—	0.10	0.10	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.05	0.99	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	195	195	< 0.005	0.01	0.70	198
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.86	4.86	< 0.005	< 0.005	0.01	4.93

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.81	0.81	< 0.005	< 0.005	< 0.005	0.82
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Grading (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.62	3.04	27.2	27.6	0.06	1.12	—	1.12	1.03	—	1.03	—	6,599	6,599	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	—	9.21	9.21	—	3.66	3.66	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.62	3.04	27.2	27.6	0.06	1.12	—	1.12	1.03	—	1.03	—	6,599	6,599	0.27	0.05	—	6,621

Dust From Material Movement	—	—	—	—	—	—	9.21	9.21	—	3.66	3.66	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.60	0.50	4.48	4.53	0.01	0.18	—	0.18	0.17	—	0.17	—	1,085	1,085	0.04	0.01	—	1,088
Dust From Material Movement	—	—	—	—	—	—	1.51	1.51	—	0.60	0.60	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.09	0.82	0.83	< 0.005	0.03	—	0.03	0.03	—	0.03	—	180	180	0.01	< 0.005	—	180
Dust From Material Movement	—	—	—	—	—	—	0.28	0.28	—	0.11	0.11	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.05	1.13	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	223	223	< 0.005	0.01	0.80	226
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.18	0.04	2.63	1.05	0.01	0.03	0.40	0.42	0.03	0.11	0.13	—	1,511	1,511	0.14	0.24	3.06	1,590

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.07	0.83	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	198	198	< 0.005	0.01	0.02	200
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.18	0.04	2.84	1.06	0.01	0.03	0.40	0.42	0.03	0.11	0.13	—	1,510	1,510	0.14	0.24	0.08	1,587
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.14	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	33.3	33.3	< 0.005	< 0.005	0.06	33.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.03	0.01	0.46	0.17	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	248	248	0.02	0.04	0.22	261
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.52	5.52	< 0.005	< 0.005	0.01	5.60
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.08	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	41.1	41.1	< 0.005	0.01	0.04	43.2

3.4. Grading (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.44	2.90	26.9	27.5	0.06	1.08	—	1.08	0.99	—	0.99	—	6,599	6,599	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	—	9.21	9.21	—	3.66	3.66	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.44	2.90	26.9	27.5	0.06	1.08	—	1.08	0.99	—	0.99	—	6,599	6,599	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	—	9.21	9.21	—	3.66	3.66	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.57	0.48	4.42	4.52	0.01	0.18	—	0.18	0.16	—	0.16	—	1,085	1,085	0.04	0.01	—	1,088
Dust From Material Movement	—	—	—	—	—	—	1.51	1.51	—	0.60	0.60	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.09	0.81	0.83	< 0.005	0.03	—	0.03	0.03	—	0.03	—	180	180	0.01	< 0.005	—	180
Dust From Material Movement	—	—	—	—	—	—	0.28	0.28	—	0.11	0.11	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.05	1.13	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	223	223	< 0.005	0.01	0.80	226
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.18	0.04	2.63	1.05	0.01	0.03	0.40	0.42	0.03	0.11	0.13	—	1,511	1,511	0.14	0.24	3.06	1,590
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.07	0.83	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	198	198	< 0.005	0.01	0.02	200
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.18	0.04	2.84	1.06	0.01	0.03	0.40	0.42	0.03	0.11	0.13	—	1,510	1,510	0.14	0.24	0.08	1,587
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.14	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	33.3	33.3	< 0.005	< 0.005	0.06	33.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.03	0.01	0.46	0.17	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	248	248	0.02	0.04	0.22	261
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.52	5.52	< 0.005	< 0.005	0.01	5.60
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.08	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	41.1	41.1	< 0.005	0.01	0.04	43.2

3.5. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.75	0.99	< 0.005	0.03	—	0.03	0.03	—	0.03	—	183	183	0.01	< 0.005	—	184
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.14	0.18	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	30.3	30.3	< 0.005	< 0.005	—	30.4
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.16	0.14	1.79	0.00	0.00	0.44	0.44	0.00	0.10	0.10	—	427	427	0.01	0.02	0.04	432
Vendor	0.04	0.01	0.67	0.24	< 0.005	0.01	0.10	0.10	0.01	0.03	0.03	—	363	363	0.02	0.05	0.02	380
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.01	0.01	0.01	0.14	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	33.4	33.4	< 0.005	< 0.005	0.06	33.9
Vendor	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27.7	27.7	< 0.005	< 0.005	0.03	29.1
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.54	5.54	< 0.005	< 0.005	0.01	5.61
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.59	4.59	< 0.005	< 0.005	< 0.005	4.81
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.6. Building Construction (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.11	0.93	9.55	12.8	0.02	0.35	—	0.35	0.32	—	0.32	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.07	0.73	0.98	< 0.005	0.03	—	0.03	0.02	—	0.02	—	183	183	0.01	< 0.005	—	184
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	0.02	0.01	0.13	0.18	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	30.3	30.3	< 0.005	< 0.005	—	30.4
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.16	0.14	1.79	0.00	0.00	0.44	0.44	0.00	0.10	0.10	—	427	427	0.01	0.02	0.04	432
Vendor	0.04	0.01	0.67	0.24	< 0.005	0.01	0.10	0.10	0.01	0.03	0.03	—	363	363	0.02	0.05	0.02	380
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.14	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	33.4	33.4	< 0.005	< 0.005	0.06	33.9
Vendor	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	27.7	27.7	< 0.005	< 0.005	0.03	29.1
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.54	5.54	< 0.005	< 0.005	0.01	5.61
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.59	4.59	< 0.005	< 0.005	< 0.005	4.81
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipm ent	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipm ent	0.44	0.37	3.36	4.63	0.01	0.12	—	0.12	0.11	—	0.11	—	858	858	0.03	0.01	—	861
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipm ent	0.08	0.07	0.61	0.85	< 0.005	0.02	—	0.02	0.02	—	0.02	—	142	142	0.01	< 0.005	—	143
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17	0.17	0.11	2.29	0.00	0.00	0.44	0.44	0.00	0.10	0.10	—	472	472	0.01	0.02	1.56	479
Vendor	0.04	0.01	0.59	0.23	< 0.005	< 0.005	0.10	0.10	< 0.005	0.03	0.03	—	355	355	0.02	0.05	0.79	372
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.14	0.14	1.68	0.00	0.00	0.44	0.44	0.00	0.10	0.10	—	419	419	0.01	0.02	0.04	425
Vendor	0.04	0.01	0.63	0.24	< 0.005	0.01	0.10	0.10	0.01	0.03	0.03	—	355	355	0.02	0.05	0.02	371
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.04	0.62	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	154	154	< 0.005	0.01	0.24	156
Vendor	0.01	< 0.005	0.22	0.08	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	127	127	0.01	0.02	0.12	133
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	25.5	25.5	< 0.005	< 0.005	0.04	25.9
Vendor	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	21.1	21.1	< 0.005	< 0.005	0.02	22.0
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.8. Building Construction (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	0.90	9.13	12.8	0.02	0.31	—	0.31	0.29	—	0.29	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	1.07	0.90	9.13	12.8	0.02	0.31	—	0.31	0.29	—	0.29	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.38	0.32	3.27	4.59	0.01	0.11	—	0.11	0.10	—	0.10	—	858	858	0.03	0.01	—	861
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.06	0.60	0.84	< 0.005	0.02	—	0.02	0.02	—	0.02	—	142	142	0.01	< 0.005	—	143
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17	0.17	0.11	2.29	0.00	0.00	0.44	0.44	0.00	0.10	0.10	—	472	472	0.01	0.02	1.56	479
Vendor	0.04	0.01	0.59	0.23	< 0.005	< 0.005	0.10	0.10	< 0.005	0.03	0.03	—	355	355	0.02	0.05	0.79	372
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.14	0.14	1.68	0.00	0.00	0.44	0.44	0.00	0.10	0.10	—	419	419	0.01	0.02	0.04	425
Vendor	0.04	0.01	0.63	0.24	< 0.005	0.01	0.10	0.10	0.01	0.03	0.03	—	355	355	0.02	0.05	0.02	371
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.06	0.05	0.04	0.62	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	154	154	< 0.005	0.01	0.24	156
Vendor	0.01	< 0.005	0.22	0.08	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	127	127	0.01	0.02	0.12	133
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.11	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	25.5	25.5	< 0.005	< 0.005	0.04	25.9
Vendor	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	21.1	21.1	< 0.005	< 0.005	0.02	22.0
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	0.76	7.12	9.94	0.01	0.32	—	0.32	0.29	—	0.29	—	1,511	1,511	0.06	0.01	—	1,516
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.20	0.27	< 0.005	0.01	—	0.01	0.01	—	0.01	—	41.4	41.4	< 0.005	< 0.005	—	41.5
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.85	6.85	< 0.005	< 0.005	—	6.88
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.05	0.62	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	148	148	< 0.005	0.01	0.02	150
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.17	4.17	< 0.005	< 0.005	0.01	4.23
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.69	0.69	< 0.005	< 0.005	< 0.005	0.70
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.10. Paving (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.36	0.32	3.97	10.3	0.01	0.11	—	0.11	0.10	—	0.10	—	1,511	1,511	0.06	0.01	—	1,516
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.11	0.28	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	41.4	41.4	< 0.005	< 0.005	—	41.5
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.85	6.85	< 0.005	< 0.005	—	6.88
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.05	0.62	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	148	148	< 0.005	0.01	0.02	150
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.17	4.17	< 0.005	< 0.005	0.01	4.23
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.69	0.69	< 0.005	< 0.005	< 0.005	0.70
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	13.7	13.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.04	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.53	6.53	< 0.005	< 0.005	—	6.55
Architectural Coatings	0.67	0.67	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.08	1.08	< 0.005	< 0.005	—	1.09
Architectural Coatings	0.12	0.12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.03	0.36	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	85.4	85.4	< 0.005	< 0.005	0.01	86.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.29	4.29	< 0.005	< 0.005	0.01	4.35
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.71	0.71	< 0.005	< 0.005	< 0.005	0.72
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.12. Architectural Coating (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.65	0.96	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	134	134	0.01	< 0.005	—	134

Architectural Coating	13.7	13.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.53	6.53	< 0.005	< 0.005	—	6.55
Architectural Coatings	0.67	0.67	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.08	1.08	< 0.005	< 0.005	—	1.09
Architectural Coatings	0.12	0.12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.03	0.36	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	85.4	85.4	< 0.005	< 0.005	0.01	86.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.29	4.29	< 0.005	< 0.005	0.01	4.35
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.71	0.71	< 0.005	< 0.005	< 0.005	0.72
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	13.7	13.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	13.7	13.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.32	0.43	< 0.005	0.01	—	0.01	0.01	—	0.01	—	51.5	51.5	< 0.005	< 0.005	—	51.6
Architectural Coatings	5.29	5.29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.52	8.52	< 0.005	< 0.005	—	8.55
Architectural Coatings	0.97	0.97	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.46	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	94.4	94.4	< 0.005	< 0.005	0.31	95.8

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.03	0.34	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	83.9	83.9	< 0.005	< 0.005	0.01	85.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	33.2	33.2	< 0.005	< 0.005	0.05	33.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.49	5.49	< 0.005	< 0.005	0.01	5.57
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.14. Architectural Coating (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.65	0.96	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	134	134	0.01	< 0.005	—	134

Architectural Coatings	13.7	13.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.65	0.96	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	13.7	13.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.25	0.37	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	51.5	51.5	< 0.005	< 0.005	—	51.6
Architectural Coatings	5.29	5.29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.52	8.52	< 0.005	< 0.005	—	8.55

Architectural Coating	0.97	0.97	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.46	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	94.4	94.4	< 0.005	< 0.005	0.31	95.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.03	0.34	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	83.9	83.9	< 0.005	< 0.005	0.01	85.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	33.2	33.2	< 0.005	< 0.005	0.05	33.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.49	5.49	< 0.005	< 0.005	0.01	5.57
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	4.39	4.17	2.31	21.8	0.04	0.03	3.47	3.51	0.03	0.88	0.91	—	4,262	4,262	0.26	0.21	13.1	4,344
Total	4.39	4.17	2.31	21.8	0.04	0.03	3.47	3.51	0.03	0.88	0.91	—	4,262	4,262	0.26	0.21	13.1	4,344
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	3.91	3.67	2.70	20.9	0.04	0.03	3.47	3.51	0.03	0.88	0.91	—	3,907	3,907	0.31	0.23	0.34	3,985
Total	3.91	3.67	2.70	20.9	0.04	0.03	3.47	3.51	0.03	0.88	0.91	—	3,907	3,907	0.31	0.23	0.34	3,985
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.72	0.67	0.46	3.57	0.01	0.01	0.62	0.63	0.01	0.16	0.16	—	659	659	0.05	0.04	0.93	672
Total	0.72	0.67	0.46	3.57	0.01	0.01	0.62	0.63	0.01	0.16	0.16	—	659	659	0.05	0.04	0.93	672

4.1.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	4.39	4.17	2.31	21.8	0.04	0.03	3.47	3.51	0.03	0.88	0.91	—	4,262	4,262	0.26	0.21	13.1	4,344

Total	4.39	4.17	2.31	21.8	0.04	0.03	3.47	3.51	0.03	0.88	0.91	—	4,262	4,262	0.26	0.21	13.1	4,344
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	3.91	3.67	2.70	20.9	0.04	0.03	3.47	3.51	0.03	0.88	0.91	—	3,907	3,907	0.31	0.23	0.34	3,985
Total	3.91	3.67	2.70	20.9	0.04	0.03	3.47	3.51	0.03	0.88	0.91	—	3,907	3,907	0.31	0.23	0.34	3,985
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.72	0.67	0.46	3.57	0.01	0.01	0.62	0.63	0.01	0.16	0.16	—	659	659	0.05	0.04	0.93	672
Total	0.72	0.67	0.46	3.57	0.01	0.01	0.62	0.63	0.01	0.16	0.16	—	659	659	0.05	0.04	0.93	672

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	782	782	0.04	< 0.005	—	784
Total	—	—	—	—	—	—	—	—	—	—	—	—	782	782	0.04	< 0.005	—	784
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	782	782	0.04	< 0.005	—	784
Total	—	—	—	—	—	—	—	—	—	—	—	—	782	782	0.04	< 0.005	—	784

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	129	129	0.01	< 0.005	—	130
Total	—	—	—	—	—	—	—	—	—	—	—	—	129	129	0.01	< 0.005	—	130

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	775	775	0.04	< 0.005	—	777
Total	—	—	—	—	—	—	—	—	—	—	—	—	775	775	0.04	< 0.005	—	777
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	775	775	0.04	< 0.005	—	777
Total	—	—	—	—	—	—	—	—	—	—	—	—	775	775	0.04	< 0.005	—	777
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	128	128	0.01	< 0.005	—	129
Total	—	—	—	—	—	—	—	—	—	—	—	—	128	128	0.01	< 0.005	—	129

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.12	0.06	1.01	0.43	0.01	0.08	—	0.08	0.08	—	0.08	—	1,286	1,286	0.11	< 0.005	—	1,289
Total	0.12	0.06	1.01	0.43	0.01	0.08	—	0.08	0.08	—	0.08	—	1,286	1,286	0.11	< 0.005	—	1,289
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.12	0.06	1.01	0.43	0.01	0.08	—	0.08	0.08	—	0.08	—	1,286	1,286	0.11	< 0.005	—	1,289
Total	0.12	0.06	1.01	0.43	0.01	0.08	—	0.08	0.08	—	0.08	—	1,286	1,286	0.11	< 0.005	—	1,289
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.02	0.01	0.18	0.08	< 0.005	0.01	—	0.01	0.01	—	0.01	—	213	213	0.02	< 0.005	—	213
Total	0.02	0.01	0.18	0.08	< 0.005	0.01	—	0.01	0.01	—	0.01	—	213	213	0.02	< 0.005	—	213

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.10	0.05	0.87	0.37	0.01	0.07	—	0.07	0.07	—	0.07	—	1,111	1,111	0.10	< 0.005	—	1,114
Total	0.10	0.05	0.87	0.37	0.01	0.07	—	0.07	0.07	—	0.07	—	1,111	1,111	0.10	< 0.005	—	1,114

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.10	0.05	0.87	0.37	0.01	0.07	—	0.07	0.07	—	0.07	—	1,111	1,111	0.10	< 0.005	—	1,114
Total	0.10	0.05	0.87	0.37	0.01	0.07	—	0.07	0.07	—	0.07	—	1,111	1,111	0.10	< 0.005	—	1,114
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.02	0.01	0.16	0.07	< 0.005	0.01	—	0.01	0.01	—	0.01	—	184	184	0.02	< 0.005	—	184
Total	0.02	0.01	0.16	0.07	< 0.005	0.01	—	0.01	0.01	—	0.01	—	184	184	0.02	< 0.005	—	184

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	5.01	5.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.60	0.60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.63	0.60	0.07	6.81	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	18.2	18.2	< 0.005	< 0.005	—	18.3
Total	6.24	6.21	0.07	6.81	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	18.2	18.2	< 0.005	< 0.005	—	18.3

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	5.01	5.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.60	0.60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	5.61	5.61	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	0.91	0.91	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.11	0.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.08	0.07	0.01	0.85	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.06	2.06	< 0.005	< 0.005	—	2.07
Total	1.10	1.10	0.01	0.85	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	2.06	2.06	< 0.005	< 0.005	—	2.07

4.3.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	5.01	5.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.60	0.60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.63	0.60	0.07	6.81	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	18.2	18.2	< 0.005	< 0.005	—	18.3
Total	6.24	6.21	0.07	6.81	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	18.2	18.2	< 0.005	< 0.005	—	18.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	5.01	5.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.60	0.60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	5.61	5.61	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	0.91	0.91	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.11	0.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Landsca Equipment	0.08	0.07	0.01	0.85	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.06	2.06	< 0.005	< 0.005	—	2.07
Total	1.10	1.10	0.01	0.85	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	2.06	2.06	< 0.005	< 0.005	—	2.07

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	9.04	8.57	17.6	0.03	0.02	—	24.3
Total	—	—	—	—	—	—	—	—	—	—	—	9.04	8.57	17.6	0.03	0.02	—	24.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	9.04	8.57	17.6	0.03	0.02	—	24.3
Total	—	—	—	—	—	—	—	—	—	—	—	9.04	8.57	17.6	0.03	0.02	—	24.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1.50	1.42	2.92	0.01	< 0.005	—	4.02
Total	—	—	—	—	—	—	—	—	—	—	—	1.50	1.42	2.92	0.01	< 0.005	—	4.02

4.4.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	8.14	7.69	15.8	0.03	0.02	—	21.9
Total	—	—	—	—	—	—	—	—	—	—	—	8.14	7.69	15.8	0.03	0.02	—	21.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	8.14	7.69	15.8	0.03	0.02	—	21.9
Total	—	—	—	—	—	—	—	—	—	—	—	8.14	7.69	15.8	0.03	0.02	—	21.9
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1.35	1.27	2.62	< 0.005	< 0.005	—	3.62
Total	—	—	—	—	—	—	—	—	—	—	—	1.35	1.27	2.62	< 0.005	< 0.005	—	3.62

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149

Total	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149
Total	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	7.05	0.00	7.05	0.70	0.00	—	24.7
Total	—	—	—	—	—	—	—	—	—	—	—	7.05	0.00	7.05	0.70	0.00	—	24.7

4.5.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149
Total	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149
Total	—	—	—	—	—	—	—	—	—	—	—	42.6	0.00	42.6	4.26	0.00	—	149
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	7.05	0.00	7.05	0.70	0.00	—	24.7
Total	—	—	—	—	—	—	—	—	—	—	—	7.05	0.00	7.05	0.70	0.00	—	24.7

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28	0.28
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28	0.28

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.68	1.68
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28	0.28
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28	0.28

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	8/3/2026	8/14/2026	5.00	10.0	—
Grading	Grading	8/17/2026	11/6/2026	5.00	60.0	—
Building Construction	Building Construction	11/23/2026	7/2/2027	5.00	160	—
Paving	Paving	11/9/2026	11/20/2026	5.00	10.0	—
Architectural Coating	Architectural Coating	12/7/2026	7/16/2027	5.00	160	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40

Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Tier 4 Final	2.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37

Building Construction	Welders	Diesel	Tier 4 Final	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Tier 4 Final	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Tier 4 Final	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Tier 4 Final	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	14.3	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.80	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	14.3	LDA,LDT1,LDT2
Grading	Vendor	—	8.80	HHDT,MHDT
Grading	Hauling	20.8	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	43.2	14.3	LDA,LDT1,LDT2
Building Construction	Vendor	12.8	8.80	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	14.3	LDA,LDT1,LDT2
Paving	Vendor	—	8.80	HHDT,MHDT

Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	8.64	14.3	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.80	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	14.3	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.80	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	14.3	LDA,LDT1,LDT2
Grading	Vendor	—	8.80	HHDT,MHDT
Grading	Hauling	20.8	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	43.2	14.3	LDA,LDT1,LDT2
Building Construction	Vendor	12.8	8.80	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	14.3	LDA,LDT1,LDT2
Paving	Vendor	—	8.80	HHDT,MHDT

Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	8.64	14.3	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.80	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	473,850	157,950	0.00	0.00	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	—	—	15.0	0.00	—
Grading	10,000	—	180	0.00	—
Paving	0.00	0.00	0.00	0.00	1.32

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Single Family Housing	1.32	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	279	0.01	< 0.005
2027	0.00	267	0.01	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	1,132	1,132	1,132	413,034	4,899	4,899	4,899	1,788,091

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	1,132	1,132	1,132	413,034	4,899	4,899	4,899	1,788,091

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)

Single Family Housing	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	120
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.1.2. Mitigated

Hearth Type	Unmitigated (number)
Single Family Housing	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	120
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
473850	157,950	0.00	0.00	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	1,068,987	267	0.0129	0.0017	4,011,776

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	1,059,301	267	0.0129	0.0017	3,465,376

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	4,231,080	170,700

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	3,807,972	136,560

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	79.0	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	79.0	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced

Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

8. User Changes to Default Data

Screen	Justification

Land Use	Lot acreage adjusted to represent overall acreage of the project site.
Construction: Construction Phases	Based on typical construction practices, architectural coating assumed to start two weeks after the start of building construction and last for the same number of days. Demolition not required for the proposed project. Phase timing adjusted based on project-specific information provided by the applicant.
Operations: Vehicle Data	Trip Rates and VMT adjusted to be consistent with traffic project-specific traffic data prepared by Fehr and Peers.
Operations: Energy Use	The Project would include 10 percent electrical appliances and HVAC systems.

Minor Project Health Effects Tool

Latitude	38.41453583	**<-- Step 1: Input latitude (Please chose a value between 38.0 and 39.7)**
Longitude	-121.351657	**<-- Step 2: Input longitude (Please chose a value between -122.5 and -120.0)**

PM2.5 Health Endpoint	Age Range[1]	Incidences Across the Reduced Sacramento 4-km Modeling Domain Resulting from Project Emissions (per year)[2,5] (Mean)	Incidences Across the 5-Air-District Region Resulting from Project Emissions (per year)[2] (Mean)	Percent of Background Health Incidences Across the 5-Air-District Region[3]	Total Number of Health Incidences Across the 5-Air-District Region (per year)[4]
Respiratory					
Emergency Room Visits, Asthma	0 - 99	0.83	0.75	0.0041%	18419
Hospital Admissions, Asthma	0 - 64	0.055	0.050	0.0027%	1846
Hospital Admissions, All Respiratory	65 - 99	0.27	0.23	0.0012%	19644
Cardiovascular					
Hospital Admissions, All Cardiovascular (less Myocardial Infarctions)	65 - 99	0.14	0.13	0.00054%	24037
Acute Myocardial Infarction, Nonfatal	18 - 24	0.000068	0.000062	0.0016%	4
Acute Myocardial Infarction, Nonfatal	25 - 44	0.0061	0.0056	0.0018%	308
Acute Myocardial Infarction, Nonfatal	45 - 54	0.016	0.014	0.0019%	741
Acute Myocardial Infarction, Nonfatal	55 - 64	0.025	0.023	0.0019%	1239
Acute Myocardial Infarction, Nonfatal	65 - 99	0.090	0.082	0.0016%	5052
Mortality					
Mortality, All Cause	30 - 99	1.7	1.5	0.0034%	44766

Ozone Health Endpoint	Age Range[1]	Incidences Across the Reduced Sacramento 4-km Modeling Domain Resulting from Project Emissions (per year)[2,5] (Mean)	Incidences Across the 5-Air-District Region Resulting from Project Emissions (per year)[2] (Mean)	Percent of Background Health Incidences Across the 5-Air-District Region[3]	Total Number of Health Incidences Across the 5-Air-District Region (per year)[4]
Respiratory					
Hospital Admissions, All Respiratory	65 - 99	0.060	0.048	0.00024%	19644
Emergency Room Visits, Asthma	0 - 17	0.31	0.26	0.0045%	5859
Emergency Room Visits, Asthma	18 - 99	0.48	0.40	0.0032%	12560
Mortality					
Mortality, Non-Accidental	0 - 99	0.037	0.031	0.00010%	30386

1. Affected age ranges are shown. Other age ranges are available, but the endpoints and age ranges shown here are the ones used by the USEPA in their health assessments. The age ranges are consistent with the epidemiological study that is the basis of the health function.

2. Health effects are shown in terms of incidences of each health endpoint and how it compares to the base (2035 base year health effect incidences, or "background health incidence") values. Health effects are shown for the Reduced Sacramento 4-km Modeling Domain and the 5-Air-District Region.

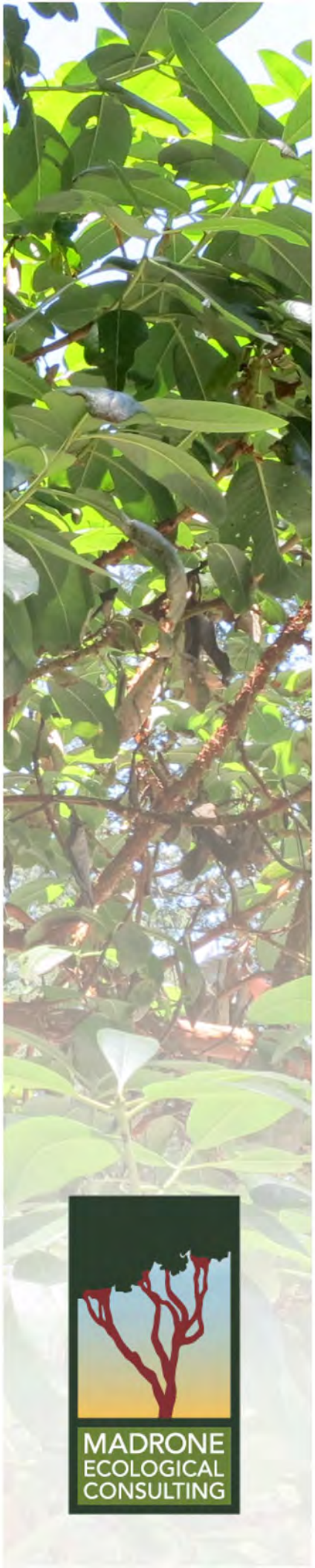
3. The percent of background health incidence uses the mean incidence. The background health incidence is an estimate of the average number of people that are affected by the health endpoint in a given population over a given period of time. In this case, the background incidence rates cover the 5-Air-District Region (estimated 2035 population of 3,271,451 persons). Health incidence rates and other health data are typically collected by the government as well as the World Health Organization. The background incidence rates used here are obtained from BenMAP.

4. The total number of health incidences across the 5-Air-District Region is calculated based on the modeling data. The information is presented to assist in providing overall health context.

5. The technical specifications and map for the Reduced Sacramento 4-km Modeling Domain are included in Appendix A, Table A-1 and Appendix B, Figure B-2 of the *Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District.*

Sac Metro Air District Minor Project Health Effects Tool, version 2, published June 2020

Appendix D



Biological Resources Assessment

Summer Flats at Waterman Road

Elk Grove, Sacramento County, California

June 2025

MADRONE ECOLOGICAL CONSULTING

Prepared for:
Sheldon Business Park
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Attachment B. IPaC Trust Resource Report for the Study Area
Attachment C. CNPS Inventory of Rare and Endangered Plants Query for the "Elk Grove, California" USGS Quadrangle and Eight Surrounding Quadrangles
Attachment D. Wildlife List
Attachment E. Special-Status Plant Survey Report
Attachment F. Preliminary Jurisdictional Determination and Aquatic Resource Delineation Map

1.0 INTRODUCTION

This report presents the results of a Biological Resources Assessment (BRA) conducted for the Summer Flats at Waterman Road project (Project), which includes a development area (on-site area) and areas supporting associated off-site infrastructure (off-site areas) required for the Project. The on-site area and the off-site area are collectively referred to in this document as the Study Area. The 37.7-acre Study Area is located immediately east of Waterman Road, and generally between Elk Grove Boulevard to the south and Bond Road to the north in the City of Elk Grove, Sacramento County, California (**Figure 1**). The Study Area is located at Latitude 38.41440, Longitude -121.35139, in a portion of Section 32, Township 7 North, Range 6 East (MDB&M) as shown on the "Elk Grove, California" 7.5-Minute Series USGS Topographic Quadrangle (USGS 2022).

This document has been prepared to support the City of Elk Grove's (City's) California Environmental Quality Act (CEQA) review of the proposed Project.

1.1 Project Description

The Project includes on-site development of a residential community and related off-site improvements. Proposed development in the on-site area includes single family residential housing and supporting infrastructure in the western half of the property, a designated open space area in the eastern half of the property, and a water quality basin in the southeastern corner of the property (**Attachment A**). The residential housing area includes access roadways and landscape lots. A recreational trail accessed from the residential area would follow the western edge of the open space area and would include a loop around the water quality basin. The Project includes a trail connection between the on-site trail and an existing off-site recreational trail that parallels the eastern edge of the Project property.

Off-site improvements include Waterman Road frontage improvements along the length of the development area, a Waterman Road pavement transition in the northwestern portion of the Study Area, and installation of storm water infrastructure from the water quality basin to an existing storm water system at East Park Drive in the southeastern portion of the Study Area.

As proposed, approximately 47% (13 acres) of the 27.6-acre Project parcel would be dedicated to open space that would contain avoided seasonal wetlands and vernal pools (**Attachment A**). The 13-acre open space area would include avoidance of approximately 1.69 acre of seasonal wetlands and 0.06 acre of vernal pool. A portion of the open space area (approximately 4 acres of annual brome grassland) would be affected during construction but is expected to revert back to annual brome grassland following construction.

2.0 REGULATORY SETTING

This section describes federal, state, and local laws and policies that are relevant to this assessment of biological resources.

2.1 Federal Regulations

2.1.1 Federal Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973 protects species that are federally listed as endangered or threatened with extinction. FESA prohibits the unauthorized "take" of listed wildlife species. Take includes harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species or any attempt to engage in such activities. Harm includes significant modifications or degradations of habitats that may cause death or injury to protected species by impairing their behavioral patterns. Harassment includes disruption of normal behavior patterns that may result in injury to or mortality of protected species. Civil or criminal penalties can be levied against persons convicted of unauthorized "take." In addition, FESA prohibits malicious damage or destruction of listed plant species on federal lands or in association with federal actions, and the removal, cutting, digging up, damage, or destruction of listed plant species in violation of state law. FESA does not afford any protections to federally listed plant species that are not also included on a state endangered species list on private lands with no associated federal action.

2.1.2 Clean Water Act, Section 404

Section 404 of the Federal Clean Water Act requires that a Department of the Army permit be issued prior to the discharge of dredged or fill material into waters of the United States, including some wetlands. The U.S. Army Corps of Engineers (USACE) administers this program, with oversight from the U. S. Environmental Protection Agency. As of the date of this document, waters of the United States (waters of the U.S.) are defined as follows (40 CFR 120.2):

1. Waters which are:
    i. Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
    ii. The territorial seas; or
    iii. Interstate waters;
2. Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under item (5) below;
3. Tributaries of waters identified in items (1) or (2) above that are relatively permanent, standing or continuously flowing bodies of water;
4. Wetlands adjacent to the following waters:
    i. Waters identified in item (1) of this section; or
    ii. Relatively permanent, standing or continuously flowing bodies of water identified in items (2) or (3) above and with a continuous surface connection to those waters;

5. Intrastate lakes and ponds not identified in paragraphs (1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in items (1) or (3) above.

Under the current definition of waters of the U.S., "adjacent" means *having a continuous surface connection*. Waters subject to regulation under Section 404 are referred to as "jurisdictional waters".

2.1.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase or barter, any native migratory bird, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR 21.11.). Likewise, Section 3513 of the California Fish & Game Code prohibits the "take or possession" of any migratory non-game bird identified under the MBTA. Therefore, activities that may result in the injury or mortality of native migratory birds, including eggs and nestlings, would be prohibited under the MBTA.

2.1.4 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act of 1940 (as amended) provides for the protection of bald eagle and golden eagle by prohibiting the take, possession, sale, purchase, barter, offer to sell, purchase or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit [16 USC 668(a); 50 CFR 22]. The U.S. Fish and Wildlife Service (USFWS) may authorize take of bald eagles and golden eagles for activities where the take is associated with, but not the purpose of, the activity and cannot practicably be avoided (50 CFR 22.26).

2.2 State Regulations

2.2.1 California Environmental Quality Act

CEQA requires evaluations of project effects on biological resources. Determining the significance of those effects is guided by Appendix G of the CEQA guidelines. These evaluations must consider direct effects on a biological resource within the project site itself, indirect effects on adjacent resources, and cumulative effects within a larger area or region. Effects can be locally important but not significant according to CEQA if they would not substantially affect the regional population of the biological resource. Significant adverse impacts on biological resources would include the following:

- Substantial adverse effects on any species identified as candidate, sensitive, or special-status in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife (CDFW) or the USFWS (these effects could be either direct or via habitat modification);
- Substantial adverse impacts to species designated by CDFW as Species of Special Concern;
- Substantial adverse effects on riparian habitat or other sensitive habitat identified in local or regional plans, policies, or regulations or by CDFW and USFWS;

- Substantial adverse effects on federally protected wetlands defined under Section 404 of the Clean Water Act (these effects include direct removal, filling, or hydrologic interruption of marshes, vernal pools, coastal wetlands, or other wetland types);
- Substantial interference with movements of native resident or migratory fish or wildlife species population, or with use of native wildlife nursery sites;
- Conflicts with local policies or ordinances protecting biological resources (e.g. tree preservation policies); and
- Conflict with provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan.

2.2.2 State Endangered Species Act

With limited exceptions, the California Endangered Species Act (CESA) of 1984 protects state-designated endangered and threatened species in a way similar to FESA. For projects on private property (i.e., that for which a state agency is not a lead agency), CESA enables CDFW to authorize take of a listed species that is incidental to carrying out an otherwise lawful project that has been approved under CEQA (Fish and Game Code Section 2081).

2.2.3 California Fully Protected Species

The State of California first began to designate species as "fully protected" prior to the creation of the federal and California ESAs. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction and included fish, amphibians and reptiles, birds, and mammals. Most fully protected species have since been listed as threatened or endangered under the federal and/or California ESAs. The regulations that implement the Fully Protected Species Statute (California Fish and Game Code, § 4700 for mammals, § 3511 for birds, § 5050 for reptiles and amphibians, and § 5515 for fish) provide that fully protected species may not be taken or possessed at any time. Furthermore, CDFW prohibits any state agency from issuing incidental take permits for fully protected species. CDFW will issue licenses or permits for take of these species for necessary scientific research or live capture and relocation pursuant to the permit.

2.2.4 California Species of Special Concern

The Species of Special Concern (SSC) are defined by CDFW as a species, subspecies, or distinct population of an animal native to California that are not legally protected under the federal or California ESAs or the California Fish and Game Code, but currently satisfies one or more of the following criteria:

- The species has been completely extirpated from the state or, as in the case of birds, it has been extirpated from its primary seasonal or breeding role.
- The species is listed as federally (but not state) threatened or endangered or meets the state definition of threatened or endangered but has not formally been listed.

- The species has or is experiencing serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for state threatened or endangered status.
- The species has naturally small populations that exhibit high susceptibility to risk from any factor that if realized, could lead to declines that would qualify it for state threatened or endangered status.

SSC are typically associated with habitats that are threatened. Project-related impacts to SSC, state-threatened or endangered species are considered "significant" under CEQA.

2.2.5 Native Plant Protection Act

The Native Plant Protection Act (NPPA) was enacted in 1977 and allows the Fish and Game Commission to designate plants as rare or endangered. There are 64 species, subspecies, and varieties of plants that are protected as rare under the NPPA. The NPPA prohibits take of endangered or rare native plants but includes some exceptions for agricultural and nursery operations; emergencies; and after properly notifying CDFW for vegetation removal from canals, roads, and other sites, changes in land use, and in certain other situations.

2.2.6 Clean Water Act, Section 401

Section 401 of the Clean Water Act requires any applicant for a 404 permit in support of activities that may result in any discharge into waters of the United States to obtain a water quality certification with the Regional Water Quality Control Board (RWQCB). This program is meant to protect these waters and wetlands by ensuring that waste discharged into them meets state water quality standards. Because the water quality certification program is triggered by the need for a Section 404 permit (and both programs are a part of the Clean Water Act), the definition of waters of the United States under Section 401 is the same as that used by the USACE under Section 404.

2.2.7 California Water Code, Porter-Cologne Act

Waters that are not considered waters of the U.S. may be considered waters of the State of California (waters of the state) under the Porter-Cologne Water Quality Control Act (Porter-Cologne). Porter-Cologne, from Division 7 of the California Water Code, requires any person discharging waste or proposing to discharge waste that could affect the quality of waters of the state to file a report of waste discharge (RWD) with the RWQCB. The RWQCB can waive the filing of a report, but once a report is filed, the RWQCB must either waive or adopt water discharge requirements (WDRs). Waters of the state are defined as any surface water or groundwater, including saline waters, within the boundaries of the state of California. Wetlands that are waters of the state include natural wetlands; wetlands created by modification of a surface water of the state; and artificial wetlands that meet specific criteria.

2.2.8 California Fish and Game Code, Section 1600 – Streambed and Lake Alteration

The CDFW is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code, Section 1600, requires notification to CDFW of any proposed activity that may substantially modify a river, stream, or lake. Notification is required by any person, business, state or local government agency, or public utility that proposes an activity that will:

- substantially divert or obstruct the natural flow of any river, stream or lake;
- substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or
- deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

The California Code of Regulations defines a river or stream thusly: "A stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation" (CCR Title 14, Section 1.72). For the purposes of Section 1600, rivers, streams, and lakes include those that are dry for periods of time as well as those that flow year round. If notification is required and CDFW believes the proposed activity is likely to substantially adversely affect fish and wildlife resources, it will require that the parties enter into a Lake or Streambed Alteration Agreement (LSAA).

2.2.9 California Fish and Game Code, Section 3503.5 - Raptor Nests

Section 3503.5 of the Fish and Game Code makes it unlawful to take, possess, or destroy hawks or owls, unless permitted to do so, or to destroy the nest or eggs of any hawk or owl.

2.3 Local Regulations

2.3.1 City of Elk Grove General Plan

The City of Elk Grove (City) General Plan (last updated in 2021) contains a number of open-space and conservation related policies, including policies that address the location and uses of open space areas, special status species habitat preservation, wildlife movement, stream buffer zones, wetland and riparian area avoidance, tree preservation, and maintenance of water quality. The General Plan states that development should preserve and enhance natural areas that serve, or may potentially serve, as habitat for special-status species and that unavoidable impacts must be mitigated (Policy NR-1-2); retain movement corridor(s) adequate (both in size and in habitat quality) to allow for the continued wildlife use based on the species anticipated in the corridor (Policy NR-1.2b); avoid impacts to wetlands, vernal pools, marshland, and riparian (streamside) areas unless shown to be technically infeasible and ensure that no net loss of wetland areas occurs (Policy NR-1-4); preserve large native oak and other native tree species as well as large non-native tree species that are an important part of the City's historic and aesthetic character (Policy NR-2-1); and integrate sustainable stormwater management techniques in site design to reduce stormwater runoff and control erosion (Policy NR-3-2).

The General Plan identifies the Study Area as a potential infill area within the Eastern Elk Grove Community Plan area (City of Elk Grove 2021). The General Plan land use map shows most of the western half of the Project parcel as low-density residential and the eastern half and northwest corner of the Project parcel as resource management and conservation (City of Elk Grove 2021). As proposed, the Project maintains an open space area in the resource management and conservation portion, which facilitates avoidance of some of the wetlands in the Study Area and special status species that may use those wetlands and adjacent grassland areas, retains a clear north-south corridor of undeveloped land through which wildlife could move, and provides a storm water management system that would prevent impacts related to storm water runoff. Tree removal would be governed by the City's municipal code (see **Section 2.3.2** below). The Project would be required to mitigate impacts to aquatic resources as required by state and federal regulations.

2.3.2 City of Elk Grove Tree Preservation and Protection

The City has adopted regulations for the preservation and protection of certain trees within the City limits (Municipal Code Chapter 19.12). The City's adopted regulations apply to four types of trees as follows:

- Landmark trees, which are trees specifically identified for protection by the Elk Grove City Council;
- Trees of local importance, which are trees of specific varieties greater than six inches in diameter;
- Secured trees, which are trees that were protected as part of the development process for residential subdivisions and commercial developments; and
- Trees on City property or in the public right-of-way and that are landmark trees, trees of local importance, or secured trees.

A tree permit must be secured from the City prior to removal (or other work) on any of the above four types of trees.

2.3.3 City of Elk Grove Swainson's Hawk Code

In 2003, the City established and adopted Chapter 16.130 of the Elk Grove Municipal Code (Swainson's Hawk Code) to provide options for mitigating a project's impacts to Swainson's hawk foraging habitat. Chapter 16.130 applies to projects that would subdivide parcels five (5) acres and larger of land zoned for agricultural uses. Chapter 16.130 outlines potential compensatory mitigation for projects that must comply with the Swainson's Hawk Code. Because the Project site is not currently zoned for agricultural use, Chapter 16.130 does not apply.

3.0 METHODOLOGY

3.1 Literature Review

A list of special-status species with potential to occur within the Study Area was developed by utilizing the following publicly available information sources:

- California Natural Diversity Database (CNDDB) (CNDDB 2024) query of the Study Area and all areas within 5 miles of the Study Area (**Figures 2** and **3**);
- USFWS Information for Planning and Conservation (IPaC) (USFWS 2024) query for the Study Area (**Attachment B**);
- California Native Plant Society (CNPS) Rare and Endangered Plant Inventory (CNPS 2023) query of the "Elk Grove, California" USGS topo quadrangle, and the eight surrounding quadrangles (**Attachment C**);
- Verified records from Bumble Bee Watch (BBW 2024);
- Western Monarch Milkweed Mapper (WMMM 2024) and Western Monarch Overwintering Site Viewer (Xerxes Society 2024) records;
- Research grade observations from iNaturalist (iNaturalist 2024);
- Confirmed nesting records and observation records from Cornell Laboratory of Ornithology's eBird database (Cornell Lab 2024); and
- Western Bat Working Group (WBWG) Species Matrix (WBWG 2024).

In addition, any special-status species that are known to occur in the region, but that were not identified in any of the above information sources were also analyzed for their potential to occur within the Study Area.

The results of previously completed surveys were also reviewed and information contained therein was incorporated into this document as appropriate. These previous data sources include:

- *Biological Assessment (E.S.A.) and Biological Resources Assessment (CEQA) for the Housing Development Project at Waterman Road, Elk Grove, California* (Natural Investigations Company 2022)
- Verified aquatic resources delineation map for the Waterman Road Property (Natural Investigations Company 2021)

For the purposes of this Biological Resources Assessment, special-status species is defined as those species that are:

- listed as threatened or endangered, or proposed or candidates for listing by the USFWS or National Marine Fisheries Service;
- listed as threatened or endangered and candidates for listing by CDFW;
- identified as Fully Protected species or species of special concern by CDFW;
- identified as Medium or High priority species by the WBWG (WBWG 2023); and
- plant species considered to be rare, threatened, or endangered in California by the CNPS and CDFW [California Rare Plant Rank (CRPR) 1, 2, and 3]:
  - CRPR 1A: Plants presumed extinct.

- CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere.
- CRPR 2A: Plants extirpated in California, but common elsewhere.
- CRPR 2B: Plants rare, threatened, or endangered in California, but more common elsewhere.
- CRPR 3: Plants about which the CNPS needs more information – a review list.

3.2 Field Surveys

Madrone biologist Tara Collins conducted site visits of the Study Area on 4 and 9 May and 9 June 2023 and 1, 9, 20 May and 21 June 2024, and Madrone biologist Daria Snider visited the site on 6 September and 9 December 2023. During their site visits, Ms. Collins and Ms. Snider mapped vegetation communities, evaluated the location and extent of previously mapped aquatic resources, and generally evaluated habitat conditions in the Study Area. A list of wildlife species observed during the site visits is included in **Attachment D**.

During the May and June 2023 and 2024 site visits, Ms. Collins conducted a special-status plant survey of the Study Area in accordance with the U.S. Fish and Wildlife Service's *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (USFWS 1996), California Department of Fish and Wildlife's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018), and the *CNPS Botanical Survey Guidelines* (CNPS 2001). A copy of the special-status plant survey report is included as **Attachment E**.

Because the Study Area limits changed from the time Natural Investigations Company completed an aquatic resource delineation of the site in 2021, Ms. Snider completed a supplemental aquatic resource delineation of the Study Area on 6 September 2023. Madrone updated the aquatic resource delineation map to reflect the updated Study Area, submitted the comprehensive map to the USACE, and received a Preliminary Jurisdictional Determination for the map in October 2024 (**Attachment F**).

4.0 EXISTING CONDITIONS

The Study Area is characterized by generally flat to slightly rolling topography supporting annual brome grassland interspersed with seasonal wetlands and vernal pools. The elevation ranges from approximately 35 to 53 feet above mean sea level. The Study Area is bordered by medium-density residential development on the southwest and east sides, rural residential development on the south and north sides, and an undeveloped area on the northwest side. The northwest corner of the Study Area, which provides site access from Waterman Road, shows signs of past grading, with a small berm and riprap piles present. A perimeter firebreak is disked along the northern boundary, and signs of historic disking are visible. Structures within the Study Area include three lines of large metal power line towers that generally run north-south through the eastern half of the Study Area. Additionally, a line of wooden power poles runs north-south along Waterman Road. An old well, presumably no longer functioning as it lacks a power line, occurs near the southwest corner of the Study Area, and a blank wooden billboard is present on the west border along Waterman Road. Approximately 15 acres of the southwest portion of the Study Area is fenced off and heavily grazed by goats and sheep; water troughs are present near the southwest corner and are fed via

hoses from a rural residence located to the south of the Study Area. A residential area occurs along the eastern boundary of the Study Area, and some ornamental landscaping plants associated with the residences have overgrown onto the Study Area. The annual brome grasslands within the on-site portion of the Study Area are heavily grazed by goats annually in summer.

4.1 Terrestrial Land Cover

The primary terrestrial vegetation community present at the Study Area is annual brome grassland (**Table 1** and **Figure 4**). The annual brome grassland is dominated by ryegrass (*Festuca perennis*), slender wild oat (*Avena barbata*), medusa head (*Elymus caput-medusae*), and soft chess (*Bromus hordeaceus*). The Study Area also supports inclusions of rural residential development along Waterman Road and urban areas (areas that are paved or otherwise developed with urban uses) along Waterman Road and associated with development east of the Project parcel.

Table 1. Terrestrial Land Covers and Aquatic Resources within the Study Area

Land Cover/Resource	Area (acres)
Terrestrial Land Covers	
Annual Brome Grassland	26.8
Rural Residential	0.2
Road	6.8
Total Terrestrial Land Covers	*33.8*
Aquatic Resources	
Wetlands	
Seasonal Wetland	1.70
Seasonal Wetland Swale	0.01
Vernal Pool	1.01
Non-Wetlands	
Detention Basin	0.97
Drainage Ditch	0.20
Roadside Ditch	0.01
Total Aquatic Resources	*3.90*
Total	**37.7**

Summation errors may occur due to rounding.

4.2 Soils

The Natural Resources Conservation Service (NRCS) has mapped four soil units within the Study Area (**Figure 5**) (NRCS 2024).

- Dumps (136): present in Waterman Road northwest of the Project property
- Durixeralfs, 0 to 1 percent slopes (137): present in Waterman Road southwest of the Project property and in the southwestern portion of the existing off-site detention basin; well-drained, alluvium derived from granite, not saline or alkaline

- Redding gravelly loam, 0-8% slopes, MLRA 17 (198): covers most of the Study Area (86%); moderately well drained, loamy alluvium derived from igneous, metamorphic and sedimentary rock over clayey alluvium derived from igneous, metamorphic and sedimentary rock over cemented alluvium derived from igneous, metamorphic and sedimentary rock; slightly acidic, not saline
- San Joaquin-Galt complex, leveled, 0 to 1% slopes (217): narrow band present along southeastern boundary of Study Area, extends into area supporting the existing off-site detention basin; moderately well drained, alluvium derived from granite, not saline or alkaline

4.3 Aquatic Resources

A protocol-level aquatic resources delineation was conducted for the Study Area by Natural Investigations Company (on-site portion) and Madrone (off-site portion). A PJD has been issued for the entire Study Area by the USACE (**Attachment F**). Aquatic resources mapped within the Study Area are depicted in **Figure 4**. **Table 1** above summarizes these mapped aquatic resource types and a description by type is included below.

4.3.1 Jurisdictional Considerations

Under the current definition of waters of the U.S. (January 2023 Clean Water Rule, as amended in August 2023), wetlands are only considered to be jurisdictional if they have a continuous surface connection to a relatively permanent water. The January 2023 rule defines a continuous surface connection for wetlands as physically abutting or touching relatively permanent waters; a connection to relatively permanent waters by a discrete feature like a non-jurisdictional ditch, swale, pipe, or culvert; or where a natural berm, bank, dune, or similar natural landform between an adjacent wetland and a relatively permanent water does not sever a continuous surface connection to the extent the natural landform provides evidence of a continuous surface connection (the August 2023 amended rule did not modify the definition of continuous surface connection). The USACE will determine, via the submitted request for jurisdictional determination, whether some or all of the wetlands in the Study Area are jurisdictional under the Clean Water Act.

A number of aquatic features are not considered to be waters of the U.S. under the Clean Water Rule, (40 CFR 120.2[b]) including ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water (40 CFR 120.0[b][3]) and artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing (40 CFR 120.2[b][5]). The USACE will determine, via the submitted request for an AJD, whether some or all of the ditches and/or the detention basin in the Study Area are jurisdictional under the Clean Water Act.

The *State Policy for Water Quality Control: State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (State Policy) (State Board 2019, as revised) describes activities that are excluded from the application procedures for regulation of discharges of dredged or fill material to waters of the state (Policy Section IV[D]). Excluded activities include those that are exempt under Clear Water Act

Section 404(f). The State Policy notes that the state may elect to issue or waive waste discharge requirements under Porter-Cologne for exempt activities. Clean Water Act Section 404(f) activities include normal farming; maintenance activities; construction and maintenance of farm ponds, stock ponds, irrigation ditches, or the maintenance of drainage ditches; construction of temporary sedimentation basins; activities for which the state has an approved Clean Water Act Section 208(b)(4) program; and construction or maintenance of farm roads, forest roads, or temporary roads for moving mining equipment.

4.3.2 Seasonal Wetland

The Study Area supports a total of 1.70 acres of seasonal wetland. Seasonal wetlands are depressional wetlands that pond water seasonally. These features are often topographically and hydrologically similar to vernal pools, but have a short hydroperiod, and as a result, support a slightly different plant community that is not characterized by a dominance of vernal pool endemics. At the time of the aquatic resources delineation, the seasonal wetlands within the Study Area were dominated by winged water starwort (*Callitriche marginata*), creeping spikerush (*Eleocharis macrostachya*), ryegrass, Mediterranean barley *(Hordeum marinum* ssp. *gussoneanum*), perennial pepperweed (*Lepidium latifolium*), Carter's buttercup (*Ranunculus bonariensis var. trisepalus)*, curly dock (*Rumex crispus*), and flowering quillwort (*Triglochin scilloides*).

The seasonal wetlands are waters of the state. The USACE will determine whether the seasonal wetlands are federally jurisdictional when it issues a jurisdictional determination for the Study Area.

4.3.3 Seasonal Wetland Swale

The Study Area supports two distinct portions of a seasonal wetland swale that total 0.01 acre. This seasonal wetland swale is located along the northern boundary of the Study Area and is adjacent to an isolated vernal pool. Seasonal wetland swales are sloping, linear seasonal wetlands that convey storm water runoff, and may detain it for short periods of time. The seasonal wetland swales within the Study Area are occupied by marginal wetland species typical of the seasonal wetlands described above.

The seasonal wetland swale is a water of the state. The swale has a direct surface connection to an isolated vernal pool but does not appear to have a direct surface connection to any relatively permanent waters. The USACE will determine whether the seasonal wetland swale is federally jurisdictional when it issues a jurisdictional determination for the Study Area.

4.3.4 Vernal Pool

A number of vernal pools totaling approximately 1.01 acres occur within the Study Area. Vernal pools are topographic basins that are underlain with an impermeable or semi-permeable hardpan or duripan layer. Vernal pools inundate during the wet season, and typically dry by late spring and remain dry through the summer months. Vernal pools were differentiated from depressional seasonal wetlands within the Study Area based upon the predominance of vernal pool endemic plant species. At the time of the aquatic

resources delineation, the vernal pools were dominated by winged water starwort, California damasonium (*Damasonium californicum*), ornate downingia (*Downingia ornatissima*), ornate downingia *Eleocharis macrostachya*), and Carter's buttercup.

The vernal pools are waters of the state. One vernal pool in the southwest corner of the Study Area is connected to a roadside ditch on the west side of Waterman Road. This ditch, which was created to capture storm water runoff from the road and surrounding area, does not appear to have a direct connection to the City of Elk Grove storm water system (City of Elk Grove 2019) nor is it directly connected to a relatively permanent water. None of the other vernal pools appear to have a direct surface connection to any relatively permanent waters or other aquatic features that are connected to a relatively permanent water. The USACE will determine whether the vernal pools are federally jurisdictional when it issues a jurisdictional determination for the Study Area.

4.3.5 Detention Basin

A portion of a constructed storm water detention basin (0.97 acre) occurs in the southeastern portion of the Study Area. This basin is incorporated into the City's Jeanne and Jerry Strong Park and is surrounded by urban development and a recreational trail.

The State Policy states that areas used for "Detention, retention, infiltration, or treatment of stormwater runoff and other pollutants or runoff subject to regulation under a municipal, construction, or industrial stormwater permitting program," are not considered to be waters of the state (State Policy Section II[3][d][iii]).

As described in CFR 120.2(b), "artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing" are not considered to be waters of the U.S. Regardless, the USACE will formally determine whether the detention basin is federally jurisdictional when it issues a jurisdictional determination for the Study Area.

4.3.6 Drainage and Roadside Ditches

Approximately 0.20 acre of constructed drainage ditch is present within the Study Area. Segments of drainage ditch are located along the eastern boundary of the Study Area and just west of the detention basin within a developed area. A large stretch of the northern portion of the constructed ditch has been filled, presumably by adjacent homeowners discarding yard debris. As a result, a short reach of intact ditch in the northern part of the Study Area has been isolated from the remainder of the intact ditch to the south. No part of the drainage ditch is maintained.

A total of 0.01 acre of constructed roadside ditch segments are also present within the Study Area. These ditch segments were created to capture storm water runoff from the road and surrounding area and are largely unvegetated. It appears that the roadside ditches are minimally maintained by weed removal. All of

the ditch segments are along the eastern side of Waterman Road and drain into the City's storm water system at the southwestern corner of the Study Area, just north of Cruz Court.

The State Policy does not specifically address whether ditches are considered to be waters of the state. However, the State Policy does state that all artificial wetlands that are less than an acre in size and do not satisfy the State Policy's other wetland definition criteria set forth in the policy are not waters of the state (State Policy Section II[3]).

According to CFR 120.2(b), ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water are not considered to be waters of the U.S. The USACE will determine whether the drainage and roadside ditches are federally jurisdictional when it issues a jurisdictional determination for the Study Area.

4.4 Special Lands

The Study Area is not within the primary or secondary zones of the Sacramento-San Joaquin Delta. The site does not support critical habitat for any federally listed species and is not within the South Sacramento Habitat Conservation Plan area.

5.0 RESULTS

Table 2 provides a list of special-status species that were evaluated, including the listing status, habitat associations, and their potential to occur in the Study Area for each. The following criteria were used to determine each species' potential for occurrence in the Study Area:

- Present: Species occurs on the site based on CNDDB records, and/or was observed on the site during field surveys.
- High: The site is within the known range of the species and suitable habitat exists.
- Moderate: The site is within the known range of the species and very limited suitable habitat exists.
- Low: The site is within the known range of the species and there is marginally suitable habitat, or the species was not observed during protocol-level surveys conducted on-site.
- Absent/No Habitat Present: The site does not contain suitable habitat for the species, the species was not observed during protocol-level surveys conducted on-site, or the site is outside the known range of the species.

Figures 3 and **4** show CNDDB occurrences of special status plant species and wildlife species within five miles of the Study Area, respectively. A discussion of all special-status plant and animal species with potential to occur on the site follows **Table 2**.

Table 2. Special-Status Species with Potential to Occur within the Summer Flats Study Area

Scientific Name (Common Name)	Federal Status[1]	State Status[1]	Habitat Requirements	Potential for Occurrence
Plants				
Balsamorhiza macrolepis Big-scale balsamroot	--	CRPR 1B.2	Prefers chaparral, cismontane woodland, and valley and foothill grasslands. Often associated with serpentine soils. Found in elevations between 150-5100 feet.	**Absent.** Marginally suitable habitat is present, but this plant was not found during protocol surveys of the Study Area in 2023 and 2024.
Brasenia schreberi Watershield	--	CRPR 2B.3	Freshwater marshes and swamps (0' - 7,220')	**No Habitat Present.** The Study Area does not support habitat for this species.
Carex comosa Bristly sedge	--	CRPR 2B.1	Fresh water marshes or other wet habitats. Occurs between 0-2050 ft.	**No Habitat Present.** The Study Area does not support habitat for this species.
Cicuta maculata var. bolanderi Bolander's water-hemlock	--	CRPR 2B.1	Coastal, fresh, or brackish marshes and swamps (0' – 656').	**No Habitat Present.** The Study Area does not support habitat for this species.
Cuscuta obtusiflora var. glandulosa Peruvian dodder	--	CRPR 2B.2	Freshwater marshes and swamp. Found in elevations between 50 to 920 feet.	**No Habitat Present.** The Study Area does not support habitat for this species.
Downingia pusilla Dwarf downingia	--	CRPR 2B.2	Mesic areas in valley and foothill grassland, and vernal pools (3' – 1,460').	**Absent.** Marginally suitable habitat is present, but this plant was not found during protocol surveys of the Study Area in 2023 and 2024.
Gratiola heterosepala Boggs Lake hedge-hyssop	--	CE, CRPR 1B.2	Vernal pools and margins of lakes/ponds on clay soils (35' - 7,790').	**Absent.** Marginally suitable habitat is present, but this plant was not found during protocol surveys of the Study Area in 2023 and 2024.
Hibiscus lasiocarpos var. occidentalis Woolly rose-mallow	--	CRPR 1B.2	Occurs in freshwater wetlands/marshes including edges. Often in riprap on sides of levees, but has also been found in detention basins. Found in elevations between sea level to 395 feet.	**Absent.** Marginally suitable habitat is present, but this plant was not found during protocol surveys of the Study Area in 2023 and 2024.

Table 2. Special-Status Species with Potential to Occur within the Summer Flats Study Area

Scientific Name (Common Name)	Federal Status[1]	State Status[1]	Habitat Requirements	Potential for Occurrence
Juncus leiospermus var. ahartii Ahart's dwarf rush	--	CRPR 1B.2	Occurs along edges of vernal pool and other seasonally ponded features between 100 and 750 feet.	**Absent.** Marginally suitable habitat is present, but this plant was not found during protocol surveys of the Study Area in 2023 and 2024.
Lasthenia chrysantha Alkali-sink goldfields	--	CRPR 1B.1	Alkaline vernal pools (0' - 655').	**No Habitat Present.** The Study Area does not support alkaline soils.
Lathyrus jepsonii var. jepsonii Delta tule pea	None	CRPR 1B.2	Prefers tidally influenced channels, brackish marshes and swamps below 15 feet.	**No Habitat Present.** The Study Area does not support habitat for this species.
Legenere limosa Legenere	--	CRPR 1B.1	Occurs in vernal pools between 5 and 2885 feet.	**Present.** Species was observed during protocol surveys in 2023 and 2024.
Lepidium latipes var. heckardii Heckard's pepper-grass	--	CRPR 1B.2	This annual prefers valley and foothill grasslands with alkaline soils.	**No Habitat Present.** The Study Area does not support alkaline soils.
Lilaeopsis masonii Mason's lilaeopsis	--	CR, CRPR 1B.1	This species prefers brackish or freshwater swamps, intertidal marshes, and riparian scrub at or below 35 feet.	**No Habitat Present.** The Study Area does not support habitat for this species.
Limosella australis Delta mudwort	--	CRPR 2B.1	Favors freshwater and brackish marshes, swamps, or riparian scrub. Usually found in association with muddy banks in the Delta. (0-10 feet)	**No Habitat Present.** The Study Area does not support habitat for this species.
Navarretia myersii ssp. myersii Pincushion navarretia	--	CRPR 1B.1	Vernal pools (often acidic) (65' - 1,085').	**Absent.** Marginally suitable habitat is present, but this plant was not found during protocol surveys of the Study Area in 2023 and 2024.
Orcuttia tenuis Slender Orcutt grass	FT	CE, CRPR 1B.1	Occurs in vernal pools and other seasonally ponded features between 115 and 5775 feet.	**Absent.** Marginally suitable habitat is present, but this plant was not found during protocol surveys of the Study Area in 2023 and 2024.

Table 2. Special-Status Species with Potential to Occur within the Summer Flats Study Area

Scientific Name **(Common Name)**	**Federal Status[1]**	**State Status[1]**	**Habitat Requirements**	**Potential for Occurrence**
Orcuttia viscida Sacramento Orcutt grass	FE	CE, CRPR 1B.1	Occurs in vernal pools between 100 and 330 feet.	**Absent.** Marginally suitable habitat is present, but this plant was not found during protocol surveys of the Study Area in 2023 and 2024.
Sagittaria sanfordii Sanford's arrowhead	--	CRPR 1B.2	Occurs in emergent marsh habitat, typically associated with drainages, canals, or irrigation ditches (0' - 2,135').	**Absent.** Marginally suitable habitat is present, but this plant was not found during protocol surveys of the Study Area in 2023 and 2024.
Scutellaria galericulata Marsh skullcap	--	CRPR 2B.2	Lower montane coniferous forest, marshes and swamps, and mesic meadows and seeps (0′ – 6,890′)	**Absent.** Marginally suitable habitat is present, but this plant was not found during protocol surveys of the Study Area in 2023 and 2024.
Scutellaria lateriflora Side-flowering skullcap	--	CRPR 2B.2	Freshwater marshes or other wet habitats between 0 and 10 feet. Known in California only from the tidally influenced Sacramento San Joaquin Delta.	**No Habitat Present.** The Study Area does not support habitat for this species.
Trifolium hydrophilum Saline clover	--	CRPR 1B.2	Grows in marshes, swamps, and vernal pools with alkaline soils between sea level and 985 feet elevation.	**No Habitat Present.** The Study Area does not support alkaline soils.
Invertebrates				
Bombus crotchii Crotch bumble bee	--	CC	Occurs in open grasslands and scrub habitats.	**Low.** The annual grasslands could support suitable foraging flower populations but ground squirrel burrows that would provide potential nesting and overwintering habitat are absent. As a result, this species has a very low potential to occur within the Study Area.

Table 2. Special-Status Species with Potential to Occur within the Summer Flats Study Area

Scientific Name **(Common Name)**	**Federal Status[1]**	**State Status[1]**	**Habitat Requirements**	**Potential for Occurrence**
Bombus occidentalis Western bumble bee	--	CC	Occurs in meadows and grasslands with blended floral resources. Historically known to occur throughout the mountains and northern coast of California, is now largely confined to high elevation sites and isolated areas on the northern California coast.	**No Habitat Present.** The Study Area is not within the range of this species.
Branchinecta lynchi Vernal pool fairy shrimp	FT	--	Occurs in vernal pools.	**High.** Vernal pools and seasonal wetlands in the Study Area provide suitable habitat for this species.
Danaus plexippus Monarch	FC	--	Migratory species; most prevalent in the Central Valley in summer and early fall. Dependent upon milkweed (*Asclepias* species) plants as its exclusive larval host.	**Low.** Scattered individual milkweed plants are present on-site. No monarch caterpillars were observed at the time of the special-status plant survey or during the supplemental aquatic resources delineation in 2023.
Desmocerus californicus dimorphus Valley elderberry longhorn beetle	FT	--	Dependent upon elderberry (*Sambucus* species) plant as primary host species.	**No Habitat Present.** The Study Area does not support any elderberry shrubs.
Lepidurus packardi Vernal pool tadpole shrimp	FE	--	Occurs in vernal pools.	**High.** Vernal pools and seasonal wetlands in the Study Area provide suitable habitat for this species.
Amphibians				
Ambystoma californiense California tiger salamander	FT	CT, SSC	Breeds in ponds or other deeply ponded wetlands and uses gopher holes and ground squirrel burrows in adjacent grasslands for upland refugia/foraging.	**No Habitat Present.** The Study Area is outside of the known range of the species.
Spea hammondii Western spadefoot	PT	SSC	Breeds in vernal pools, seasonal wetlands and associated swales. Forages and hibernates in adjacent grasslands.	**High.** Long-duration seasonal wetlands and vernal pools throughout the site are suitable habitat for this species.

Table 2. Special-Status Species with Potential to Occur within the Summer Flats Study Area

Scientific Name **(Common Name)**	**Federal Status[1]**	**State Status[1]**	**Habitat Requirements**	**Potential for Occurrence**
Reptiles				
Actinemys marmorata Northwestern pond turtle	PT	SSC	Occurs in ponds, rivers, streams, wetlands, and irrigation ditches with associated marsh habitat.	**Low.** The deeper portions of the detention basin are perennially inundated, and provide very limited habitat for this species.
Thamnophis gigas Giant garter snake	FT	CT	Occurs in rivers, canals, irrigation ditches, rice fields, and other aquatic habitats with slow moving water and heavy emergent vegetation.	**No Habitat Present.** The Study Area does not support habitat for this species.
Birds				
Agelaius tricolor Tricolored blackbird	--	CE, SSC	Colonial nester in cattails (*Typha* species), bulrush (*Schoenoplectus* species), or blackberry (*Rubus* species) associated with marsh habitats.	**Low.** Study Area lacks suitable nesting habitat but annual grassland provides suitable foraging habitat for this species.
Aquila chrysaetos Golden eagle	--	CFP	Forages in open areas including grasslands, savannahs, deserts, and early successional stages of shrub and forest communities. Nests in large trees and cliffs.	**Low.** Study Area lacks suitable nesting habitat. The site is surrounded by urban development, and while annual grassland provides suitable foraging habitat, this species is unlikely to forage in the Study Area.
Athene cunicularia Burrowing owl	--	SSC	Nests in abandoned ground squirrel (*Otospermophilus beecheyi*) burrows associated with open grassland habitats.	**Low.** No ground squirrel burrows were observed within the Study Area, but marginally suitable burrow habitat may be present in debris scattered around the site.
Buteo swainsoni Swainson's hawk	--	CT	Nests in large trees, preferably in riparian areas. Forages in fields, cropland, irrigated pasture, and grassland near large riparian corridors.	**High.** Annual grassland in the Study Area provides suitable foraging habitat for this species. Suitable nest trees are located adjacent to and within 0.25 mile of the Study Area.

Table 2. Special-Status Species with Potential to Occur within the Summer Flats Study Area

Scientific Name **(Common Name)**	**Federal Status[1]**	**State Status[1]**	**Habitat Requirements**	**Potential for Occurrence**
Circus hudsonius Northern harrier	--	SSC	Nests in emergent wetland/marsh, open grasslands, or savannah habitats. Forages in open areas such as marshes, agricultural fields, and grasslands.	**High.** Annual grassland in the Study Area provides suitable foraging habitat for this species, but suitable nesting habitat does not occur within the Study Area.
Elanus leucurus White-tailed kite	--	CFP	Open grasslands, fields, and meadows are used for foraging. Isolated trees in proximate to foraging habitat are used for perching and nesting.	**High.** Annual grassland in the Study Area provides suitable foraging habitat for this species. Suitable nest trees are located adjacent to and within 0.25 mile of the Study Area.
Haliaeetus leucocephalus Bald eagle	--	CE	Nest in large trees within 1 mile of lakes, rivers, or larger streams.	**No Habitat Present.** The Study Area lacks suitable foraging and breeding habitat.
Lanius ludovicianus Loggerhead shrike	--	SSC	Occurs in open areas with sparse trees, shrubs, and other perches.	**High.** Annual grassland in the Study Area provides suitable foraging habitat for this species. This species could nest in trees and shrubs adjacent to Study Area.
Mammals				
Antrozous pallidus Pallid bat	--	SSC, WBWG H	Inhabits low elevation (<6,000 feet) rocky arid deserts and canyonlands, shrub-steppe grasslands, karst formations, and higher elevation coniferous forests (>7,000 feet). Day and night roosts include crevices in rocky outcrops and cliffs, caves, mines, trees (e.g., bole cavities of oaks, exfoliating valley oak bark), and various human structures such as bridges, barns, porches, bat boxes, and human-occupied as well as vacant buildings.	**Low (foraging only).** Potential foraging only. There is no suitable roosting habitat on-site.

Table 2. Special-Status Species with Potential to Occur within the Summer Flats Study Area

Scientific Name **(Common Name)**	**Federal Status[1]**	**State Status[1]**	**Habitat Requirements**	**Potential for Occurrence**
Taxidea taxus American badger	--	SSC	This species prefers dry open fields, grasslands, and pastures.	**Low.** The annual brome grassland represents marginally suitable habitat due to the high degree of annual disturbance from goat grazing, and the relative isolation of this patch of habitat.

[1] *Status Codes:*

CC – California Candidate for Listing
SSC – CDFW Species of Concern
CE – California Endangered
CT – California Threatened
CR – California Rare
CFP – California Fully Protected
CRPR – California Rare Plant Rank
WL – CDFW Special Animals Watch List
WBWG H – Western Bat Working Group High Threat Rank
WBWG M – Western Bat Working Group Medium Threat Rank
FE – Federally Endangered
FT – Federally Threatened
FC – Federal Candidate for Listing
PT – Proposed for Federal Listing as Threatened

5.1 Plants

5.1.1 Big-Scale Balsamroot

Big-scale balsamroot (*Balsamorhiza macrolepis var. macrolepis*) is not federally or state-listed, but it is classified as a CRPR List 1B.2 plant. It is a perennial herbaceous species that occurs in chaparral, cismontane woodland and valley and foothill grasslands between 295 and 4,600 feet. Big-scale balsamroot blooms from March through June and may be found on serpentine soils, though it is known to grow on other soil types as well (CNPS 2024).

The annual brome grassland throughout the Study Area provides marginal habitat for this species. This species was not observed during the 2023 or 2024 protocol-level special status plant surveys of the Study Area. This species has not been documented within five miles of the Study Area in the CNDDB (CNDDB 2024).

5.1.2 Dwarf Downingia

Dwarf downingia (*Downingia pusilla*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. It is a diminutive annual herb that is strongly associated with vernal pools and other seasonally inundated features at elevations ranging from sea level to approximately 1,500 feet (CNPS 2024). Dwarf downingia is typically associated with areas that experience a moderate degree of disturbance, and it blooms from March to May.

The vernal pools, seasonal wetlands and seasonal wetland swale within the Study Area represent suitable habitat for this species. This species was not observed during the 2023 or 2024 protocol-level special status plant surveys of the Study Area. There are two records of dwarf downingia within five miles of the Study Area in the CNDDB (**Figure 2**). The nearest of these (CNDDB Occurrence #55) is located approximately 0.6 miles northwest of the site on the northwest corner of Bond Road and Waterman Road in Elk Grove (CNDDB 2024).

5.1.3 Boggs Lake Hedge-Hyssop

Boggs Lake hedge-hyssop (*Gratiola heterosepala*) is not federally listed, but it is a California endangered species and a CRPR List 1B.2 plant. Boggs Lake hedge-hyssop grows in vernal pools and around the perimeter of lakes and ponds between 30 and 7,800 feet (CNPS 2024). This small annual herb favors clay soils, and blooms from April to August (CNPS 2024).

The larger vernal pools and seasonal wetlands within the Study Area represent suitable habitat for this species. This species was not observed during the 2023 or 2024 protocol-level special status plant surveys of the Study Area. There are four records of Boggs Lake hedge-hyssop within five miles of the Study Area in the CNDDB, one of which is extirpated (**Figure 2**) (CNDDB 2024). The nearest of these (CNDDB Occurrence

#33) is located approximately 1.1 miles northwest of the site, 0.75 mile northwest of the intersection of Bond Road and Waterman Road (CNDDB 2024).

5.1.4 Woolly Rose-Mallow

Woolly rose-mallow (*Hibiscus lasiocarpus var. occidentalis*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. It generally occurs in shallow freshwater marshy habitats along the edges of drainages and detention basins with perennial or nearly perennial inundation. This perennial rhizomatous species blooms from June through September and occurs from sea level to approximately 395 feet (CNPS 2024).

The deeper portions of the detention basin within the Study Area represent marginally suitable habitat for this species. This species was not observed during the 2023 or 2024 protocol-level special status plant surveys of the Study Area. This species was not identified as a target species for this survey, but would have been documented if present, as the surveys were floristic in nature. This species has not been documented within five miles of the Study Area in the CNDDB (CNDDB 2024).

5.1.5 Ahart's Dwarf Rush

Ahart's dwarf rush (*Juncus leiospermus var. ahartii*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. Ahart's dwarf rush grows along the edges of seasonal wet habitats such as vernal pools and swales within valley and foothill grasslands between elevations of approximately 100 feet and 750 feet (CNPS 2024). This annual herb blooms from March to May (CNPS 2024).

The larger vernal pools and seasonal wetlands within the Study Area represent suitable habitat for this species. This species was not observed during the 2023 or 2024 protocol-level special status plant surveys of the Study Area. This species has not been documented within five miles of the Study Area in the CNDDB (CNDDB 2024).

5.1.6 Legenere

Legenere (*Legenere limosa*) is not federally or state listed, but it is classified as a CRPR List 1B.1 species. This annual herb is primarily associated with vernal pools (CNPS 2024). Legenere occurs at elevations between 5 and 2885 feet, and blooms from April to June (CNPS 2024).

Protocol-level plant surveys conducted by botanists during the 2023 and 2024 blooming season documented this species in six vernal pools within the Study Area (**Figure 4** and **Attachment E**).

5.1.7 Pincushion Navarretia

Pincushion navarretia (*Navarretia myersii ssp. myersii*) is not federally or state listed, but it is classified as a CRPR List 1B.1 plant. This species is found in vernal pools and other mesic areas in annual grasslands, often

on acidic soils (CNPS 2024). Pincushion navarretia is found between approximately 65 and 1,100 feet and blooms in April and May (CNPS 2024).

The vernal pools, seasonal wetlands and seasonal wetland swale within the Study Area represent suitable habitat for this species. This species was not observed during the 2023 or 2024 protocol-level special status plant surveys of the Study Area. This species has not been documented within five miles of the Study Area in the CNDDB (CNDDB 2024).

5.1.8 Slender Orcutt Grass

Slender Orcutt grass (*Orcuttia tenuis*) is listed as threatened pursuant to the federal Endangered Species Act. A total of 82 occurrences are known, of which 76 are presumed to be extant (USFWS 2005). In addition to the counties listed in its historic range, slender Orcutt grass is also known from Lassen, Modoc, Butte, and Plumas Counties (USFWS 2005). The highest concentration of slender Orcutt grass occurs in Tehama County, where 27 natural occurrences are found (USFWS 2005).

The vernal pools within the Study Area represent suitable habitat for this species. This species was not observed during the 2023 or 2024 protocol-level special status plant surveys of the Study Area. There is one record of slender Orcutt grass within five miles of the Study Area in the CNDDB (**Figure 2**) (CNDDB 2024). CNDDB Occurrence #90 is located approximately 4.8 miles northeast of the site, 0.3 mile northeast of the Excelsior and Dierks Road intersection, south of Laguna Creek (CNDDB 2024).

5.1.9 Sacramento Orcutt Grass

Sacramento Orcutt grass (*Orcuttia viscida*) is listed as endangered pursuant to the federal Endangered Species Act. The earliest collection of this species was in 1936 near Phoenix Field; however, by 1990, Sacramento Orcutt grass was known from seven natural occurrences and one introduction (USFWS 2005). The current distribution of the species is restricted to eight extant populations in Sacramento County. One additional population was discovered after 1990; but one known population and a portion of another have been extirpated (USFWS 2005). The highest concentration of occupied habitat occurs within a 2.3-square mile area near Rancho Cordova (USFWS 2005).

The vernal pools within the Study Area represent suitable habitat for this species. This species was not observed during the 2023 or 2024 protocol-level special status plant surveys of the Study Area. This species has not been documented within five miles of the Study Area in the CNDDB (CNDDB 2024).

5.1.10 Sanford's Arrowhead

Sanford's arrowhead (*Sagittaria sanfordii*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. It generally occurs in shallow freshwater habitats associated with drainages, canals, and larger ditches that sustain inundation and/or slow-moving water into early summer. This perennial rhizomatous species blooms from May to October and occurs from sea level to approximately 2,000 feet (CNPS 2024).

The deeper portions of the detention basin within the Study Area represent marginally suitable habitat for this species. This species was not observed during the 2023 or 2024 protocol-level special status plant surveys of the Study Area. There are 11 records of Sanford's arrowhead in the CNDDB, the nearest of which (Occurrence #74) is located approximately 0.9 mile to the north, about 0.5 mile north of Grant Line and Waterman Road (**Figure 2**) (CNDDB 2024).

5.1.11 Marsh Skullcap

Marsh skullcap (*Scutellaria galericulata*) is not a state or federally listed species but is classified as a CRPR List 2B.2 plant. This perennial rhizomatous herb is found in various habitats including lower montane coniferous forest, mesic meadows and seeps, and marshes and swamps. Marsh skullcap is found from approximately sea level to 6,890 feet in elevation and blooms from June through September (CNPS 2024).

The deeper portions of the detention basin within the Study Area provide marginally suitable habitat for this species. This species was not observed during the 2023 or 2024 protocol-level special status plant surveys of the Study Area. This species was not identified as a target species for this survey, but would have been documented if present, as the surveys were floristic in nature. This species has not been documented within five miles of the Study Area in the CNDDB (CNDDB 2024).

5.2 Invertebrates

5.2.1 Crotch Bumble Bee

Crotch bumble bee (*Bombus crotchii*) is not federally listed but is a candidate for listing under CESA. The historic range of this species extends from central California south to Baja California del Norte, Mexico, and includes coastal areas east to the edges of the deserts and the Central Valley, but largely excluding mountainous areas of California (Thorp et al., 1983, Williams et al. 2014). Recent observations indicate declines in both relative abundance and persistence (IUCN 2023). This species was historically common in the Central Valley of California, but now appears to be absent from most of it, especially in the center of its historic range (Hatfield et al. 2014).

In California, this species inhabits open grasslands and scrub habitats. Like most bumble bees, Crotch bumble bee may nest underground in abandoned rodent nests or above ground in tufts of grass, old bird nests, rock piles, or cavities in dead trees. Bumble bees are generalist foragers and have been reported visiting a wide variety of flowering plants. They require plants that bloom and provide adequate nectar and pollen throughout the colony's life cycle, which is generally from March to August for Crotch bumble bee (IUCN 2023).

Two different species of bumble bee were observed in the Study Area during the special-status plant survey, but neither were identified to species. The Study Area provides suitable foraging habitat for the species, but nesting or overwintering habitat is absent. The CNDDB does not list any occurrences of this species within

five miles of the Study Area. The nearest sighting recorded in Bumble Bee Watch is about 10.4 miles to the southwest, near the Interstate 5/Twin Cities Road interchange, recorded in 2023 (BBW 2024). The iNaturalist database shows one research grade record in the City of Galt, about 11.4 miles to the south of the Study Area, recorded in 2020 (iNaturalist 2024).

5.2.2 Vernal Pool Fairy Shrimp

The vernal pool fairy shrimp (*Branchinecta lynchi*) is listed as threatened pursuant to the federal Endangered Species Act. Historically, the range of vernal pool fairy shrimp extended throughout the Central Valley of California. Vernal pool fairy shrimp populations have been found in several locations throughout California, with habitat extending from Stillwater Plain in Shasta County through the Central Valley to Pixley in Tulare County, and along the Central Coast range from northern Solano County to Pinnacles National Monument in San Benito County (Eng *et al.* 1990, Fugate 1992). Additional populations occur in San Luis Obispo, Santa Barbara, and Riverside counties. The historic and current ranges of vernal pool fairy shrimp are very similar in extent; however, the remaining populations are more fragmented and isolated than during historical times (USFWS 2005). The life cycle of vernal pool fairy shrimp is adapted to seasonally inundated features such as vernal pools, seasonal wetlands, and seasonal wetland swales. Fairy shrimp embryos survive the dry season in cyst form. Cysts "hatch" soon after pools become inundated during the wet season. Fairy shrimp complete their life cycle quickly and feed on small particles of detritus, algae, and bacteria (Eriksen and Belk 1999).

The vernal pools and seasonal wetland swales throughout the Study Area represent suitable habitat for this species, though most of the wetland areas have extensive algal matting/thatch covering the ground. Protocol-level surveys for this species have not been conducted within the Study Area. There are 13 presumed extant CNDDB occurrences of vernal pool fairy shrimp within five miles of the Study Area, which include one general location record (an area that covers a large area between Waterman Road and Bradshaw Road) from 1993 that includes the Study Area (Occurrence #164; CNDDB 2024). The most recent record is from 2014 (Occurrence #894), was from a dry-season sample collected from a detention basin about 3.8 miles to the northeast (CNDDB 2024).

5.2.3 Monarch

The monarch butterfly (*Danaus plexippus*) is a FESA candidate species. It is a large conspicuous species that occurs in North, Central, and South America; Australia; New Zealand; islands of the Pacific and Caribbean, and elsewhere (Malcolm and Zalucki 1993 in USFWS 2020). During the breeding season, monarchs lay their eggs on their obligate milkweed host plant (*Asclepias* spp.), and larvae emerge after two to five days (Zalucki 1982 in USFWS 2020). Larvae develop over a period of 9 to 18 days, feeding on the milkweed and then pupate into chrysalis before eclosing 6 to 14 days later as an adult butterfly (USFWS 2020). Multiple generations of monarchs are produced during the breeding season, with most adult butterflies living approximately two to five weeks (USFWS 2020).

In California, monarchs continue to occupy and breed in areas near their overwintering groves along the California coast into northern Baja California throughout the year, and also disperse over multiple generations to occupy and breed throughout the state in the spring through fall (USFWS 2020). Migrating monarchs in western North America tend to occur more frequently near water sources such as rivers, creeks, roadside ditches, and irrigated gardens (Morris et al. 2015 in USFWS 2020). Adult monarch butterflies require a diversity of blooming nectar resources during breeding and migration (spring through fall). Monarchs also need milkweed (for both oviposition and larval feeding) embedded within this diverse nectaring habitat.

This species was not observed in the Study Area during Project-related surveys, and only a few scattered narrowleaf milkweed (*Asclepias fascicularis*) plants occur within the Study Area. Although suitable floral resources occur, the paucity of larval host plants substantially reduces the likelihood of the species utilizing the Study Area. No CNDDB occurrences of this species are documented within five miles of the Study Area (CNDDB 2024). The WMMM also shows a record of a monarch about 2.8 miles east of the Study Area (recorded in 2019; WMMM 2024). The site is not proximate to any overwintering areas for the species (Xerxes Society 2024).

5.2.4 Vernal Pool Tadpole Shrimp

The vernal pool tadpole shrimp (*Lepidurus packardi*) is listed as endangered pursuant to the federal Endangered Species Act. The historic range of the vernal pool tadpole shrimp likely extended throughout the Central Valley of California and has been documented from east of Redding in Shasta County south to Fresno County, and from the San Francisco Bay Wildlife Refuge in Alameda County. The historic and current ranges of vernal pool tadpole shrimp are very similar in extent; however, the remaining populations are more fragmented and isolated than during historical times (USFWS 2005).

This species is associated with long-duration seasonal pools in grasslands throughout the northern and eastern portions of the Central Valley (USFWS 2005). Suitable vernal pools and seasonal swales are generally underlain by hardpan or sandstone. Much like vernal pool fairy shrimp, vernal pool tadpole shrimp are adapted to seasonally inundated features such as vernal pools, seasonal wetlands, and seasonal wetland swales (USFWS 2005).

The vernal pools and seasonal wetland swales throughout the Study Area represent suitable habitat for this species, though most of the wetland areas have extensive algal matting/thatch covering the ground. Protocol-level surveys for this species have not been conducted within the Study Area. The CNDDB shows 13 presumed extant occurrences of this species within five miles of the Study Area, the closest being a 1993 record about 0.9 mile to the south, near the intersection of Grant Line Road and Mosher Road (Occurrence #86; CNDDB 2024).

5.3 Amphibians

5.3.1 Western Spadefoot

The western spadefoot (*Spea hammondii*) is proposed for listing as threatened under FESA and is a CDFW species of special concern. This amphibian is a nocturnal animal that forages in grassland, open chaparral, and pine-oak woodlands for a variety of invertebrates such as insects and worms (USFWS 2005). Western Spadefoot breeds from January through May in variety of temporary wetlands including creeks, pools in intermittent drainages, vernal pools, and seasonal wetlands, and other fish-free water features. The tadpoles develop in 3 to 11 weeks, and must complete their metamorphosis before the temporary pools dry. Post-metamorphic juveniles feed and then immediately seek underground refugia. Following metamorphosis, the adults are largely terrestrial in nature and will burrow into sandy or gravelly soils utilizing the "spades" on the hind feet. The majority of an adult's life is spent in underground burrows (USFWS 2005).

Several of the seasonal wetlands and vernal pools within the Study Area represent suitable breeding habitat for western spadefoot and the surrounding annual brome grasslands provide suitable dry-season habitat. The CNDDB does not show any occurrences of this species within five miles of the Study Area, nor does the iNaturalist database. The nearest recent, presumed extant record in the CNDDB is about 9.3 miles to the northeast, in Mather Regional Park (Occurrence #396; CNDDB 2024). Adults were first recorded in this location in 1993, and tadpoles were observed in 2018.

5.4 Reptiles

5.4.1 Northwestern Pond Turtle

The northwestern pond turtle (*Actinemys marmorata*) is proposed for listing as threatened under FESA and is designated as a CDFW species of special concern. Its favored habitats include streams, large rivers and canals with slow-moving water, aquatic vegetation, and open basking sites. Although the turtles must live near water, they can tolerate drought by burrowing into the muddy beds of dried drainages. This species feeds mainly on invertebrates such as insects and worms, but will also consume small fish, frogs, mammals and some plants. Northwestern pond turtle predators include raccoons, coyotes, raptors, weasels, large fish, and bullfrogs. This species breeds from mid to late spring in adjacent open grasslands or sandy banks.

The CNDDB lists one occurrence of this species within five miles of the Study Area. This observation (Occurrence #1217) was recorded in 2010 in an area dominated by blue oak woodland with a network of ponds and seasonal creeks (CNDDB 2024). Deeper portions of the detention basin that is within the Study Area are perennially inundated and provide very limited habitat for this species. Because females move overland for up to 100 meters (325 feet) in the spring and summer to find suitable sites for egg-laying, areas to the north of the detention basin and within the Study Area could support dispersing turtles, though that portion of the Study Area is extensively disturbed as a result of grazing by goats.

5.5 Birds

5.5.1 Tricolored Blackbird

Tricolored blackbird (*Agelaius tricolor*) populations, which are currently in decline throughout the state, were listed as threatened under CESA by the California Fish and Game Commission on 19 April 2018. Historically, colonies were established in freshwater marshes dominated by cattails (*Typha* spp.) and bulrushes (*Scirpus* or *Schoenoplectus* spp.). More recently, they have utilized non-native mustards (*Brassica* spp.), blackberries (*Rubus* spp.), thistles (*Circium* spp.), and mallows (*Malva* spp.) as nesting substrate (Airola et al. 2016). Since the 1980s, the largest colonies have been observed in the San Joaquin Valley in cultivated fields of triticale, which is a hybrid of wheat and rye often grown as livestock fodder (Meese 2014). This current trend of nesting in active agricultural fields has further imperiled the species as nestlings typically are not fledged by the time the triticale is harvested.

Nesting habitat is not present within the Study Area, but the annual brome grassland throughout the Study Area represents suitable foraging habitat. The CNDDB shows 11 presumed extant nesting records for tricolored blackbird within five miles of the Study Area, the closest of which is approximately one mile to the south, along Grant Line Road between Waterman Road and Bradshaw Road (Occurrence #301, CNDDB 2024). Nesting at that site was last recorded in 1998. The Cornell Lab or Ornithology's eBird database (eBird) shows limited unconfirmed observations of flyover birds in areas about two miles to the northwest and west, but no nesting observations within several miles of the site (Cornell Lab 2024).

5.5.2 Golden Eagle

The golden eagle (*Aquila chrysaetos*) is not federally or state listed but is a CDFW fully protected species and is protected under the federal Bald and Golden Eagle Protection Act. It is a very large solitary raptor that forages in large, expansive open grasslands and savannahs, and nests on cliff ledges or in large, lone trees in rolling to mountainous terrain (Shuford and Gardali 2008). Though its natural densities are generally believed to be low, it once was relatively common to the open areas of California.

The CNDDB does not list any occurrences of golden eagle nest sites within five miles of the Study Area. Cornell Lab's eBird lists one confirmed 2014 observation along Grant Line Road, about six miles to the east of the Study Area (Cornell Lab 2024). While the annual brome grasslands, seasonal wetlands, and vernal pools represent suitable foraging habitat for this species, it is unlikely to use the site for foraging given the site's proximity to development and small size.

5.5.3 Burrowing Owl

Burrowing owl (*Athene cunicularia*) is not listed pursuant to either the California or federal Endangered Species Acts but is designated as a species of special concern by the CDFW. They typically inhabit dry open rolling hills, grasslands, desert floors, and open bare ground with gullies and arroyos. This species typically uses burrows created by fossorial mammals, most notably the California ground squirrel, but may also use

man-made structures such as culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement (CDFG 1995). The breeding season extends from February 1 through August 31 (CBOC 1993, CDFG 1995).

Annual brome grasslands, seasonal wetlands, and vernal pools within the Study Area represent suitable foraging habitat for this species, but the lack of ground squirrel burrows for nesting habitat substantially reduces the potential for this species to occur. Debris piles in various locations throughout the Study Area could provide marginally suitable nesting or wintering habitat. The CNDDB lists seven presumed extant records for burrowing owl within five miles of the Study Area, the closest of which was recorded in 2007 approximately 2.4 miles northwest of the Study Area, near the Highway 99 southbound on-ramp at Laguna Boulevard (Observation #1258; CNDDB 2024). The closest recent confirmed eBird record (2020) is approximately 2.2 miles southwest, in a driveway near a small field close to the intersection of Stockton Boulevard and Twin Cities Road (Cornell Lab 2024).

5.5.4 Swainson's Hawk

Swainson's hawk (*Buteo swainsoni*) is a raptor species that is not federally listed, but is listed as threatened under CESA. Breeding pairs typically nest in tall trees associated with riparian corridors, and forage in grassland, irrigated pasture, and cropland with a high density of rodents (Shuford and Gardali 2008). The Central Valley populations breed and nest in the late spring through early summer before migrating to Central and South America for the winter (Shuford and Gardali 2008).

Annual brome grasslands, seasonal wetlands, and vernal pools throughout the Study Area represent suitable foraging habitat for Swainson's hawk. There are no suitable nest trees on-site, but trees within 0.25-mile of the Study Area may provide suitable nesting habitat. The CNDDB documents 49 presumed extant records for Swainson’s hawk nesting within five miles of the Study Area, the closest of which (about 0.7 miles to the northeast) was a eucalyptus tree that was removed in 2003 (Occurrence #4663; CNDDB 2024). eBird includes several observations over the last 10 years, with one observation of active nest building in 2017 near the Sheldon-Pleasant Grove Community Stadium, approximately 2.5 miles to the north (Cornell Lab 2024).

5.5.5 Northern Harrier

The northern harrier (*Circus hudsonius*) is not listed pursuant to either the California or federal Endangered Species Acts; however, it is considered to be a species of special concern by the CDFW. This species is known to nest within the Central Valley, along the Pacific Coast, and in northeastern California (Shuford and Gardali 2008). The northern harrier is a ground nesting species, and typically nests in emergent wetland/marsh, open grasslands, or savannah habitats. Foraging occurs within a variety of open habitats such as marshes, agricultural fields, and grasslands (Shuford and Gardali 2008).

Annual brome grasslands, seasonal wetlands, and vernal pools throughout the Study Area represent suitable foraging habitat for northern harrier, though the species is not likely to nest on-site due to regular

site disturbance from grazing and proximity to developed areas. The CNDDB does not list any occurrences of this species within five miles of the Study Area, probably due to lack of reporting rather than scarcity of the species. The nearest, recent observation records of this species in eBird (2021) occur along the Laguna Creek Parkway Trail (approximately 0.5 mile northwest) and near Camden Park (approximately 1.3 miles northwest), both of which are along Laguna Creek (Cornell Lab 2024).

5.5.6 White-Tailed Kite

White-tailed kite (*Elanus leucurus*) is not federally or state listed, but is a CDFW fully protected species. This species is a yearlong resident in the Central Valley and is primarily found in or near foraging areas such as open grasslands, meadows, farmlands, savannahs, and emergent wetlands (Shuford and Gardali 2008). White-tailed kites typically nest from March through June in trees within riparian, oak woodland, and savannah habitats of the Central Valley and Coast Range (Shuford and Gardali 2008).

Annual brome grasslands, seasonal wetlands, and vernal pools throughout the Study Area represent suitable foraging habitat for white-tailed kite, and trees adjacent to the Study Area could be used for perching and nesting. eBird shows several recent unconfirmed observations at Jack Hill Park, which is approximately 0.25-mile west of the Study Area (Cornell Lab 2024).

5.5.7 Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is not listed and protected pursuant to either the California or federal Endangered Species Acts; but is a CDFW species of special concern. Loggerhead shrikes nest in small trees and shrubs in woodland and savannah vegetation communities, and forage in open habitats throughout California (Shuford and Gardali 2008). The nesting season ranges from March through June.

Annual brome grasslands within the Study Area represent suitable foraging habitat for this species, and it could use trees in adjacent areas for perching. The CNDDB does not list any occurrences of this species within five miles of the Study Area, probably due to lack of reporting rather than scarcity of the species. eBird includes an unconfirmed 2013 observation record along the Elk Grove Creek Trail west of Highway 99 in Elk Grove, about two miles west of the Study Area (Cornell Lab 2024).

5.6 Mammals

5.6.1 Pallid Bat

Pallid bat (*Antrozous pallidus*) is not federally or state listed, but is considered a CDFW species of special concern and is classified by the WBWG as a High priority species. It favors roosting sites in crevices in rock outcrops, caves, abandoned mines, hollow trees, and human-made structures such as barns, attics, and sheds (WBWG 2024). Though pallid bats are gregarious, they tend to group in smaller colonies of 10 to 100 individuals. It is a nocturnal hunter and captures prey in flight, but unlike most American bats, the species has been observed foraging for flightless insects, which it seizes after landing (WBWG 2024).

The site does not support suitable roosting habitat for this species, but the Study Area could provide foraging habitat. The CNDDB does not show any records of pallid bat within five miles of the Study Area (CNDDB 2024).

5.6.2 American Badger

The American badger (*Taxidea taxus*) is not federally or state listed but is designated as a species of special concern by CDFW. The species historically ranged throughout much of the state except in humid coastal forests. Badgers were once numerous in the Central Valley; however, populations now occur in low numbers in the surrounding peripheral parts of the valley and in the adjacent lowlands of eastern Monterey, San Benito, and San Luis Obispo counties (Williams 1986). Badgers occupy a variety of habitats, including grasslands and savannas. The principal requirements seem to be significant food supply, friable soils, and relatively open uncultivated ground (Williams 1986).

Evidence of this species was not observed during surveys of the Study Area. The CNDDB does not list any occurrences of American badger within five miles of the Study Area. The annual brome grasslands provide only marginal foraging habitat for American badger due to the parcel's small size and surrounding development.

5.7 Wildlife Corridors

The Study Area is surrounded by urban residential to both the east and west, and by rural residential and urban parks to the south. To the north is a similar annual grassland field, but beyond that is more rural and urban residential. The Study Area is essentially surrounded by development, and as such, very little terrestrial wildlife is likely to access it, and there is no natural area for wildlife to travel from and to. No wildlife corridors occur within the Study Area.

6.0 IMPACTS TO SENSITIVE BIOLOGICAL RESOURCES

This section details potential impacts to the biological resources discussed above associated with construction of the Project. A 25.7-acre Project impact area shown on **Figure 6** comprises areas that would be graded or disturbed to establish the residential development area, water quality basin, and recreational trail. As proposed, construction would avoid 12 acres within the Study Area.

6.1 Terrestrial Land Covers

Figure 6 and **Table 3** summarize the terrestrial land cover impacts associated with the Project. As proposed, the Project would result in the conversion of 19.9 acres of annual brome grassland, though, as noted in Section 1.1 above, some of the affected area would ultimately be retained in the open space parcels associated with the tentative map (see **Attachment A**), with most reverting back to annual brome grassland following the completion of construction. Impacts to annual brome grassland could affect lifecycle activities

of species that rely on annual brome grassland for nesting and foraging, including western spadefoot, several species of special-status birds, and American badger.

Table 3. Terrestrial Land Cover and Aquatic Resource Impacts within the Study Area

Community/Resource	Study Area (acres)	Permanent Impacts (acres)	Avoided Area (acres)
Terrestrial Land Covers			
Annual Brome Grassland	26.8	19.9	6.9
Rural Residential	0.2	0.2	0.0
Road	6.8	4.5	2.3
Total Terrestrial Land Covers	*33.8*	*24.6*	*9.2*
Aquatic Resources			
Wetlands			
Seasonal Wetland	1.70	0.00	1.70
Seasonal Wetland Swale	0.01	0.00	0.01
Vernal Pool	1.01	0.95	0.07
Non-Wetlands			
Detention Basin	0.97	0.08	0.88
Drainage Ditch	0.20	0.06	0.13
Roadside Ditch	0.01	0.01	0.00
Total Aquatic Resources	*3.90*	*1.10*	*2.79*
Total	**37.7**	**25.7**	**12.0**

Summation errors may occur due to rounding.

6.2 Aquatic Resources

Of the approximately 3.90 acres of aquatic resources mapped within the Study Area, 1.10 acres will be permanently filled as a result of Project construction (**Table 3**). Of this amount, 0.95 acre of impact would be to a wetland type (vernal pool) while the remaining 0.15 acre of impact would affect constructed aquatic features (detention basin and drainage and roadside ditches). The Project would avoid impacts to all of the seasonal wetlands and seasonal wetland swales in the Study Area (1.70 and 0.01 acre, respectively) and to 0.07 acre of vernal pool.

6.3 Special-Status Plant Species

The Project will result in the fill of vernal pools that support populations of legenere, a CRPR 1B.1 species. Legenere was not identified in any of the seasonal wetlands, seasonal wetland swales, or vernal pools that will be avoided. Project construction would result in the loss of all populations of this species in the Study Area.

6.4 Crotch Bumble Bee

The annual brome grassland within the Study Area represents marginally suitable habitat for Crotch's bumblebee due to low habitat quality, small patch size, and isolation from other patches. Approximately

19.9 acres of marginally suitable habitat for this species will be impacted by the Project. The disturbance and/or removal of this marginally suitable habitat could adversely affect this species if construction activity results in the removal of active Crotch bumblebee nests.

6.5 Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp

Vernal pools that would be filled as a result of construction represent potential habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp. The Study Area has not been surveyed for vernal pool branchiopods, and it is assumed that these species could be present in the impact area. As such, fill of 0.95 acre of vernal pool is expected to adversely affect vernal pool fairy shrimp and vernal pool tadpole shrimp.

6.6 Monarch

The Study Area supports widely scattered narrow-leaf milkweed, the host plant for monarch. If milkweed plants are removed as a result of construction and monarch eggs, larvae, and/or chrysalis are present, individuals of this species could be killed.

6.7 Western Spadefoot

The 0.95 acre of vernal pools that would be filled as a result of construction provide suitable breeding habitat for western spadefoot, and the surrounding annual brome grasslands provide suitable dry-season (upland) habitat. If western spadefoot (any stage) is present in any of the impacted vernal pools or adults are present in adjacent annual brome grassland areas at the time of construction, individuals could be injured or killed.

6.8 Northwestern Pond Turtle

Because the portion of the Study Area within 100 meters is subject to extensive disturbance by grazing, northwestern pond turtle would not be expected to utilize the Study Area for nesting. However, if northwestern pond turtle is utilizing perennially inundated portions of the detention basin and construction either results in direct impacts to the aquatic habitat or impacts to dispersing turtles, individual turtles could be injured or killed as a result.

6.9 Nesting Raptors and Migratory Birds

Swainson's hawk, white-tailed kite, northern harrier, tricolored blackbird, and loggerhead shrike have the potential to nest within the Study Area, as do other more common bird species protected by the MBTA. If any of these protected species were nesting on-site during construction, nest disturbance or removal could result in injury or death. Additionally, birds nesting in avoided areas adjacent to active construction areas could be disturbed by construction, which could result in nest abandonment.

6.10 Foraging Raptors

The annual brome grassland within the Study Area provides suitable foraging habitat for burrowing owl, Swainson's hawk, white-tailed kite, northern harrier, and other more common raptors. Project construction would result in direct impacts of up to 19.9 acres of annual brome grassland and 0.95 acre of vernal pool that currently provide foraging habitat for foraging raptors.

Because the Project property is not zoned for agricultural use, the City's compensatory mitigation requirement for the loss of Swainson's hawk foraging habitat does not apply. Approximately 7 acres of annual brome grassland will be retained on-site in designated open space areas. Given the Project property's location in the City's potential infill area, impacts to 19.9 acres is not considered significant.

6.11 Burrowing Owl

The annual brome grassland throughout Study Area provides suitable foraging habitat for burrowing owl, and debris piles within the Study Area provide marginally suitable burrow habitat. If ground disturbance occurred while burrowing owls were in burrows, individuals of this species could be killed.

6.12 Roosting Bats

Trees and/or buildings in residential areas adjacent to the site could provide roosting habitat for special-status bats. The Project would not affect any buildings and the trees along Waterman Road that may need to be removed do not provide suitable roosting habitat. The Project is not expected to result impacts to roosting bats.

6.13 American Badger

Annual brome grasslands provide foraging habitat for this species, and the loss of up to 19.9 acres of annual brome grassland would affect the regional availability of foraging habitat for American badger. However, because the site is in an urbanizing area and is generally surrounded by development, it is unlikely that this species would utilize the impact area. As such, direct impacts to this species are not anticipated.

7.0 AVOIDANCE, MINIMIZATION, AND MITIGATION FOR IMPACTS TO SENSITIVE BIOLOGICAL RESOURCES

The avoidance and minimization measures presented in this section may be required by the CEQA lead agency to mitigate impacts to sensitive biological resources associated with construction of the Project.

7.1 Terrestrial Land Cover

The Project will result in the conversion of 19.9 acres of annual brome grassland, most of which is in the western portion of the Project parcel that is anticipated for development under the City's General Plan.

Some of the disturbed areas would be retained in the long term as part of the designated open space areas on-site, and would likely revert to annual brome grassland. The City of Elk Grove does not have policies or regulations that require mitigation for the loss of this type of terrestrial vegetation community.

The Project may require the removal of two small non-native trees along the east shoulder of Waterman Road frontage, along the edge of the road right-of-way. These trees are not landmark trees, secured trees, or trees of local importance, so a tree permit would not be required.

No other measures are recommended.

7.2 Aquatic Resources

The Project will result in the loss of 0.95 acre of wetland (vernal pool) and 0.15 acre of other types of aquatic resources (detention basin and drainage and roadside ditches). We recommend the following measures to ensure that impacts to aquatic resources are mitigated consistent with General Plan policy and state and federal regulations.

- If the USACE determines that some or all of aquatic resources in the Study Area that will be filled are waters of the U.S., the Project proponent shall obtain authorization to fill such waters of the U.S. under Clean Water Act Section 404. Aquatic resources that will be filled shall be replaced or rehabilitated on a "no-net-loss" basis. Habitat restoration, rehabilitation, and/or replacement shall be at a location and by methods acceptable to the USACE. A Section 404 permit is not needed for the fill of aquatic resources that are not waters of the U.S.
- If the USACE determines that some or all of the aquatic resources in the Study Area that will be filled are waters of the U.S., the Project proponent shall apply for a Clean Water Act Section 401 water quality certification from the Central Valley RWQCB and adhere to the certification conditions. If the USACE determines that none of the aquatic resources in the Study Area that will be filled are waters of the U.S., the Project proponent shall submit a Report of Waste Discharge to the Central Valley RWQCB with a request for waste discharge requirements and adhere to the waste discharge requirements.
- If the final Project design will result in permanent impacts to aquatic resources that meet the definition of a river or stream under the California Code of Regulations or the 100-year floodplain of a river or stream, the Project proponent shall notify CDFW of the proposed alteration pursuant to Fish and Game Code Section 1600, Lake or Streambed Alteration. Minimization and avoidance measures will be proposed as appropriate and may include preconstruction species surveys and reporting, protective fencing around avoided biological resources, worker environmental awareness training, seeding disturbed areas adjacent to open space areas with native seed, and installation of project-specific storm water BMPs. Mitigation may include restoration or enhancement of resources on- or off-site, purchase of habitat credits from an agency-approved mitigation/conservation bank off-site, working with a local land trust to preserve land, or any other method acceptable to CDFW.

7.3 Special-Status Plant Species

The Study Area is known to support populations of legenere, a CRPR List 1B.1 species; these populations would be directly impacted by construction. Populations of other special-status plant species may also be present on-site in areas that have not been surveyed. If such populations are present, then they could also be impacted by construction. Given these conditions, the following mitigation is recommended:

- If construction in areas surveyed in 2023 does not commence prior to the spring of 2026, another round of special-status plant surveys shall be conducted in areas proposed for impact prior to commencement of construction. Surveys shall be conducted area in accordance with the *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants* (USFWS 2000), the *Botanical Survey Guidelines of the California Native Plant Society* (CNPS 2001), and *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018). This protocol includes conducting surveys at the appropriate time of year, when plants are in bloom.
- If the Project avoids the known special-status plant populations and an associated "Avoidance Zone," then no impacts to the plants would occur, and no mitigation is necessary. The size of the Avoidance Zone needed to prevent impacts may vary based on the plant species and their habitat requirements. If an ESA or CESA listed special-status plant is found and is to be avoided, then an appropriate Avoidance Zone shall be developed in consultation with USFWS or CDFW (as applicable). If the species is not listed under ESA or CESA, an appropriate Avoidance Zone shall be developed by a qualified botanist in consultation with the City. Avoidance Zone areas may differ by species and site-specific conditions, and they should be developed such that the avoided special-status plant population is likely to persist in perpetuity. Avoidance zones may be based on a fixed buffer distance from the special-status plant population, at the limit of a hydrologic break, or as otherwise determined appropriate for the species in question. A 250 foot buffer is an appropriate Avoidance Zone for legenere.
- If any impacts (direct or indirect) would occur to special-status plants, the Project Proponent shall mitigate according to one or a combination of the options below. A Special-Status Plant Mitigation Plan shall be developed and submitted to the City. The Special-Status Plant Mitigation Plan shall be approved by the City prior to issuance of a grading permit that would impact the plants. Note that the options below are minimum recommendations:
    - Indirect impacts: Indirect impacts would occur if the Project avoids the mapped populations but affects a portion of an Avoidance Zone. Recommended mitigation for indirect impacts is 0.5:1 (mitigation: impacts) based on the acreage or numbers of plants that have impacts within their Avoidance Zone (if there are dense populations, acreage may be a better metric, while if there are relatively few, widely scattered plants, number of plants may be a better metric).
    - Direct impacts: Direct impacts would occur if grading or other direct disturbance occurs within mapped populations. Recommended mitigation for direct impacts is 1:1 for preservation of an existing population, or 2:1 for relocation/translocation of impacted plants/seeds. These ratios may be based on the acreage of occupied habitat or number of plants; this metric will be clearly defined in the Special-Status Plant Mitigation Plan. Mitigation Options are as follows:

1. Preservation: Identify one or more existing, unprotected populations of the special-status plant that will be impacted by the Project in the Project vicinity and protect this population in perpetuity by establishing a preserve on the land that supports those populations. Once the proposed mitigation area is approved by the City, the mitigation area shall be protected by a recorded conservation easement or deed restriction and managed in accordance with a long-term management plan that maintains the habitats the conservation easement was established to protect (including the special-status plants). Additionally, a preserve management endowment shall be established to fund the long-term management outlined in the long-term management plan, or sufficient annual management funding shall be a condition of a Homeowner's Association, Community Services District, or other alternative as approved by the City. As this option would preserve an existing, established population, there would be no temporal loss, and low risk of failure. As a result, the required mitigation ratio for this option would be 1:1. This ratio may be based on the acreage of occupied habitat or number of plants; this metric will be clearly defined in the Special-Status Plant Mitigation Plan. This option may be implemented at a mitigation/conservation bank if the target plant species is present at the bank, and the Special-Status Plant Mitigation Plan shall describe how the purchase of bank credits translates into appropriate 1:1 preservation.
2. Relocation or Translocation: Mitigate impacts by establishment of a new special-status plant population or expansion of an existing special-status plant population. The proposed mitigation area may be on-site or off-site and shall be permanently protected by the recordation of a conservation easement or deed restriction, development of a long-term management plan that maintains the habitats that the conservation easement was established to protect, and include the establishment of a preserve management endowment, or sufficient annual management funding shall be a condition of a Homeowner's Association, Community Services District, or other alternative as approved by the City or regulating agency. The Project proponent would locate and protect the mitigation area(s), translocate seeds or relocate perennial plants to the mitigation area(s), monitor the translocated/relocated seeds/plants for a minimum of five years, and meet established success criteria as detailed in the Special-Status Plant Mitigation Plan. The minimum success criterion for this option would be 2:1 replacement of directly impacted plants and 1:1 replacement for indirectly impacted plants by year five of monitoring. This ratio may be based on the acreage of occupied habitat or number of plants; this metric will be clearly defined in the Special-Status Plant Mitigation Plan. If the success criteria are not met, then additional habitat shall be set aside as set forth under Option 1 or as agreed upon by the City as appropriate. Because population sizes for annual plants can vary widely from year to year, for Option 2, population counts or acreage mapping would be conducted in the last two years of monitoring, and the highest count or acreage shall be at least equivalent to the number of required replacement plants.

- To provide a habitat protection mechanism, a conservation easement, deed restriction, or a similar habitat protection mechanism shall be recorded over any Project avoidance areas that support special-status plant species. The habitat protection mechanism shall be accompanied by a long-term management plan that requires that the preserve area be managed in a fashion

that ensures long-term viability of the plant species that the preserve was established to protect. The habitat protection mechanism shall be accompanied by a funding mechanism (e.g., an endowment or other funding source) that ensures funds will be available for management of the preserve in perpetuity.

7.4 Crotch Bumble Bee

Crotch bumble bee could utilize the impact area for foraging or nesting. Crotch bumble bee was designated as a candidate for listing under the CESA in 2019, but no decision on listing has been published. If, at the time of project implementation, the species is not a CESA candidate or CESA listed, and it does not fall into any of the other special-status categories defined in **Section 3.0**, then it would not qualify for protections under CEQA and no mitigation is necessary.

Because Crotch bumble bee is a candidate species, appropriate mitigation measures are still being developed and refined. The following measures have been developed based on current literature and research and CDFW's *Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species* (CDFW 2023). If at a later date a different mitigation measure is determined to be more appropriate, that can be submitted to the City at that time for review and approval.

- Initial ground-disturbing work (e.g., grading, vegetation removal, staging) shall take place between 1 September and 31 March (i.e., outside the colony active period), if feasible, to avoid impacts on Crotch bumble bee.
- If completing all initial ground-disturbing work between 1 September and 31 March is not feasible, then a senior biologist with 10 or more years of experience conducting biological resource surveys within California shall conduct a pre-construction survey for Crotch bumble bee in the area proposed for impact no more than 14 days prior to the commencement of construction activities. The survey shall occur during the period from one hour after sunrise to two hours before sunset, with temperatures between 65° F and 90° Fahrenheit, with low wind and no rain. If the timing of the start of construction makes the survey infeasible due to the temperature requirements, the surveying biologist shall select the most appropriate days based on the National Weather Service seven-day forecast, and shall survey at a time of day that is closest to the temperature range stated above. The survey duration shall be commensurate with the extent of suitable floral resources (which represent foraging habitat) present within the area proposed for impact and the level of effort shall be based on the metric of a minimum of one person-hour of searching per three acres of suitable floral resources/foraging habitat. A meandering pedestrian survey shall be conducted throughout the area proposed for impact in order to identify patches of suitable floral resources. Suitable floral resources for Crotch bumble bee include species in the following families: Apocynaceae, Asteraceae, Boraginaceae, Fabaceae, and Lamiaceae.
- At a minimum, pre-construction survey methods shall include the following:
    - Search areas with floral resources for foraging bumble bees. Observed foraging activity may indicate a nest is nearby, and therefore, the survey duration shall be increased when foraging bumble bees are present.

- If bumble bees are observed, attempt to photograph the individual and identify it to species.
- If Crotch bumble bees are observed, watch the individuals and observe their flight patterns. Attempt to track their movements between foraging areas and the nest.
- Visually look for nest entrances. Observe burrows, any other underground cavities, logs, or other possible nesting habitat.
- If floral resources or other vegetation preclude observance of the nest, small areas of vegetation may be removed via hand removal, line trimming, or mowing to a height of no less than 4 inches to assist with locating the nest.
- Look for concentrated special-status bumble bee activity.
- Listen for the humming of a nest colony.

- The biologist conducting the survey shall record when the survey was conducted, a general description of any suitable foraging habitat/floral resources present, a description of observed bumble bee activity, a list of bumble bee species observed, a description of any vegetation removed to facilitate the survey, and their determination of if survey observations suggest a special-status bumble bee nest(s) may be present or if construction activities could otherwise harm special-status bumble bees. The report shall be submitted to the City prior to the commencement of construction activities.
- If no bumble bees are located during the pre-construction survey or the bumble bees located are definitively identified as common (i.e., not special-status) species, then no further mitigation or coordination with the City and/or CDFW is required.
- If any sign(s) of a bumble bee nest is observed, and/or if it cannot be established the species present is not a special-status bumble bee, then construction shall not commence until either 1) the bumble bees present are positively identification as common (i.e., not special status) by an experienced bumble bee taxonomist, or 2) the completion of coordination with CDFW to identify appropriate mitigation measures, which may include but not be limited to waiting until the colony active season ends; establishment of nest buffers; or obtaining an Incidental Take Permit (ITP) from CDFW.
- It is recommended, but not required, that the Project proponent also survey the proposed impact areas the year before construction begins in order to avoid potential last-minute delays associated with identifying special-status bumble bees on-site immediately prior to construction activities. To be most effective, this optional survey should follow the protocol outlined above.
- If, after coordination with CDFW, impacts to Crotch bumble bee cannot be avoided, the Project proponent shall obtain an ITP from CDFW prior to the City's approval of permits authorizing construction, and the Project proponent shall implement all conditions identified in the ITP. Mitigation required by the ITP may include but will not be limited to, the Project proponent translocating nesting substrate in accordance with the latest scientific research to another suitable location (i.e., a location that supports similar or better floral resources as the impact area), enhancing floral resources on areas of the Project site that will remain appropriate habitat, worker awareness training, and/or other measures specified by CDFW.

In addition to these measures, mitigation for the loss of Swainson's hawk foraging habitat would compensate for the loss of annual brome grassland that may be utilized by Crotch bumble bee.

7.5 Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp

The Project would result in the loss of 0.95 acre of potential vernal pool fairy shrimp and vernal pool tadpole shrimp habitat. Because surveys for these species have not been conducted, it is assumed that the species are present on-site. Because both species are federally listed, the Project will require consultation with the USFWS under FESA. If the USACE determines that the vernal pools that will be filled are waters of the U.S., then the FESA consultation will be conducted as part of the USACE permitting process under FESA Section 7. If the USACE determines that the vernal pools are not waters of the U.S., then the Project proponent will consult with the USFWS under FESA Section 10. Regardless of the consultation method, it is expected that the USFWS will assign measures to avoid, minimize, and mitigate impacts to vernal pool fairy shrimp and vernal pool tadpole shrimp and will require compensatory mitigation. As such, we recommend the following measures:

- The Project proponent shall prepare a Biological Assessment, which will include details on potential impacts to and mitigation for impacts to vernal pool fairy shrimp and vernal pool tadpole shrimp, to be submitted to the USACE and/or USFWS.
- The Project proponent shall abide by mitigation measures developed during the course of the FESA consultation. Additional measures could include preservation, restoration, or enhancement of habitat on- or off-site, purchase of habitat credits from a USFWS-approved mitigation/conservation bank, working with a local land trust to preserve land, or any other method acceptable to USFWS.
- The Project proponent shall ensure that vernal pools and seasonal wetlands that will not be filled are protected during construction by installing exclusion fencing at the edge of the permitted impact area. No construction-related activity may take place in the exclusion area, and exclusion fencing shall be designed to prevent the discharge of storm water runoff from the impact area into the exclusion zone. Exclusion fencing shall be inspected by the project biologist or a trained on-site monitor at least weekly and immediately before and after storm events. Any breaches to the exclusion fencing shall be reported to the project biologist and repaired promptly. The exclusion fencing shall remain in place until all ground-disturbing construction activity is completed.

7.6 Western Spadefoot

We recommend the following measures to avoid and minimize impacts to western spadefoot:

- Prior to construction, the Project proponent shall survey all suitable aquatic habitat on the Project site (including features proposed for avoidance) by sampling the features thoroughly with dipnets during March or early April, when spadefoot tadpoles would be present. In addition, one nocturnal acoustic survey of all areas within 300 feet of suitable aquatic habitat will be conducted. Acoustic surveys consist of walking through the area and listening for the distinctive snore-like call of this species. Timing and methodology for the aquatic and acoustic

surveys shall be based on those described in *Distribution of the Western Spadefoot* (Spea hammondii) *in the Northern Sacramento Valley of California, with Comments on Status and Survey Methodology* (Shedd 2017). If both the aquatic survey and the nocturnal acoustic survey are negative, no further mitigation is necessary.

- If western spadefoot is identified within the survey area and the species is not a federally-listed species or candidate species at the time of construction, the following mitigation measure will be implemented:
  - Western spadefoot tadpoles (as many as are reasonably possible to capture) shall be captured and relocated by a CDFW-approved biologist either to on-site avoided and fenced aquatic habitat, or to an off-site open space preserve with suitable habitat in the vicinity of the Study Area. If western spadefoot is observed within aquatic habitat proposed for avoidance, then the Project proponent may either (1) have a CDFW-approved biologist relocate the tadpoles to an off-site open space preserve with suitable habitat in the vicinity of the Study Area, or (2) install silt fencing along the edge of the proposed impact area within 300 feet of the occupied aquatic habitat to prevent metamorphosed individuals from dispersing into the construction area. Note that CDFW may require the biologist to have a Scientific Collecting Permit that allows handling of western spadefoot prior to approval.
- If western spadefoot is identified within the survey area and the species is a federally-listed species or a candidate for listing at the time of construction, the following mitigation measure will be implemented:
  - The Project proponent shall consult with the USFWS regarding impacts to western spadefoot associated with the proposed Project. The Project proponent shall obtain and comply with any conditions of the appropriate take authorization from the USFWS The conditions in this take authorization may include, but will not be limited to fencing off avoided habitat, worker awareness trainings, preservation, restoration, or enhancement of habitat on- or off-site to compensate for indirect and/or direct effects; purchase of habitat credits from an agency-approved mitigation/conservation bank; working with a local land trust to preserve land; or any other method acceptable to USFWS.

7.7 Northwestern Pond Turtle

To minimize potential impacts to northwestern pond turtle, we recommend the following measures:

- If construction would affect inundated portions of the detention basin during the active season of northwestern pond turtle (generally April to September), the Project proponent shall conduct a northwestern pond turtle survey to determine whether this species is utilizing inundated portions of the detention basin. The survey shall be conducted consistent with visual encounter survey guidance provided in Chapter 4 of *Western Pond Turtle: Biology, Sampling Techniques, Inventory and Monitoring, Conservation, and Management* (Bury et al. 2012). If no northwestern pond turtles are observed utilizing the aquatic habitat, no further mitigation is necessary.
- If northwestern pond turtles are observed utilizing the inundated portions of the detention basin inside the work area and the species is not a federally-listed species or candidate species at the time of construction, the following measures shall be implemented:

- Project work should be implemented during the turtles' active season (generally April through September).
- Prior to dewatering of the work area, a qualified biologist shall prepare a northwestern pond turtle avoidance and management plan for review and approval by the City. The plan will include requirements for monitoring during the dewatering process to ensure no turtles are harmed; turtle capture and relocation; exclusion fencing to prevent turtle movement into the work area following dewatering; and encounter protocol should northwestern pond turtles move into the work area following dewatering.

- If northwestern pond turtles are observed utilizing inundated portions of the basin adjacent to but outside of the work area and the species is not a federally-listed species or candidate species at the time of construction, the following measures shall be implemented:
  - The Project proponent shall install exclusion fencing to prevent turtles from moving into the active construction area. The fencing shall be inspected and repaired, if necessary, at least weekly. The fencing may be removed following the completion of construction.
  - After the exclusion fencing is installed, a northwestern pond turtle survey shall be conducted no more than 24 hours prior to construction in areas within 325 feet of the limits of inundated areas of the detention basin. If no northwestern pond turtles are found, no further mitigation is necessary. If a northwestern pond turtle is observed within the proposed impact area, a qualified biologist shall relocate the individual to suitable habitat outside of the proposed impact area prior to construction.
  - If northwestern pond turtles move into the work area at any time, work shall cease, and the Project biologist shall be notified. A qualified biologist shall relocate the individual to suitable habitat outside of the impact area.
- If northwestern pond turtles are observed utilizing inundated portions of the basin that are adjacent to but outside of the work area and the species is a federally-listed species or a candidate for listing at the time of construction, the following mitigation measure shall be implemented:
  - The Project proponent shall consult with the USFWS regarding impacts to northwestern pond turtle associated with the proposed Project. The Project proponent shall obtain and comply with any conditions of the appropriate take authorization from the USFWS The conditions in this take authorization may include, but will not be limited to fencing off avoided habitat, worker awareness trainings, preservation, restoration, or enhancement of habitat on- or off-site to compensate for indirect and/or direct effects; purchase of habitat credits from an agency-approved mitigation/conservation bank; working with a local land trust to preserve land; or any other method acceptable to USFWS.

7.8 Nesting Raptors and Other Birds

We recommend the following measures to avoid and minimize potential impacts to nesting raptors and other birds protected by the MBTA and/or state and federal regulations.

- If ground disturbance or other construction activities are proposed during the bird nesting season (February 1 – August 31), a focused survey for nesting raptors and migratory bird nests shall be conducted by a qualified biologist within 14 days prior to the beginning of construction activities in order to identify active nests. This survey shall be conducted within the proposed construction area and all accessible areas within the following buffer areas:
  - 0.25 mile for tree-nesting raptors
  - 500 feet for all other species
- Pre-construction (take avoidance) burrowing owl surveys of suitable habitat will be conducted consistent with the CDFW *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). Non-breeding season protocol will be used for surveys conducted between September 1 and January 31 and breeding season protocol will be used for surveys conducted between February 1 and August 31.
- If no active nests are found, no further mitigation is required. Surveys must be repeated if a lapse in construction activity exceeds 14 days and construction resumes during the nesting season.
- If active nests are found:
  - Active raptor nests: no construction activities shall take place within 0.25-mile for Swainson's hawk or within 500 feet of other raptor nest(s). The buffer(s) may be removed once the young have fledged and/or are no longer dependent on the nest;
  - Occupied burrowing owl burrows: no construction activities shall take place within 250 feet of occupied burrows, and a no-disturbance buffer shall be marked on-site. The buffer may be removed once the young have fledged and/or are no longer dependent on the nest;
  - Active tricolored blackbird nests: no construction activities shall take place within 500 feet of nesting colonies, and a no-disturbance buffer shall be marked on-site. The Project proponent shall coordinate with the City and CDFW to identify appropriate monitoring requirements;
  - Active nests of other birds: no construction activities shall take place within 100 feet of an active nest, and the no-disturbance buffer shall be marked on-site. The buffer may be removed once the young have fledged and/or are no longer dependent on the nest.
- No-disturbance buffers for all species may be reduced based on consultation and approval by the City.
- The perimeter of protected areas on-site shall be indicated by bright orange temporary fencing. No construction activities or personnel shall enter protected areas, except with approval of the biologist. If trees containing nests or nests/burrows must be removed as a result of Project implementation, removal shall be completed during the nonbreeding season (late September to February 1) if possible, or after a qualified biologist determines that the young have fledged (during the breeding season).
- Survey results shall be provided to the City within 14 days of completion of all surveys.

7.9 Worker Environmental Awareness Training

We recommend the following measure to ensure that construction crews understand potential biological resource concerns and the need for awareness during construction.

Prior to any ground-disturbing or vegetation-removal activities, a Worker Environmental Awareness Training (WEAT) shall be prepared and administered to the construction crews. The WEAT will address the state and federal Endangered Species Act; the Clean Water Act and/or Porter-Cologne; the Project's permits and CEQA documentation and associated mitigation measures; consequences and penalties for violation or noncompliance with applicable laws and regulations; identification of special-status wildlife; location of any avoided resources; hazardous substance spill prevention and containment measures; and the contact person in the event of the discovery of a special-status species. The WEAT will also discuss the different habitats used by the species' different life stages and the annual timing of these life stages. A handout summarizing the WEAT information shall be provided to workers to keep on-site for future reference. Upon completion of the WEAT training, workers will sign a form stating that they attended the training, understand the information presented and will comply with the regulations discussed. Workers will be shown designated avoidance areas during the WEAT training; worker access should be restricted to outside of those areas to minimize the potential for inadvertent environmental impacts. If not already required, fencing and signage around the boundary of avoidance areas may be helpful.

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Figures

Figure 1. Site and Vicinity

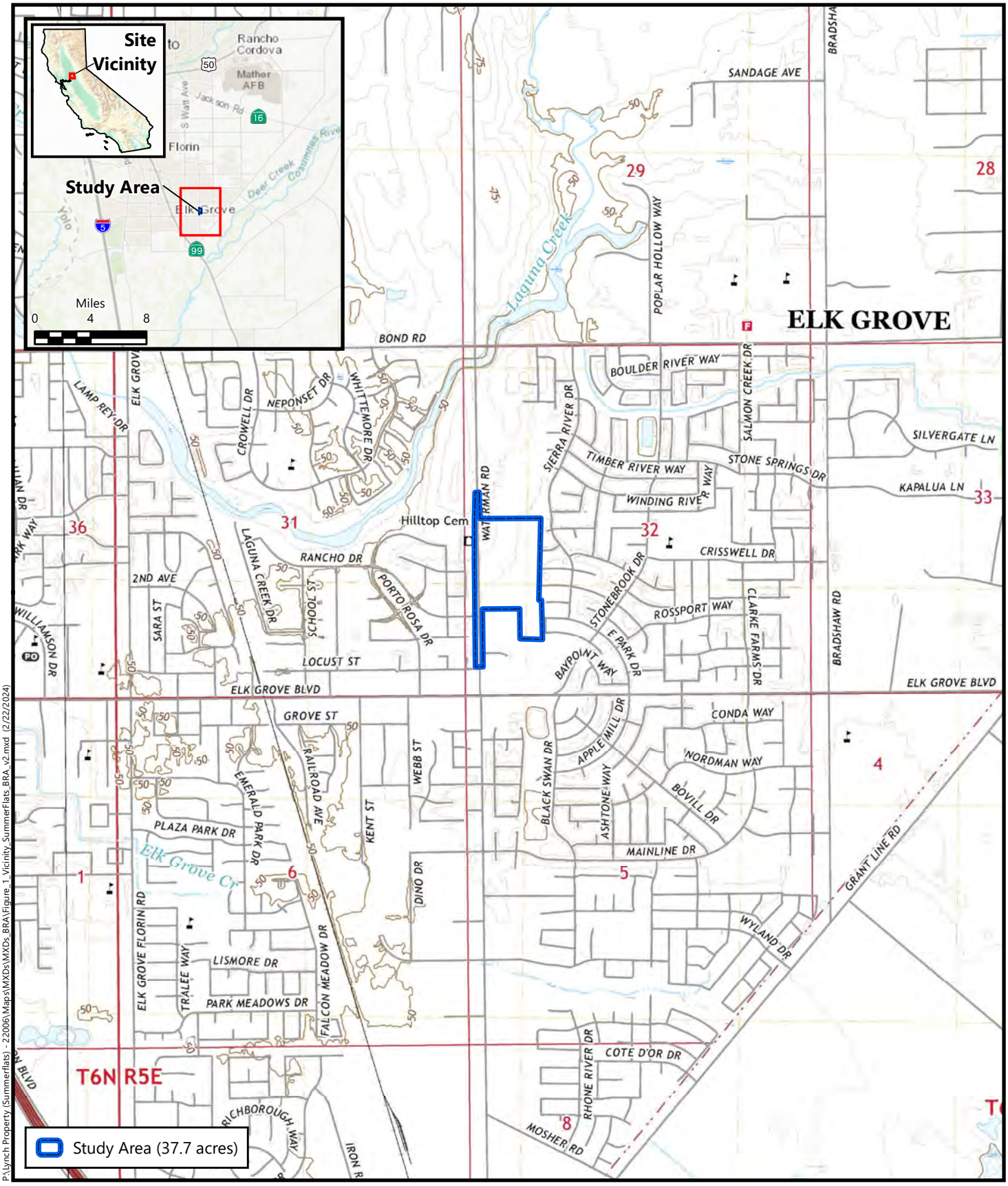
Figure 2. California Natural Diversity Database Occurrences of Plant Species

Figure 3. California Natural Diversity Database Occurrences of Wildlife Species and Critical Habitat

Figure 4. Terrestrial Land Cover and Aquatic Resources in the Study Area

Figure 5. Natural Resources Conservation Service Soils

Figure 6. Terrestrial Land Cover and Aquatic Resources Impacts



Source: United States Geologic Survey, 2022
"Elk Grove, California" 7.5-Minute Topographic Quadrangle
Section 32, Township 7 North, Range 6 East, MDBM
Latitude (NAD83): 38.414096°, Longitude (NAD83): -121.351594°

Figure 1
Site and Vicinity

Summer Flats
Elk Grove, Sacramento County, California

MADRONE ECOLOGICAL CONSULTING

Study Area (37.7 acres)
5 Mile Radius

CNDDB Plant Occurrences

1 - Boggs Lake Hedge-Hyssop
2 - Dwarf Downingia
3 - Legenere
4 - Peruvian Dodder
5 - Sanford's Arrowhead
6 - Slender Orcutt Grass

N

Miles
0
1.5

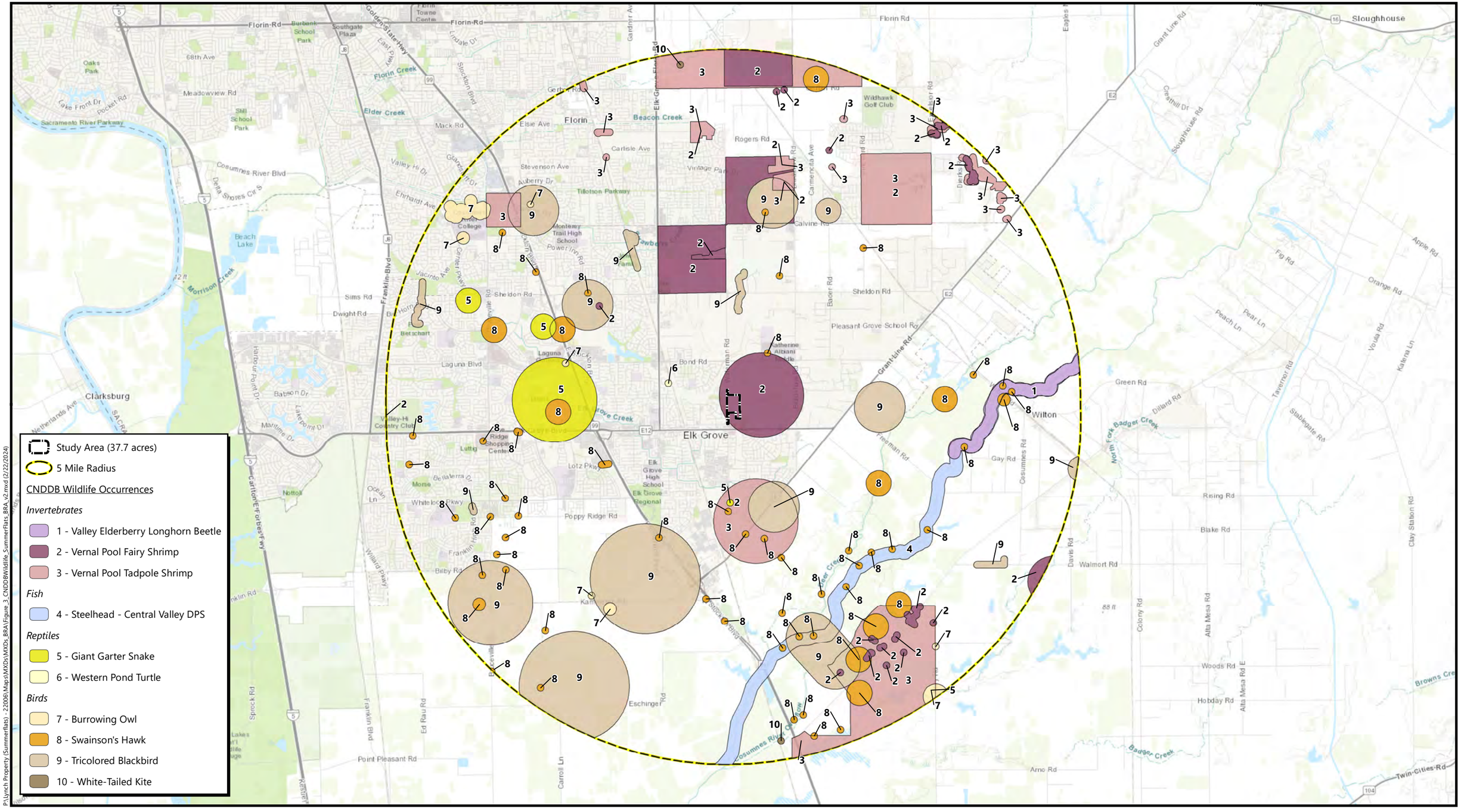
Source: *California Department of Fish and Wildlife*, February 2024
Basemap Source: *ESRI World Topography*

Figure 2
California Natural Diversity Database Occurrences of Plant Species

Summer Flats
Elk Grove, Sacramento County, California

MADRONE ECOLOGICAL CONSULTING

P:\Lynch Property (Summerflats) - 22006\Maps\MXDs\MXDs_BRA\Figure_2_CNDDBPlants_SummerFlats_BRA_v2.mxd (2/22/2024)


Study Area (37.7 acres)
5 Mile Radius
CNDDB Wildlife Occurrences
Invertebrates
1 - Valley Elderberry Longhorn Beetle
2 - Vernal Pool Fairy Shrimp
3 - Vernal Pool Tadpole Shrimp
Fish
4 - Steelhead - Central Valley DPS
Reptiles
5 - Giant Garter Snake
6 - Western Pond Turtle
Birds
7 - Burrowing Owl
8 - Swainson's Hawk
9 - Tricolored Blackbird
10 - White-Tailed Kite
Florin
Elk Grove
Sloughhouse
Wilton
Clarksburg
Florin Rd
Laguna Blvd
Sheldon Rd
Bond Rd
Grant Line Rd
Pleasant Grove School Rd
Gay Rd
Green Rd
Rogers Rd
Calvine Rd
Mack Rd
Meadowview Rd
Cosumnes River Blvd
Dwight Rd
Sims Rd
Point Pleasant Rd
Arno Rd
Walmort Rd
Hobday Rd
Woods Rd
Rising Rd
Blake Rd
Florin Creek
Elder Creek
Beacon Creek
Morrison Creek
Cosumnes River
Badger Creek
Franklin Blvd
Elk Grove-Florin Rd
Bruceville Rd
Waterman Rd
Baker Rd
Freeman Rd
Cosumnes Rd
Davis Rd
Colony Rd
Alta Mesa Rd
Alta Mesa Rd E
Twin-Cities-Rd
Florin-Rd
Sacramento River Parkway
Delta Shores Cir S
Tillotson Parkway
Power Inn Rd
Valley Hi Dr
Stevenson Ave
Carlisle Ave
Elsie Ave
Gerber Rd
Jacinto Ave
Betschart
Laguna
Lutteg
Lotz Pkwy
Poppy Ridge Rd
Bilby Rd
Eschinger Rd
Ed Rau Rd
Carroll Ln
Spicer Rd
Willard Pkwy
Harbour Point Dr
Lakepoint Dr
Maritime Dr
Babson Dr
Netherlands Ave
Morse
Bellaterra Dr
Whitelock Pkwy
Ocean Ln
Notton
Carlton Flat Rd
Fig Rd
Orange Rd
Apple Rd
Peach Ln
Pear Ln
Voulta Rd
Katena Ln
Taverner Rd
Stablegate Rd
Clay Station Rd
Browns Cre
Wildhawk Golf Club
Vintage Park
Elk Grove Regional
Elk Grove High School
Monterey Trail High School
Cosumnes River College
Harriet Albiani Middle
Florin Towne Centre
Southgate Plaza
Burbank School Park
Oaks Park
Still School Park
Beach Lake
Lake Front Dr
Pocket Rd
68th Ave
Golden State Hwy
Stockton Blvd
Gardner Ave
Lindale Dr
Eagles Nest Rd
Grant Line Rd
Creekhill Dr
Sloughhouse Rd
Dante Rd
Carmencita Ave
Country Dr
Auberry Dr
Ehrhardt Ave
Valley Hi Dr
Gerber Creek
Power Inn Rd
Jacinto Ave
Center Pkwy
Sheldon Rd
Bruceville Rd
Waterman Rd
Laguna Creek
Elk Grove Creek
Cosumnes River
North Fork Badger Creek
Badger Creek
Stockton Blvd
Franklin Blvd
Bilby Rd
Poppy Ridge Rd
Lotz Pkwy
Eschinger Rd
Point Pleasant Rd
Arno Rd

P:\Lynch Property (Summerflats) - 22006\Maps\MXDs\MXDs_BRA\Figure_4_LandCover_SummerFlats_BRA_v2.mxd (5/15/2025)

Figure 4
Terrestrial Land Cover and Aquatic Resources in the Study Area

Summer Flats
Elk Grove, Sacramento County, California

** Small summation errors may occur due to rounding*

Boundary Source: Wood Rodgers
Aerial Source: Maxar, 26 April 2022

P:\Lynch Property (Summerflats) - 22006\Maps\MXDs\MXDs_BRA\Figure_5_NRCS_SummerFlats_BRA_v2.mxd (2/22/2024)

N

Feet

0 200

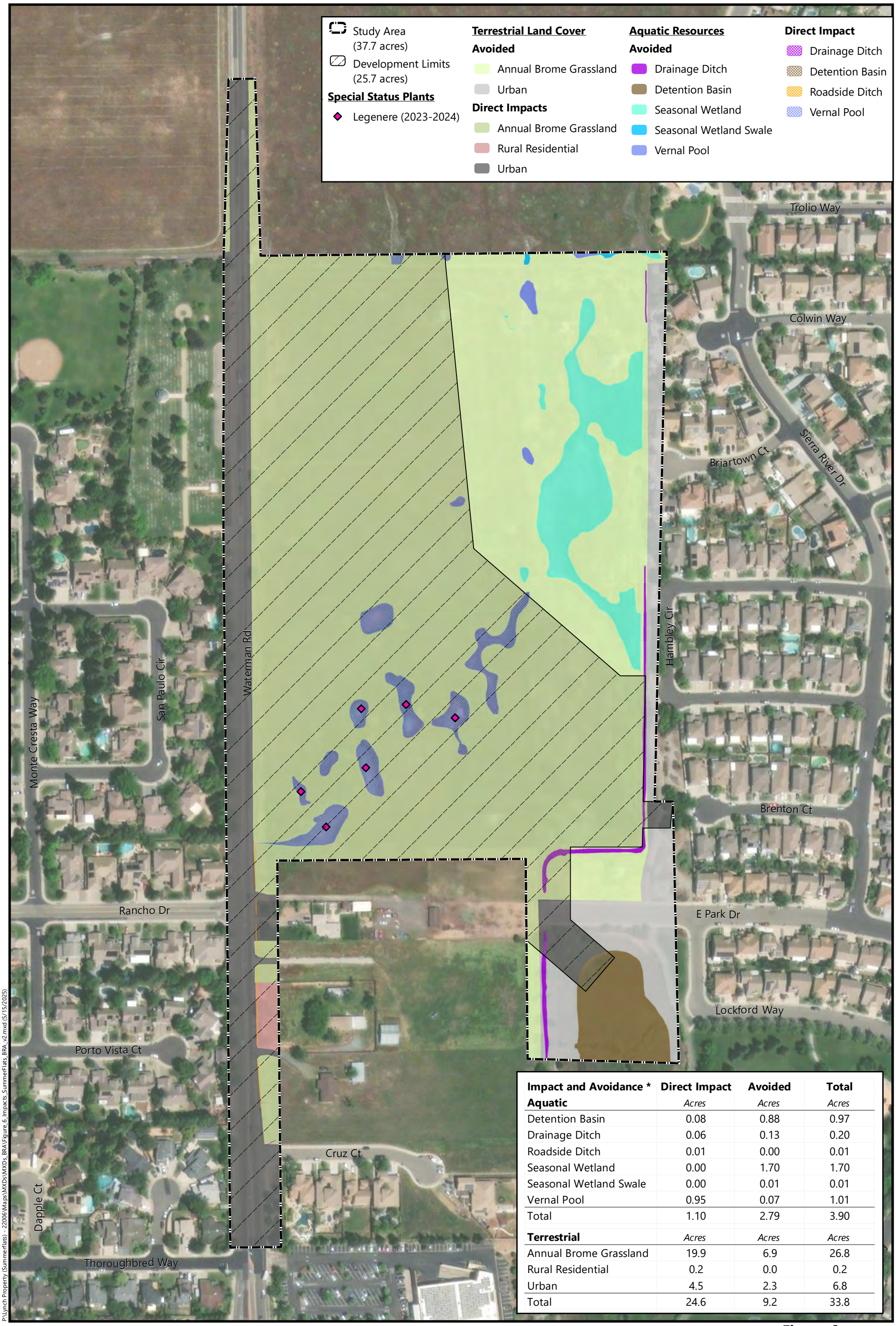
Soil Survey Source: *USDA, Natural Resources Conservation Service Soil Survey Geographic (SSURGO) database for Sacramento County, California*

Aerial Source: Maxar, 26 April 2022

Figure 5
Natural Resources Conservation Service Soils

Summer Flats
Elk Grove, Sacramento County, California

MADRONE ECOLOGICAL CONSULTING



Impact and Avoidance *	Direct Impact	Avoided	Total
Aquatic	*Acres*	*Acres*	*Acres*
Detention Basin	0.08	0.88	0.97
Drainage Ditch	0.06	0.13	0.20
Roadside Ditch	0.01	0.00	0.01
Seasonal Wetland	0.00	1.70	1.70
Seasonal Wetland Swale	0.00	0.01	0.01
Vernal Pool	0.95	0.07	1.01
Total	1.10	2.79	3.90
Terrestrial	*Acres*	*Acres*	*Acres*
Annual Brome Grassland	19.9	6.9	26.8
Rural Residential	0.2	0.0	0.2
Urban	4.5	2.3	6.8
Total	24.6	9.2	33.8

N

Feet
0 200

** Small summation errors may occur due to rounding*

Boundary Source: Wood Rodgers
Aerial Source: Maxar, 26 April 2022

P:\Lynch Property (Summerflats) - 22006\Maps\MXDs\MXDs_BRA\Figure_6_Impacts_SummerFlats_BRA_v2.mxd (5/15/2025)

Figure 6
Terrestrial Land Cover and Aquatic Resources Impacts

Summer Flats
Elk Grove, Sacramento County, California

MADRONE ECOLOGICAL CONSULTING

Attachments

Attachment A. Preliminary Tentative Subdivision Map, Summer Flats at Waterman Road

Attachment B. IPaC Trust Resource Report for the Study Area

Attachment C. CNPS Inventory of Rare and Endangered Plants Query for the "Elk Grove, California" USGS Quadrangle and Eight Surrounding Quadrangles

Attachment D. Wildlife List

Attachment E. Special-Status Plant Survey Report

Attachment F. Preliminary Jurisdictional Determination and Aquatic Resource Delineation Map

Attachment A

Preliminary Tentative Subdivision Map,
Summer Flats at Waterman Road

TENTATIVE SUBDIVISION MAP

SUMMER FLATS AT WATERMAN ROAD

CITY OF ELK GROVE, CALIFORNIA

JANUARY 31, 2024

PROJECT NOTES

APPLICANT/OWNER
SHELDON BUSINESS PARK LTD.
9501 SHELDON ROAD
ELK GROVE, CA 95642
CONTACT: GYAN KALWANI
PHONE: (916) 997-7873

PLANNER/ENGINEER
WOOD RODGERS INC.
3301 'C' STREET, BLDG. 100B
SACRAMENTO, CA 95816
CONTACT: TIM DENHAM
PHONE: (916) 341-7760

ASSESSOR'S PARCEL NO.
127-0150-001, -002, -009

AREA
27.6± ACRES GROSS

NUMBER OF LOTS

120	SINGLE-FAMILY RESIDENTIAL LOTS
1	WATER QUALITY/DETENTION BASIN
1	OPEN SPACE LOT
10	LANDSCAPE LOTS
132	TOTAL LOTS

EXISTING USE
VACANT

PROPOSED USE
SEE LAND USE SUMMARY

EXISTING ZONING
RD-4, O

PROPOSED ZONING
RD-12, O

PARK DISTRICT
COSUMNES CSD

FIRE PROTECTION
COSUMNES CSD

SCHOOL DISTRICT
ELK GROVE UNIFIED SCHOOL DISTRICT

SEWER
CITY OF ELK GROVE

STORM DRAIN
CITY OF ELK GROVE

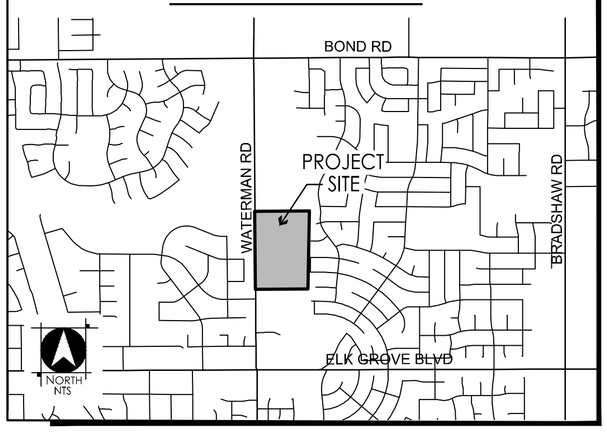
WATER
ELK GROVE WATER SERVICE RETAIL/SWCA

ELECTRICITY
SMUD

GAS
PG&E

NOTES
1. SUBDIVIDER RESERVES THE RIGHT TO FILE MULTIPLE FINAL MAPS PURSUANT TO SECTION 66456.1 OF THE SUBDIVISION MAP ACT.
2. OWNER SHALL DEDICATE ALL EASEMENTS AND I.O.D.'S NECESSARY TO PROVIDE ALL UTILITIES.
3. THIS IS AN APPLICATION FOR A DEVELOPMENT PERMIT.
4. THIS EXHIBIT IS FOR TENTATIVE SUBDIVISION MAP PURPOSES ONLY. ALL SITE CHARACTERISTICS TO BE VERIFIED PRIOR TO FINAL MAP.
5. THE AERIAL TOPOGRAPHY SHOWN HEREON WAS PRODUCED BY WOOD RODGERS IN 2022.
6. TITLE INFORMATION SHOWN PER PRELIMINARY TITLE REPORT PREPARED BY FIDELITY NATIONAL TITLE COMPANY AND DATED MARCH 21, 2023.

VICINITY MAP



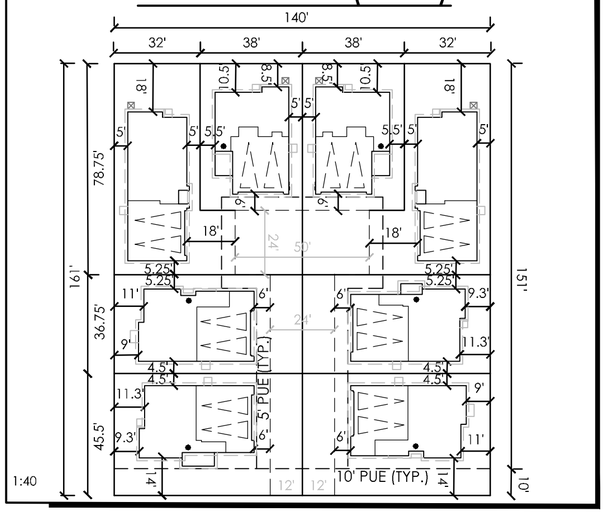
SURVEYOR'S STATEMENT

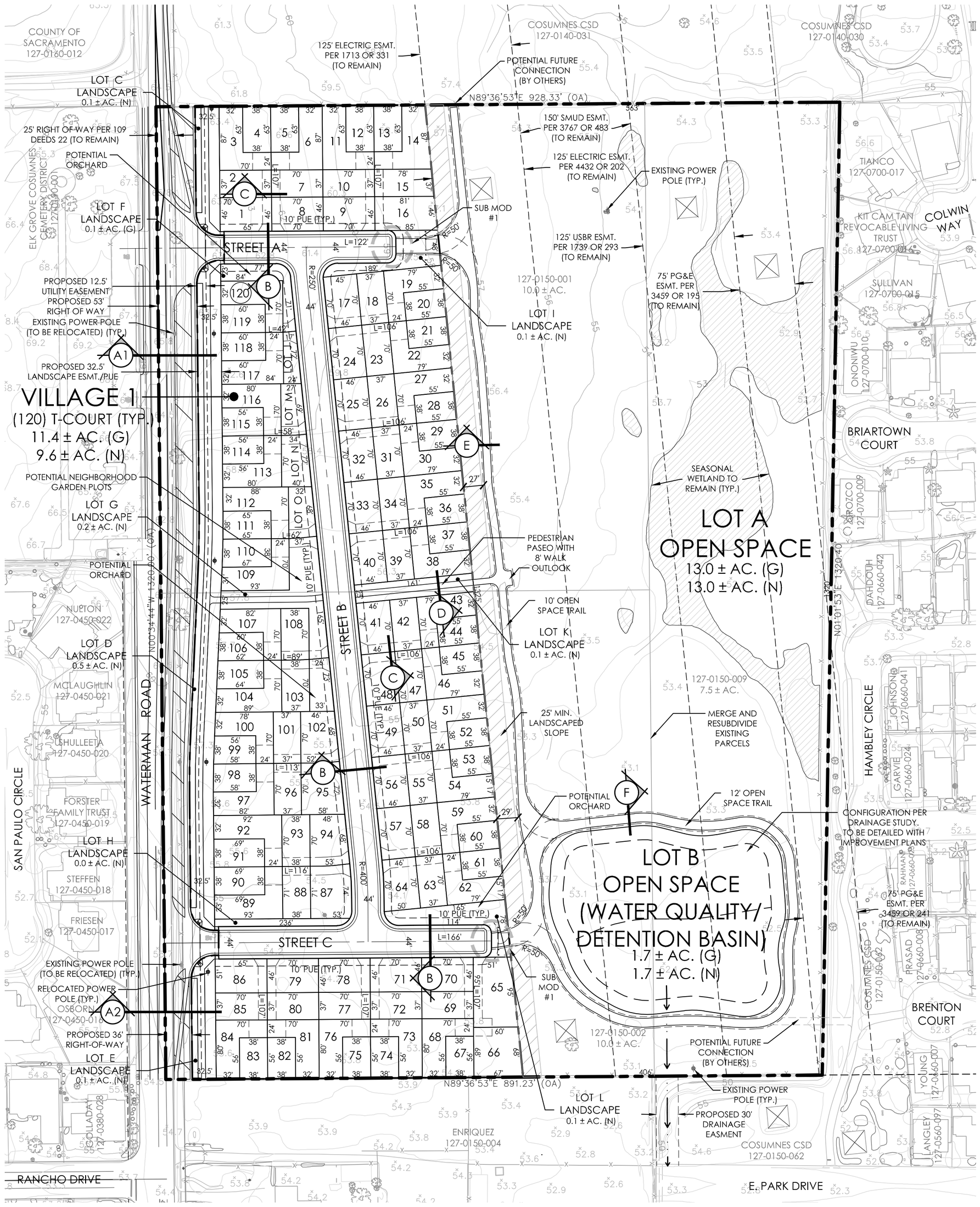
I HEREBY STATE THAT ALL EASEMENTS OF RECORD ARE SHOWN AND LABELED PER THE PRELIMINARY TITLE REPORT BY FIDELITY NATIONAL TITLE COMPANY, TITLE ORDER NUMBER FSSE–1072300331–RV DATED MARCH 21, 2023.

PROFESSIONAL LAND SURVEYOR · DENNIS L. BARBER · No. 8067 · STATE OF CALIFORNIA

DENNIS L. BARBER, P.L.S. 8067

PLOT PLAN (TYP.)





LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN IS SITUATED IN THE CITY OF ELK GROVE, COUNTY OF SACRAMENTO, STATE OF CALIFORNIA AND IS DESCRIBED AS FOLLOWS:

PARCEL NO. 1 (APN 127-0150-001): THE NORTH ONE-QUARTER OF THE WEST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER OF SECTION 32, TOWNSHIP 7 NORTH, RANGE 6 EAST, MOUNT DIABLO BASE AND MERIDIAN.

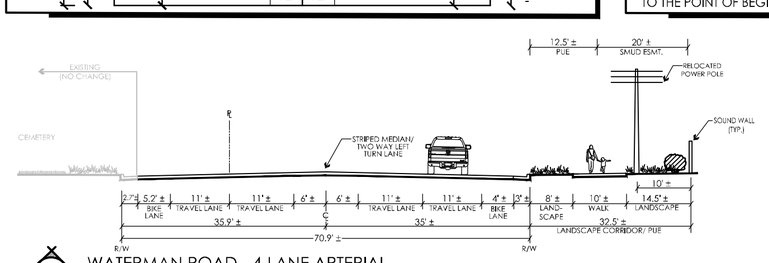
PARCEL NO. 2 (APN 127-0150-002): THE NORTH 660 FEET OF THE SOUTH THREE-QUARTERS OF THE WEST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER SECTION 32, TOWNSHIP 7 NORTH, RANGE 6 EAST, MOUNT DIABLO BASE AND MERIDIAN.

PARCEL NO. 3 (APN 127-0150-009): ALL THAT PORTION OF THE EAST ½ OF THE WEST ½ OF THE SOUTHWEST ¼ OF SECTION 32, TOWNSHIP 7 NORTH, RANGE 6 EAST, MOUNT DIABLO BASE AND MERIDIAN, DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTHWEST CORNER OF THE EAST ½ OF THE WEST ½ OF THE SOUTWEST ¼ OF SAID SECTION 32, THENCE ALONG THE WEST LINE THEREOF, SOUTH 1,320 FET; THENCE PARALLEL TO THE QUARTER SECTION LINE EAST 228 FEET; THENCE NORTHEASTERLY TO A POINT ON THE QUARTER SECTION LINE LOCATED EAST 265 FEET FROM THE POINT OF BEGINNING; THENCE WEST 265 FEET TO THE POINT OF BEGINNING.

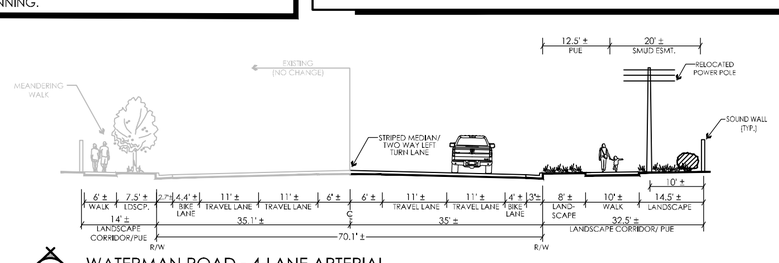
LAND USE SUMMARY

LOT NO./VILLAGE NO.	GENERAL PLAN/ SPECIFIC PLAN/ ZONING DESIGNATIONS	USE	ACRES (G)	ACRES (N)	GROSS DENSITY	UNITS
VILLAGE 1	LDR/RD-12	S-F RESIDENTIAL (T-COURT)	11.4 ±	9.6 ±	10.5	120
SUBTOTAL			**11.4 ±**	**9.6 ±**	**10.5**	**120**
LOT A	OS/O	OPEN SPACE	13.0 ±	13.0 ±		
LOT B	OS/O	WATER QUALITY/DETENTION BASIN	1.7 ±	1.7 ±		
LOT C-E	VARIES	LANDSCAPE CORRIDOR	-	0.9 ±		
LOT F-O	VARIES	LANDSCAPE LOT	-	0.9 ±		
MAJOR RIGHT-OF-WAY (WATERMAN ROAD)	-	-	1.5 ±	1.5 ±		
SUBTOTAL			**16.2 ±**	**18.0 ±**		
TOTAL			**27.6 ± AC.**	**27.6 ± AC.**		**120 DU**

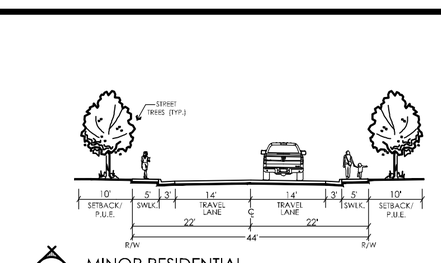
NOTES:
1. LANDSCAPE CORRIDORS ARE INCLUDED IN GROSS ACREAGE OF APPLICABLE LOT/VILLAGE.
2. NET ACREAGES EXCLUDE LANDSCAPE LOTS.



A1 WATERMAN ROAD - 4-LANE ARTERIAL
71' ± STREET SECTION
NTS



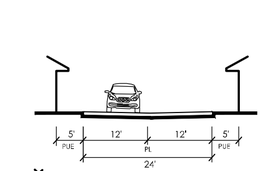
A2 WATERMAN ROAD - 4-LANE ARTERIAL
70' ± STREET SECTION
NTS



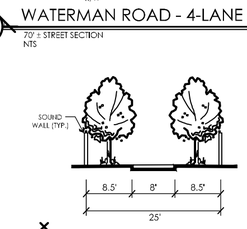
B MINOR RESIDENTIAL
44' STREET SECTION
SCALE: NTS

SUBDIVISION MODIFICATION

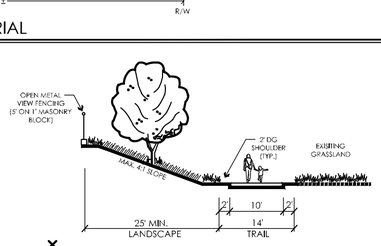
1. DEAD-END STUB STREET (2)



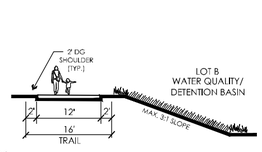
C DRIVEWAY EASEMENT
24' STREET SECTION
SCALE: NTS



D PASEO
25' SECTION
SCALE: NTS



E OPEN SPACE TRAIL
14' SECTION
SCALE: NTS



F OPEN SPACE TRAIL - ADJACENT TO LOT B
16' SECTION
SCALE: NTS

REGISTERED PROFESSIONAL ENGINEER · MICHAEL P. MOTRONI · No.73891 Exp.6/30/2025 · CIVIL · STATE OF CALIFORNIA

0 80 160 320
NORTH

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

3301 C St, Bldg. 100-B
Sacramento, CA 95816
Tel 916.341.7760
Fax 916.341.7767

J:\4000-s\4167_SummerFlats\SummerFlats OA\Planning\Exhibits\EXH-SF-TSM.dwg 1/31/2024 11:57 AM Abby Miramontes

Attachment B

IPaC Trust Resource Report
for the Study Area

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Sacramento County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Reptiles

NAME	STATUS
Giant Garter Snake *Thamnophis gigas* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4482	Threatened
Northwestern Pond Turtle *Actinemys marmorata* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

Amphibians

NAME	STATUS
California Tiger Salamander *Ambystoma californiense* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened
Western Spadefoot *Spea hammondii* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5425	Proposed Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi* Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS

NOT FOR CONSULTATION

Sacramento Orcutt Grass Orcuttia viscida — Endangered
Wherever found
There is final critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/5507

Slender Orcutt Grass Orcuttia tenuis — Threatened
Wherever found
There is final critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/1063

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (▪)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

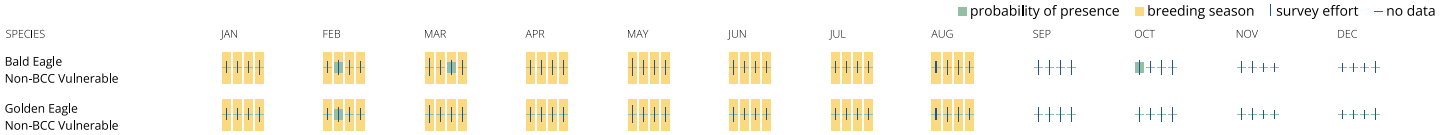
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

NOT FOR CONSULTATION



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Belding's Savannah Sparrow *Passerculus sandwichensis beldingi* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Bullock's Oriole *Icterus bullockii* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
California Gull *Larus californicus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
Common Yellowthroat *Geothlypis trichas sinuosa* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Lawrence's Goldfinch *Carduelis lawrencei* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9464	Breeds Mar 20 to Sep 20
Nuttall's Woodpecker *Picoides nuttallii* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9410	Breeds Apr 1 to Jul 20

NOT FOR CONSULTATION

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Yellow-billed Magpie Pica nuttalli — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9726

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (▥)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

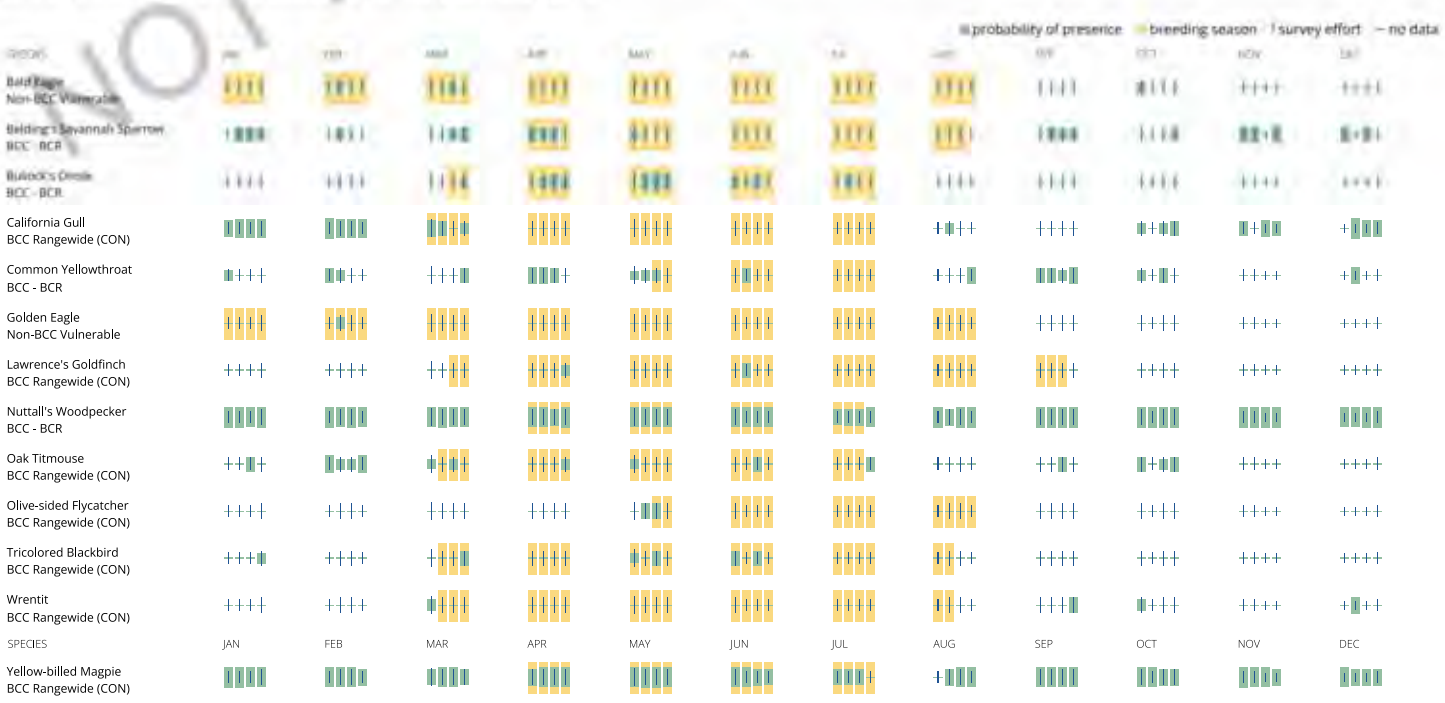
Breeding Season (–)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



NOT FOR CONSULTATION

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

NOT FOR CONSULTATION

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

This location did not intersect any wetlands mapped by NWI.

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Attachment C

CNPS Inventory of Rare and Endangered Plants Query
for the "Elk Grove, California" USGS Quadrangle
and Eight Surrounding Quadrangles

Summer Flats at Waterman Road

CNPS Rare Plant Inventory for the Elk Grove, CA 7.5' quadrangle
and eight surrouding quadrangles

Scientific Name	Common Name	Family	Lifeform	CRPR	CESA	FESA	Blooming Period	Habitat	Elevation Low (ft)	Elevation High (ft)
Brasenia schreberi	watershield	Cabombaceae	perennial rhizomatous herb (aquatic)	2B.3	None	None	Jun-Sep	Marshes and swamps (freshwater)	0	7220
Carex comosa	bristly sedge	Cyperaceae	perennial rhizomatous herb	2B.1	None	None	May-Sep	Coastal prairie, Marshes and swamps (lake margins), Valley and foothill grassland	0	2050
Cicuta maculata var. bolanderi	Bolander's water-hemlock	Apiaceae	perennial herb	2B.1	None	None	Jul-Sep	Marshes and swamps (brackish, coastal, freshwater)	0	655
Cuscuta obtusiflora var. glandulo	Peruvian dodder	Convolvulaceae	annual vine (parasitic)	2B.2	None	None	Jul-Oct	Marshes and swamps (freshwater)	50	920
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	2B.2	None	None	Mar-May	Valley and foothill grassland (mesic), Vernal pools	5	1460
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	1B.2	CE	None	Apr-Aug	Marshes and swamps (lake margins), Vernal pools	35	7790
Hibiscus lasiocarpos var. occide	woolly rose-mallow	Malvaceae	perennial rhizomatous herb (emergent)	1B.2	None	None	Jun-Sep	Marshes and swamps (freshwater)	0	395
Juncus leiospermus var. ahartii	Ahart's dwarf rush	Juncaceae	annual herb	1B.2	None	None	Mar-May	Valley and foothill grassland (mesic)	100	750
Lasthenia chrysantha	alkali-sink goldfields	Asteraceae	annual herb	1B.1	None	None	Feb-Apr	Vernal pools	0	655
Lathyrus jepsonii var. jepsonii	Delta tule pea	Fabaceae	perennial herb	1B.2	None	None	May-Jul(Aug-Sep)	Marshes and swamps (brackish, freshwater)	0	15
Legenere limosa	legenere	Campanulaceae	annual herb	1B.1	None	None	Apr-Jun	Vernal pools	5	2885
Lepidium latipes var. heckardii	Heckard's pepper-grass	Brassicaceae	annual herb	1B.2	None	None	Mar-May	Valley and foothill grassland (alkaline flats)	5	655
Lilaeopsis masonii	Mason's lilaeopsis	Apiaceae	perennial rhizomatous herb	1B.1	CR	None	Apr-Nov	Marshes and swamps (brackish, freshwater), Riparian scrub	0	35
Limosella australis	Delta mudwort	Scrophulariaceae	perennial stoloniferous herb	2B.1	None	None	May-Aug	Marshes and swamps (brackish, freshwater), Riparian scrub	0	10
Orcuttia tenuis	slender Orcutt grass	Poaceae	annual herb	1B.1	CE	FT	May-Sep(Oct)	Vernal pools	115	5775
Orcuttia viscida	Sacramento Orcutt grass	Poaceae	annual herb	1B.1	CE	FE	Apr-Jul(Sep)	Vernal pools	100	330
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	1B.2	None	None	May-Oct(Nov)	Marshes and swamps (shallow freshwater)	0	2135
Scutellaria galericulata	marsh skullcap	Lamiaceae	perennial rhizomatous herb	2B.2	None	None	Jun-Sep	Lower montane coniferous forest, Marshes and swamps, Meadows and seeps (mesic)	0	6890
Scutellaria lateriflora	side-flowering skullcap	Lamiaceae	perennial rhizomatous herb	2B.2	None	None	Jul-Sep	Marshes and swamps, Meadows and seeps (mesic)	0	1640
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	1B.2	None	None	Apr-Jun	Marshes and swamps, Valley and foothill grassland (mesic, alkaline), Vernal pools	0	985

Query date 11 October 2023

Attachment D

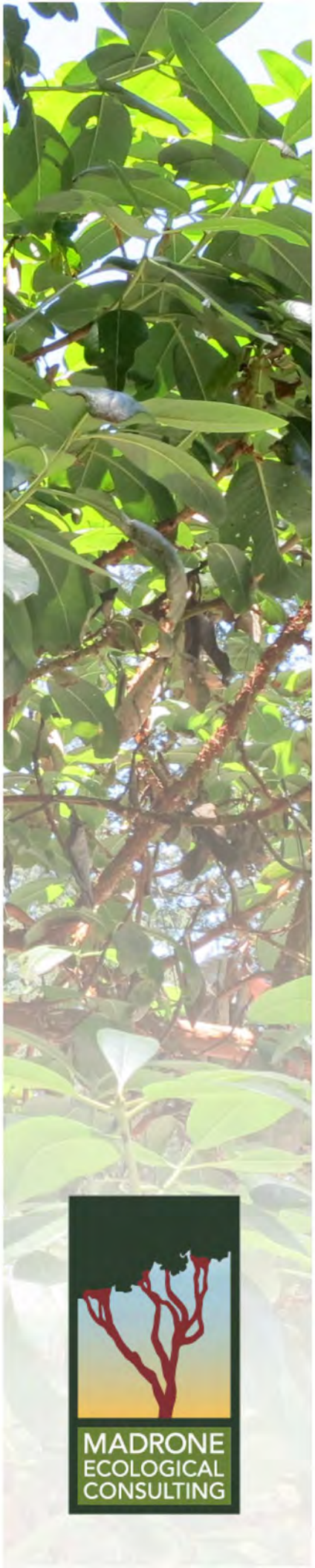
Wildlife List

Wildlife Species Observed within the
Summer Flats Study Area
9 June 2023

Species Name	**Common name**
BIRDS	
Anas platyrhynchos	Mallard
Aphelocoma californica	California scrub jay
Cathartes aura	Turkey vulture
Charadrius vociferus	Killdeer
Columba livia	Rock pigeon
Corvus brachyrhynchos	American crow
Falco sparverius	American kestrel
Mimus polyglottos	Northern mockingbird
Passer domesticus	House sparrow
Spinus tristis	American goldfinch
Sturnus vulgaris	European starling
Tachycineta bicolor	Tree swallow
Tyrannus verticalis	Western kingbird
INVERTEBRATES	
Bombus sp.	Bumble bee
Papilio rutulus	Western tiger swallowtail

Attachment E

Special-Status Plant Survey Report



Special-Status Plant Survey Report

Summerflats at Waterman Road Project

City of Elk Grove, Sacramento County

August 2024

MADRONE ECOLOGICAL CONSULTING

Prepared for:
Sheldon Business Park
8940 Elder Creek Road
Sacramento, CA 95829

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Summerflats at Waterman Road Project

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1.0 INTRODUCTION

This report presents the results of special-status plant surveys conducted for the approximately 37.7-acre Summerflats at Waterman Road Project (Study Area). The Study Area was also called the Waterman Road Property project during an aquatic resource delineation conducted for the site. The Study Area is located east of Waterman Road, and generally between Elk Grove Boulevard and Bond Road in the City of Elk Grove, Sacramento County, California. The Study Area is located in a portion of Section 32, Township 7 North, Range 6 East (MDB&M) of the "Elk Grove, California" 7.5-Minute Series USGS Topographic Quadrangle (USGS 2022) (**Figure 1**).

A special-status plant survey was conducted for a portion of the Study Area in 2023; however, heavy grazing resulted in spring vegetation removal for a portion of the site (Madrone 2023). Additionally, since the 2023 survey, the boundary for the Summerflats at Waterman Road Project expanded to include offsite infrastructure improvement areas. Therefore, the heavily grazed area and offsite areas were surveyed in 2024 to provide a complete survey of the Study Area.

2.0 METHODOLOGY

Madrone Ecological Consulting, LLC (Madrone) botanist Tara Collins conducted special-status plant surveys of the Study Area on 4 and 9 May and 9 June 2023 and 1, 9, 20 May and 21 June 2024. The special-status plant surveys were conducted in accordance with the U.S. Fish and Wildlife Service's *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (USFWS 1996), California Department of Fish and Wildlife's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018), and the *CNPS Botanical Survey Guidelines* (CNPS 2001).

A list of special-status plant species with potential to occur within the Study Area was developed by reviewing the following literature, and then refining the list based on habitats present within the Study Area:

- California Native Plant Society (CNPS) Rare and Endangered Plant Inventory (CNPS 2024a) query of CRPR Lists 1A, 1B, 2A, 2B, and 3 within the "Elk Grove, California" Topographic Quadrangle (USGS 2022) and eight surrounding quadrangles;
- the California Natural Diversity Database occurrences of special-status plant species within 5 miles of the Study Area (CNDDB 2024).

The target species for this survey were:

- Big-scale balsamroot (*Balsamorhiza macrolepis*);
- Dwarf downingia (*Downingia pusilla*);
- Boggs Lake hedge-hyssop (*Gratiola heterosepala*);
- Ahart's dwarf rush (*Juncus leiospermus var. ahartii*);
- Legenere (*Legenere limosa*);
- Pincushion navarretia (*Navarretia myersii* ssp. *myersii*);
- Slender Orcutt grass (*Orcuttia tenuis*).

- Sacramento Orcutt grass (*Orcuttia viscida*); and
- Sanford's arrowhead (*Sagittaria sanfordii*).

Meandering pedestrian surveys were conducted throughout the Study Area. The surveys were floristic in nature, which means that all plant species observed on-site were identified to the taxonomic level necessary to determine rarity. Thus, if a special-status plant was present but not on the target list, it would have been detected and documented. Plant taxonomy was based on the nomenclature in the *Jepson eFlora* (Jepson Flora Project 2024). Vegetation communities were classified according to the *Manual of California Vegetation, Second Edition* (Sawyer et al. 2009) as updated online (CNPS 2024b). Qualifications for the botanist that conducted the survey are included in **Attachment A,** a list of reference populations of target plants visited is included in **Attachment B**, and a comprehensive list of all plant species observed during surveys of the Study Area is included in **Attachment C**.

3.0 EXISTING SITE CONDITIONS

The Study Area site is characterized by generally flat to slightly rolling topography supporting annual grassland interspersed with seasonal wetlands and vernal pools. The elevation ranges from approximately 35 to 53 feet above mean sea level. The northwest corner of the Study Area, which provides site access from Waterman Road, shows signs of past grading, with a small berm and riprap piles present. A perimeter firebreak was disked along the northern boundary in 2023 and bladed along portions of the boundary in 2024, and signs of historic disking are visible along the perimeter of the Study Area and under the metal power towers. Structures within the Study Area include three lines of large metal power line towers that generally run north-south through the east half of the site. Additionally, line of wooden power poles runs north-south along Waterman Road. An old well, presumably no longer functioning as it lacks a power line, occurs near the southwest corner of the site, and a blank wooden billboard is present on the west border along Waterman Road. In 2023, approximately 15 acres of the southwest portion of the Study Area was fenced off and was heavily grazed by goats and sheep; however, in 2024, all grazing animals and associated grazing infrastructure had been removed. A planned residential community occurs along the eastern boundary of the Study Area, and some ornamental landscaping plants have overgrown onto the Study Area. The Study Area also contains a portion of Waterman Road and adjacent right of way and some stormwater drainage infrastructure in the southern portion of the Study Area.

3.1 Terrestrial Vegetation Communities

The overall vegetation community present at the Study Area is the Wild Oats (*Avena* spp.) and Annual Brome (*Bromus* spp.) Herbaceous Semi-Natural Alliance (hereafter annual brome grassland) (Sawyer et al. 2009, CNPS 2024b). The annual brome grassland is dominated by ryegrass (*Festuca perennis*), slender wild oat (*Avena barbata*), medusa head (*Elymus caput-medusae*), and soft chess (*Bromus hordeaceus*).

3.2 Soils

The Natural Resources Conservation Service (NRCS) has mapped four soil units within the Study Area (**Figure 3**) (SSURGO 2022); (136) Dumps, (137) Durixeralfs, 0-1% slopes, (198) Redding gravelly loam, 0-8% slopes, and (217) San Joaquin-Galt complex, leveled, 0 to 1% slopes. None of these soil map units have been identified as containing special soils, such as serpentine or saline-alkali inclusions (SSURGO 2022).

3.3 Aquatic Resources

Aquatic resources delineations were conducted for the Study Area (Natural Investigations Company 2021, Madrone 2024). Aquatic resources mapped within the Study Area during these surveys are depicted in **Figure 2**. **Table 1** summarizes these mapped aquatic resource types and a description by type is included below.

Table 1. Aquatic Resources Mapped within the Study Area

Waters Type	Acreage
Wetlands	
Seasonal Wetland	1.696
Seasonal Wetland Swale	0.013
Vernal Pool	1.013
Other Waters	
Detention Basin	0.966
Drainage Ditch	0.195
Roadside Ditch	0.011
Total	**3.895**

3.2.1 Seasonal Wetland

Six seasonal wetlands totaling approximately 1.696 acres occur within the Study Area. Seasonal wetlands are depressional wetlands that pond water seasonally. These features are often topographically and hydrologically similar to vernal pools, but have a short hydroperiod, and as a result, support a slightly different plant community that is not characterized by a dominance of vernal pool endemics. The seasonal wetlands within the Study Area were dominated by winged water starwort (*Callitriche marginata*), creeping spikerush (*Eleocharis macrostachya*), ryegrass, Mediterranean barley *(Hordeum marinum* ssp. *gussoneanum*), perennial pepperweed (*Lepidium latifolium*), Carter's buttercup (*Ranunculus bonariensis var. trisepalus*), curly dock (*Rumex crispus*), and flowering quillwort (*Triglochin scilloides*).

3.2.2 Seasonal Wetland Swale

Two seasonal wetland swales totaling approximately 0.013 acre were mapped within the Study Area. They are located along the northern boundary of the Study Area. Where they differ is that during the dry season,

the swales convey some groundwater flow, and as a result, they support hydrophytic vegetation. Plant species observed in these seasonal wetland swales include ryegrass and Mediterranean barley.

3.2.3 Vernal Pool

Fifteen vernal pools totaling approximately 1.013 acres occur within the Study Area. Vernal pools are topographic basins that are underlain with an impermeable or semi-permeable hardpan or duripan layer. Vernal pools inundate during the wet season, and typically dry by late spring and remain dry through the summer months. The vernal pool was differentiated from depressional seasonal wetlands within the Study Area based upon the predominance of vernal pool endemic plant species. The vernal pools were dominated by winged water starwort, California damsonium (*Damasonium californicum*), ornate downingia (*Downingia ornatissima*), ornate downingia *Eleocharis macrostachya*), and Carter's buttercup.

3.2.4 Detention Basin

A 0.966-acre portion of a detention basin is present in the southeastern corner of the Study Area. Dominant species within the bottom of the basin include common buttercup (*Ranunculus californicus*), curly dock, sandbar willow (*Salix exigua*), northern water plantain (*Alisma triviale*), and spike rush (*Eleocharis macrostachya*). Vegetation on the slopes and top of the basin consists of annual non-native grasses and forbs dominated by ryegrass, hairy vetch (*Vicia villosa*), and soft brome (*Bromus hordeaceus*).

3.2.5 Drainage Ditch

Two drainage ditch segments run along the eastern edge of the Study Area. Vegetation along the drainage ditch is dominated by ryegrass, Mediterranean barley, and perennial pepperweed.

3.2.6 Roadside Ditch

A roadside ditch runs along the southwestern edge of the Study Area, along the eastern edge of Waterman Road. This ditch is almost entirely unvegetated due to roadside herbicide and maintenance activities.

4.0 SURVEY RESULTS

4.1 Big-Scale Balsamroot

Big-scale balsamroot (*Balsamorhiza macrolepis*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. It is a perennial herbaceous species that occurs in chaparral, cismontane woodland and valley and foothill grasslands between 150 and 5,100 feet (CNPS 2024a). Big-scale balsamroot blooms from March through June and may be found on serpentine soils, though it is known to grow on other soil types as well (CNPS 2024a).

The annual brome grassland throughout the Study Area represents suitable habitat for this species. This species was not observed during the 2023 and 2024 protocol-level special-status plant surveys of the Study Area.

4.2 Dwarf Downingia

Dwarf downingia (*Downingia pusilla*) is not federally or state listed, but it is classified as a CRPR List 2B.2 plant. It is a diminutive annual herb that is strongly associated with vernal pools mesic valley and foothill grassland habitats at elevations ranging from five to 1,460 feet (CNPS 2024a). Dwarf downingia is typically associated with areas that experience a moderate degree of disturbance, and it blooms from March to May.

The vernal pools, and seasonal wetlands, and unmapped mesic areas within the Study Area represent suitable habitat for this species. This species was not observed during the 2023 and 2024 protocol-level special-status plant surveys of the Study Area.

4.3 Boggs Lake Hedge-Hyssop

Boggs Lake hedge-hyssop (*Gratiola heterosepala*) is not federally listed, but it is a California endangered species and a CRPR List 1B.2 plant. Boggs Lake hedge-hyssop grows in vernal pools and around the perimeter of marshes and swamps between 35 and 7,790 feet (CNPS 2024a). This small annual herb favors clay soils, and blooms from April to August (CNPS 2024a).

The vernal pools, seasonal wetlands, and unmapped mesic areas within the Study Area represent suitable habitat for this species. This species was not observed during the 2023 and 2024 protocol-level special-status plant surveys of the Study Area.

4.4 Ahart's Dwarf Rush

Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. Ahart's dwarf rush grows in mesic valley and foothill grassland habitats between elevations of approximately 100 feet and 750 feet (CNPS 2024a). This annual herb blooms from March to May (CNPS 2024a).

The vernal pools, seasonal wetlands, and unmapped mesic areas within the Study Area represent marginally suitable habitat for this species. This species was not observed during the 2023 and 2024 protocol-level special-status plant surveys of the Study Area.

4.5 Legenere

Legenere (*Legenere limosa*) is not federally or state listed, but it is classified as a CRPR List 1B.1 species. This annual herb is primarily associated with vernal pools (CNPS 2024a). Legenere occurs at elevations between 5 and 2885 feet, and blooms from April to June (CNPS 2024a).

The vernal pools, seasonal wetlands, and unmapped mesic areas within the Study Area represent suitable habitat for this species. Protocol-level plant surveys conducted during the 2023 and 2024 blooming season positively detected this species onsite. In 2024, legenere was documented in VP-1 (population estimated to be in 10s), VP-2 (population estimated to be in 10s), VP-4 (population estimated to be in 100s), VP-5 (population estimated to be in 10s), VP-6 (population estimated to be in 1000s), and VP-11 (population estimated to be in 1000s) (**Figure 2**). Plant species dominating the areas where legenere was found included water pygmy weed (*Crassula aquatica*), bractless hedge-hyssop (*Gratiola ebracteata*), American pillwort (*Pilularia americana*), great valley popcornflower (*Plagiobothrys stipitatus*), Carter's buttercup, and flowering quillwort.

4.6 Pincushion Navarretia

Pincushion navarretia (*Navarretia myersii* ssp. *myersii*) is not federally or state listed, but it is classified as a CRPR List 1B.1 plant. This species is found in vernal pools, often on acidic micro habitats (CNPS 2024a). Pincushion navarretia is found between approximately 65 and 1,085 feet and blooms in April and May (CNPS 2024a).

The vernal pools, seasonal wetlands, and unmapped mesic areas within the Study Area represent suitable habitat for this species. This species was not observed during the 2023 and 2024 protocol-level special-status plant surveys of the Study Area.

4.7 Sacramento Orcutt Grass

Sacramento Orcutt grass (*Orcuttia viscida*) is a CNPS 1B.1 plant as well as a federally endangered and California endangered species. Like slender Orcutt grass, this herbaceous annual also favors vernal pool habitats, though it is found between elevations of 100 and 330 feet (CNPS 2024a). Sacramento Orcutt grass typically blooms from April to July though it has been occasionally known to bloom as late as September (CNPS 2024a). It currently faces serious threats from agriculture, urbanization, and competition from exotic species (CNPS 2024a).

Longer ponding vernal pools, seasonal wetlands, and unmapped mesic areas within the Study Area represent suitable habitat for this species. This species was not observed during the 2023 and 2024 protocol-level special-status plant surveys of the Study Area.

4.8 Slender Orcutt Grass

Slender Orcutt grass (*Orcuttia tenuis*) is a CNPS 1B.1 listed plant as well as a federally threatened and California endangered species that is found in vernal pools often with gravelly substrates at elevations generally ranging between 115 and 5,775 feet (CNPS 2024a). Slender Orcutt grass is an annual herb, and its bloom period usually extends from May to October (CNPS 2024a).

Longer ponding vernal pools, seasonal wetlands, and unmapped mesic areas within the Study Area represent suitable habitat for this species. This species was not observed during the 2023 and 2024 protocol-level special-status plant surveys of the Study Area.

4.9 Sanford's Arrowhead

Sanford's arrowhead (*Sagittaria sanfordii*) is not federally or state listed but is classified as a CNPS List 1B.2 plant. This perennial rhizomatous emergent species that generally occurs in shallow freshwater habitats associated with drainages, canals, and larger ditches that sustain inundation and/or slow-moving water into early summer. Sanford's arrowhead is found from approximately sea level to 2,135 feet in elevation and blooms from May through October, and occasionally November (CNPS 2024a).

A portion of the detention basin within the Study Area provides suitable habitat for this species. This species was not observed during the 2023 and 2024 protocol-level special-status plant surveys of the site.

5.0 CONCLUSION

One special-status plant species, legenere (CRPR List 1B.2), was located within the Summerflats at Waterman Road Project Study Area during the 2023 and 2024 protocol-level special-status plant surveys.

6.0 REFERENCES

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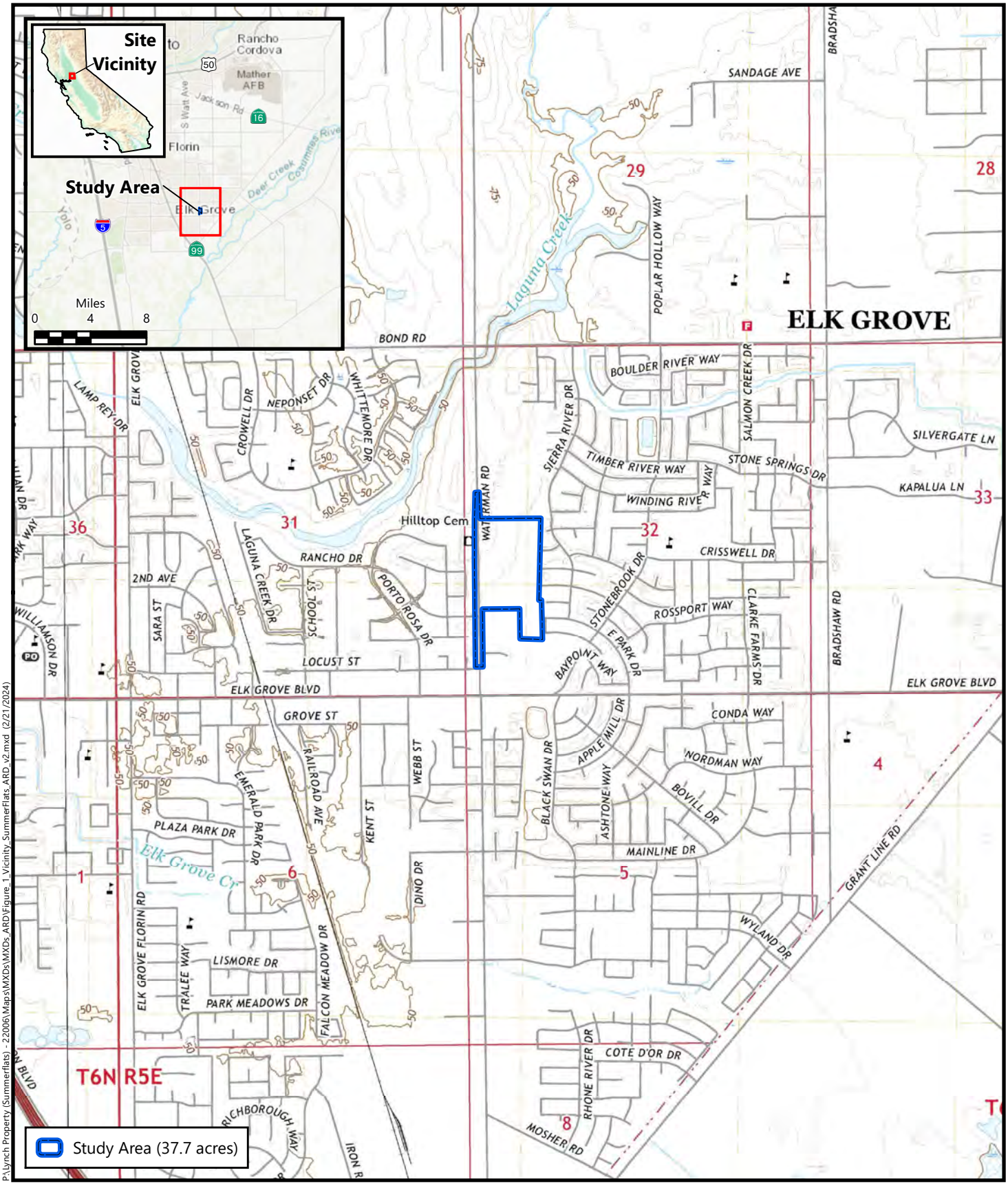
Figures

Figure 1. Site and Vicinity

Figure 2. Special-Status Plant Locations

Figure 3. Natural Resource Conservation Service Soils



P:\Lynch Property (Summerflats) - 22006\Maps\MXDs\MXDs_ARD\Figure_1_Vicinity_SummerFlats_ARD_v2.mxd (2/21/2024)

Source: United States Geologic Survey, 2022
"Elk Grove, California" 7.5-Minute Topographic Quadrangle
Section 32, Township 7 North, Range 6 East, MDBM
Latitude (NAD83): 38.414096°, Longitude (NAD83): -121.351594°

Figure 1
Site and Vicinity

Summer Flats
Elk Grove, Sacramento County, California

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P:\Lynch Property (Summerflats) - 22006\Maps\MXDs\MXDs_RarePlant\2024\Figure_2_RarePlants_SummerFlats_RP_v1.mxd (7/30/2024)

N

Feet
0 200

* *Small summation errors may occur due to rounding*

Boundary Source: Wood Rodgers
Aerial Source: Maxar, 26 April 2022

Figure 2
Special-Status Plant Locations

Summer Flats
Elk Grove, Sacramento County, California

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P:\Lynch Property (Summerflats) - 22006\Maps\MXDs\MXDs_RarePlant\2024\Figure_3_NRCS_SummerFlats_RP_v1.mxd (7/29/2024)

N

Feet

0 200

Soil Survey Source: *USDA, Natural Resources Conservation Service Soil Survey Geographic (SSURGO) database for Sacramento County, California*
Aerial Source: Maxar, 26 April 2022

Figure 3
Natural Resources Conservation Service Soils

Summer Flats
Elk Grove, Sacramento County, California

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Attachments

Attachment A: Botanist Qualifications

Attachment B: Target Plant Species Reference Population Information

Attachment C: Plant Species Observed within the Summerflats at Waterman Road Project Study Area

Attachment A

Botanist Qualifications

Special-Status Plant Survey Botanist Qualifications

Tara Collins

Ms. Collins has a B.S. in Botany from Humboldt State University and more than 24 years of experience conducting botanical inventories. As a senior biologist, she specializes in rare plant surveys, constructed/restored wetland floristic monitoring, and open space preserve management. In addition to rare plant surveys, her botanical experience includes general vegetation surveys, aerial and field vegetation mapping, CRAM assessments, measuring and monitoring special-status species plant populations, and invasive species identification and mapping. Ms. Collins' experience includes a wide variety of upland and wetland vegetation communities including annual grassland, vernal pool complex, ephemeral and emergent wetlands, preserved and created/restored vernal pools, seasonal marshes, floodplain wetlands, managed marshes, oak woodlands, riparian woodland/scrub, chaparral, coastal sage scrub, Mojave Desert scrub, desert riparian, iodine bush scrub, alkali sink habitat, and coniferous forests. Her geographic expertise covers much of California, from Shasta County in the north to the Mojave Desert and San Gabriel Mountains in the south, and from Contra Costa County in the west to the Sierra Nevada foothills in the east. Her primary focus is on the Sacramento Valley and San Joaquin Valley.

Attachment B

Target Plant Species Reference Population Information

Target Plant Species Reference Population Information
for the Summerflats at Waterman Road Project
Special-Status Plant Survey

Plant Species	Location of Reference Population	Date of Visit	Phenology of Reference Population/ Distinctive Characteristics
Balsamorhiza macrolepis Big-scale balsamroot	Herbarium specimen at UC Davis Center for Plant Diversity Online Jepson Manual and Calflora	23 April 2019 March through May 2024	Pressed specimen. Similar to *Wyethia*, but with grey, dissected leaves. Leaves are mostly basal (as opposed to *Wyethia*, which has basal and cauline leaves).
Downingia pusilla Dwarf downingia	Woodcreek Oaks Open Space Preserve (CNDDB #142)	10 April 2024	Plants are just coming into bloom below *Plagiobothrys stipitatus* and *Ranunculus bonariensis*. Should be in full bloom in about a week.
Gratiola heterosepala Boggs Lake hedge-hyssop	Churchill Downs Wetland Preserve (CNDDB Occurrence #35)	29 April 2024	Hundreds to thousands of *Gratiola heterosepala* plants were observed in this location this year. About half were in bud and half in full bloom. Pool was not inundated, but soil was still saturated. Individuals of this species were also observed in an adjacent pool. That feature was drier, and the plants were half in bloom and half in fruit.
Juncus leiospermus var. ahartii Ahart's dwarf rush	Mather Regional Park (CNDDB Occurrence #8)	12 April 2024	A few plants scattered within the area; seems like a decent year for this species, but all of the plants are quite small. The plants were all in fruit, but the long style was still readily apparent on the top of the fruits.
Legenere limosa Legenere	Sacramento County (CNDDB Occurrence #27)	17 April 2024 20 May 2024	Pool is still inundated, but millions of plants are present, above the water level. Plants were still green and identifiable, with most in fruit but some still in flower.

Plant Species	Location of Reference Population	Date of Visit	Phenology of Reference Population/ Distinctive Characteristics
Navarretia myersii ssp. *myersii* Pincushion navarretia	Herbarium specimen at UC Davis Center for Plant Diversity Online Jepson Manual and Calflora	23 April 2019 March through May 2024	Pressed specimen. Corollas for this species are quite long (12-21 mm vs 4-10 mm for the similar but more common *Navarretia leucocephala* ssp. *leucocephala*). In addition, the calyx lobes for this species are long-hairy as opposed to the generally glabrous calyx lobes for *N. leucocephala* ssp. *leucocephala*.
Orcuttia tenuis Slender Orcutt grass	Herbarium specimen at UC Davis Center for Plant Diversity Online Jepson Manual and Calflora	23 April 2019 March through May 2024	Pressed specimen. Leaves and leaf sheaths are continuous with no ligule, and lemmas are toothed. Inflorescences are tall and slender in comparison to *Orcuttia viscida*, the only other *Orcuttia* species known to occur in the area.
Orcuttia viscida Sacramento Orcutt grass	Population at Phoenix Park in Sacramento County (CNDDB Occurrence #15)	5 June 2024	Only four plants were observed in this pool, where thousands have been observed in past years. An exhaustive search was not conducted, but there are clearly fewer plants, and those that are present are small. They were still green and identifiable to species. Other botanists state that populations at other locations did not decline as substantially this year.
Sagittaria sanfordii Sanford's arrowhead	Population in Laguna Creek north of Elk Grove Blvd in Elk Grove (CNDDB Occurrence #43)	20 May 2024	Plants were in early bloom, with some plants still entirely aquatic. Those that had terrestrial leaves exhibited the typical triangular cross-section, and the blooms and fruit made blooming plants readily identifiable to species.

Attachment C

Plant Species Observed within the Summerflats at Waterman Road Project Study Area

Plant Species Observed within the Summerflats at Waterman Road Project Study Area
On 4 and 9 May and 9 June 2023, and 1, 9, 20 May and 21 June 2024

Family / Species Name	Common Name	Native / Non-Native
AGAVACEAE		
Agave americana	Century plant	Non-Native
Chlorogalum pomeridianum	Wavyleaf soap plant	Native
ALISMATACEAE		
Alisma triviale	Northern water plantain	Native
Damasonium californicum	California damsonium	Native
AMARANTHACEAE		
Amaranthus albus	Procumbent pigweed	Native
ANACARDIACEAE		
Pistacia chinensis	Chinese pistachio	Non-Native
Schinus molle	Pepper tree	Non-Native
APIACEAE		
Conium maculatum	Poison hemlock	Non-Native
Eryngium castrense	Great valley coyote-thistle	Native
APOCYNACEAE		
Asclepias fascicularis	Narrow-leaf milkweed	Native
ASTERACEAE		
Carduus pycnocephalus subsp. *pycnocephalus*	Italian thistle	Non-Native
Centromadia fitchii	Fitch's spikeweed	Native
Cichorium intybus	Chicory	Non-Native
Euthamia occidentalis	Western goldenrod	Native
Helminthotheca echioides	Bristly ox-tongue	Non-Native
Holocarpha virgata	Narrow tarplant	Native
Hypochaeris glabra	Smooth cat's-ear	Non-Native
Lactuca serriola	Prickly lettuce	Non-Native
Lasthenia fremontii	Fremont's goldfields	Native
Lasthenia glaberrima	Smooth goldfields	Native
Leontodon saxatilis	Hairy hawkbit	Non-Native
Logfia gallica	Daggerleaf cottonrose	Non-Native
Matricaria discoidea	Pineapple weed	Native
Psilocarphus brevissimus	Woolly marbles	Native

Plant Species Observed within the Summerflats at Waterman Road Project Study Area
On 4 and 9 May and 9 June 2023, and 1, 9, 20 May and 21 June 2024

Family / Species Name	Common Name	Native / Non-Native
ASTERACEAE, cont.		
Senecio vulgaris	Common groundsel	Non-Native
Silybum marianum	Milk thistle	Non-Native
Sonchus asper subsp. *asper*	Prickly sow thistle	Non-Native
Sonchus oleraceus	Common sow thistle	Non-Native
Taraxacum officinale	Common dandelion	Non-Native
Tragopogon porrifolius	Salsify	Non-Native
Wyethia angustifolia	Narrow leaf mule ears	Native
BORAGINACEAE		
Plagiobothrys bracteatus	Bracted popcornflower	Native
Plagiobothrys stipitatus	Great valley popcornflower	Native
BRASSICACEAE		
Brassica nigra	Black mustard	Non-Native
Lepidium draba	Heart-podded hoary cress	Non-Native
Lepidium latifolium	Perennial pepperweed	Non-Native
Raphanus sativus	Wild radish	Non-Native
CAMPANULACEAE		
Downingia bicornuta	Double-horned downingia	Native
Downingia ornatissima	Ornate downingia	Native
Legenere limosa	Legenere	Native
CARYOPHYLLACEAE		
Cerastium glomeratum	Sticky mouse-ear chickweed	Non-Native
CONVOLVULACEAE		
Convolvulus arvensis	Bindweed	Non-Native
Cuscuta howelliana	Boggs Lake dodder	Native
CRASSULACEAE		
Crassula aquatica	Water pygmy weed	Native
CYPERACEAE		
Cyperus eragrostis	Tall nutsedge	Native
Eleocharis macrostachya	Creeping spikerush	Native

Plant Species Observed within the Summerflats at Waterman Road Project Study Area
On 4 and 9 May and 9 June 2023, and 1, 9, 20 May and 21 June 2024

Family / Species Name	Common Name	Native / Non-Native
CYPERACEAE, cont.		
Schoenoplectus acutus var. occidentalis	Common tule	Native
ELATINACEAE		
Elatine sp.	Waterwort	Native
EUPHORBIACEAE		
Croton setiger	Turkey-mullein	Native
Triadica sebifera	Chinese tallowtree	Non-Native
FABACEAE		
Cercis occidentalis	Western redbud	Native
Lotus corniculatus	Bird's-foot trefoil	Non-Native
Lupinus bicolor	Miniature lupine	Native
Medicago polymorpha	Burclover	Non-Native
Trifolium ciliolatum	Foothill clover	Native
Trifolium depauperatum	Dwarf sack clover	Native
Trifolium dubium	Little hop clover	Non-Native
Trifolium hirtum	Rose clover	Non-Native
Trifolium variegatum	Variegated clover	Native
Vicia villosa	Winter vetch	Non-Native
Wisteria sinensis	Chinese wisteria	Non-Native
FAGACEAE		
Quercus lobata	Valley oak	Native
GENTIANACEAE		
Cicendia quadrangularis	Timwort	Native
GERANIACEAE		
Erodium botrys	Filaree	Non-Native
Erodium cicutarium	Redstem filaree	Non-Native
Geranium dissectum	Cut leaf geranium	Non-Native
Geranium molle	Soft geranium	Non-Native
ISOETACEAE		
Isoetes nuttallii	Nuttall's quillwort	Native

Plant Species Observed within the Summerflats at Waterman Road Project Study Area
On 4 and 9 May and 9 June 2023, and 1, 9, 20 May and 21 June 2024

Family / Species Name	Common Name	Native / Non-Native
JUNCACEAE		
Juncus bufonius	Toad rush	Native
Juncus capitatus	Dwarf rush	Non-Native
Juncus uncialis	Inch-high rush	Native
JUNCAGINACEAE		
Triglochin scilloides	Flowering quillwort	Native
LAMIACEAE		
Pogogyne zizyphoroides	Sacramento mesa mint	Native
Trichostema lanceolatum	Vinegar weed	Native
LYTHRACEAE		
Lythrum hyssopifolia	Hyssop loosestrife	Non-Native
MALVACEAE		
Malva parviflora	Cheeseweed	Non-Native
Tilia americana	American basswood	Non-Native
MARSILEACEAE		
Pilularia americana	American pillwort	Native
MORACEAE		
Morus alba	White mulberry	Non-Native
MYRSINACEAE		
Lysimachia arvensis	Scarlet pimpernel	Non-Native
Lysimachia minima	Chaffweed	Native
ONAGRACEAE		
Epilobium campestre	Smooth boisduvalia	Native
Epilobium ciliatum	Slender willow herb	Native
OROBANCHACEAE		
Castilleja attenuata	Valley tassels	Native
Castilleja campestris	Yellow owl's clover	Native
Triphysaria eriantha	Butter-and-eggs	Native

Plant Species Observed within the Summerflats at Waterman Road Project Study Area
On 4 and 9 May and 9 June 2023, and 1, 9, 20 May and 21 June 2024

Family / Species Name	Common Name	Native / Non-Native
PAPAVERACEAE		
Eschscholzia californica	California poppy	Native
PHRYMACEAE		
Diplacus tricolor	Tricolor monkeyflower	Native
Erythranthe latidens	Broad-tooth monkeyflower	Native
PLANTAGINACEAE		
Callitriche marginata	Winged water starwort	Native
Gratiola ebracteata	Bractless hedge-hyssop	Native
Plantago erecta	California plantain	Native
Plantago lanceolata	English plantain	Non-Native
Veronica peregrina	Purslane speedwell	Native
POACEAE		
Alopecurus saccatus	Pacific foxtail	Native
Avena barbata	Slender wild oat	Non-Native
Avena fatua	Wild oat	Non-Native
Briza minor	Small quaking grass	Non-Native
Bromus diandrus	Ripgut grass	Non-Native
Bromus hordeaceus	Soft chess	Non-Native
Crypsis schoenoides	Swamp prickle grass	Non-Native
Deschampsia danthonioides	Annual hair grass	Native
Elymus caput-medusae	Medusa head	Non-Native
Festuca arundinacea	Tall fescue	Non-Native
Festuca myuros	Rattail fescue	Non-Native
Festuca perennis	Ryegrass	Non-Native
Glyceria declinata	Low manna grass	Non-Native
Hordeum brachyantherum	Meadow barley	Native
Hordeum marinum subsp. *gussoneanum*	Mediterranean barley	Non-Native
Hordeum murinum	Wall barley	Non-Native
Paspalum dilatatum	Dallis grass	Non-Native
Paspalum distichum	Knot grass	Native
Phalaris aquatica	Harding grass	Non-Native
Phalaris lemmonii	Lemmon's canary grass	Native
Phalaris paradoxa	Hood canary grass	Non-Native
Polypogon monspeliensis	Annual rabbitfoot grass	Non-Native

Plant Species Observed within the Summerflats at Waterman Road Project Study Area
On 4 and 9 May and 9 June 2023, and 1, 9, 20 May and 21 June 2024

Family / Species Name	Common Name	Native / Non-Native
POACEAE, cont.		
Stipa pulchra	Purple needle grass	Native
POLEMONIACEAE		
Navarretia leucocephala	White headed navarretia	Native
POLYGONACEAE		
Polygonum aviculare	Prostrate knotweed	Non-Native
Rumex crispus	Curly dock	Non-Native
Rumex pulcher	Fiddle dock	Non-Native
PORTULACACEAE		
Portulaca oleracea	Purslane	Non-Native
RANUNCULACEAE		
Ranunculus aquatilis	Water buttercup	Native
Ranunculus bonariensis var. *trisepalus*	Carter's buttercup	Native
Ranunculus californicus	Common buttercup	Native
Ranunculus sardous	Hairy buttercup	Non-Native
ROSACEAE		
Pyrus calleryana	Callery pear	Non-Native
Rubus armeniacus	Armenian blackberry	Non-Native
RUBIACEAE		
Galium aparine	Goose grass	Native
Sherardia arvensis	Field madder	Non-Native
SALICACEAE		
Salix babylonica	Weeping willow	Non-Native
Salix exigua	Sandbar willow	Native
Salix lasiandra	Pacific willow	Native
THEMIDACEAE		
Brodiaea coronaria	Garland brodiaea	Native
Triteleia hyacinthina	White brodiaea	Native
Triteleia laxa	Ithuriel's spear	Native

Plant Species Observed within the Summerflats at Waterman Road Project Study Area
On 4 and 9 May and 9 June 2023, and 1, 9, 20 May and 21 June 2024

Family / Species Name	Common Name	Native / Non-Native
TYPHACEAE		
Typha sp.	Cattail	Native or Non-Native
VERBENACEAE		
Phyla nodiflora	Frogfruit	Native
VITACEAE		
Vitis sp.	Grape	Non-native

Attachment F

Preliminary Jurisdictional Determination and Aquatic Resource Delineation Map

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

October 15, 2024

Regulatory Division (SPK-2004-00397)

Sheldon Business Park, Ltd.
Attn: Mr. Bryan Wilson
9501 Sheldon Road
Elk Grove, California 95624
bryanrcwr@gmail.com

Dear Mr. Wilson :

We are responding to your October 2, 2024, request for a preliminary jurisdictional determination (JD) for the Summer Flats site. The approximately 37.7-acre project site project site is located directly east of Waterman Road and north of Elk Grove Boulevard in Section 32, Township 7 North, Range 6 East, MDB&M, at Latitude 38.41440°, Longitude -121.35139°, in the City of Elk Grove, Sacramento County, California.

Based on available information, we concur with your aquatic resources delineation for the site as depicted on the enclosed *Aquatic Resources Delineation Summer Flats Elk Grove, Sacramento County, California* figure dated February 21, 2024 (prepared by Madrone Ecological Consulting) (Enclosure 1). The approximately 3.90 acres (1,859 linear feet) of aquatic features, consisting of 1.70 acres of seasonal wetland, 0.01 acre of seasonal wetland swale, 1.01 acres of vernal pool, 0.97 acre of detention basin, 0.20 acre (1,367) linear feet (LF) of drainage ditch, and 0.01 acre (492 LF) of roadside ditch present within the study area are potential jurisdictional aquatic resources ("waters of the United States") regulated under Section 404 of the Clean Water Act.

This letter verifies that the location and boundaries of wetlands were delineated consistent with the wetland definition at 33 CFR §328.3(c)(16), the 1987 *Corps of Engineers Wetlands Delineation Manual* (Wetlands Research Program Technical Report Y-87-1) and the applicable regional supplements and the location and boundaries of non-tidal waters conform with the ordinary high water mark definition at 33 CFR §328.3(c)(7), Regulatory Guidance Letter 05-05, and any applicable regional guide.

At your request, we have completed a preliminary JD for the site. Enclosed find a copy of the *Preliminary Jurisdictional Determination Form* (Enclosure 2). Please sign and return the completed form to the address listed below within 30 days of the date of this letter. If you do not return the signed form within 30 days, we will presume concurrence and finalize the preliminary jurisdictional determination.

We recommend you provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

The delineation included herein has been conducted to identify the location and extent of the aquatic resource boundaries for the particular site identified in this request. This delineation and/or jurisdictional determination may not be valid for the Wetland Conservation Provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should discuss the applicability of a certified wetland determination with the local USDA service center, prior to starting work.

You may request an approved JD for this site at any time prior to starting work within waters, including after a permit decision is made. To request an approved JD for this site, complete the attached Request for Aquatic Resources Delineation or Jurisdictional Determination Form and return it to this office at the address listed below. A Notification of Appeal Process and Request for Appeal Form is enclosed to notify you of your options with this determination (Enclosure 3).

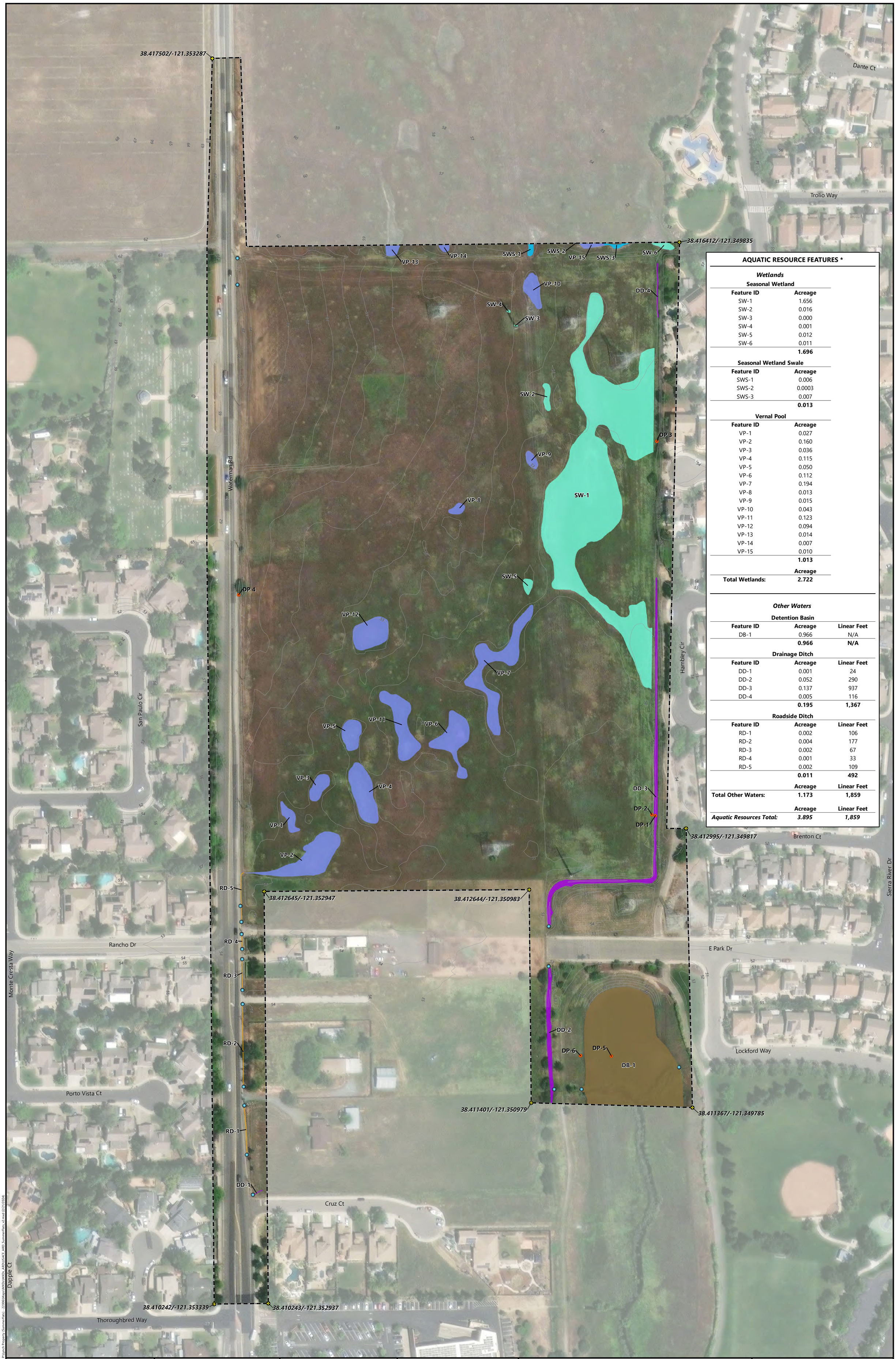
Please reference identification number SPK-2004-00397 in any correspondence concerning this project. If you have any questions, please contact Matt Hirkala by email at matthew.j.hirkala@usace.army.mil or by phone at (916) 557-5148. We appreciate feedback, especially about interactions with our staff and processes. For program information or to complete our Customer Survey, visit our website at www.spk.usace.army.mil/missions/regulatory.aspx .

Sincerely,

Matt Hirkala
Regulatory Project Manager
CA Delta Section

Enclosures

cc:
Central Valley Regional Water Quality Control Board,
centralvalleysacramento@waterboards.ca.gov
Ms. Sarah VonderOhe, Madrone Ecological Consulting, svonderohe@madroneeco.com



AQUATIC RESOURCE FEATURES *

Wetlands

Seasonal Wetland

Feature ID	Acreage
SW-1	1.656
SW-2	0.016
SW-3	0.000
SW-4	0.001
SW-5	0.012
SW-6	0.011
	1.696

Seasonal Wetland Swale

Feature ID	Acreage
SWS-1	0.006
SWS-2	0.0003
SWS-3	0.007
	0.013

Vernal Pool

Feature ID	Acreage
VP-1	0.027
VP-2	0.160
VP-3	0.036
VP-4	0.115
VP-5	0.050
VP-6	0.112
VP-7	0.194
VP-8	0.013
VP-9	0.015
VP-10	0.043
VP-11	0.123
VP-12	0.094
VP-13	0.014
VP-14	0.007
VP-15	0.010
	1.013

	Acreage
Total Wetlands:	**2.722**

Other Waters

Detention Basin

Feature ID	Acreage	Linear Feet
DB-1	0.966	N/A
	0.966	**N/A**

Drainage Ditch

Feature ID	Acreage	Linear Feet
DD-1	0.001	24
DD-2	0.052	290
DD-3	0.137	937
DD-4	0.005	116
	0.195	**1,367**

Roadside Ditch

Feature ID	Acreage	Linear Feet
RD-1	0.002	106
RD-2	0.004	177
RD-3	0.002	67
RD-4	0.001	33
RD-5	0.002	109
	0.011	**492**

	Acreage	Linear Feet
Total Other Waters:	**1.173**	**1,859**

	Acreage	Linear Feet
Aquatic Resources Total:	***3.895***	***1,859***

Prepared For:
Sheldon Business Park
8940 Elder Creek Road
Elk Grove, CA 95829

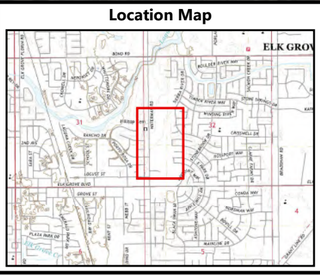
Sources
Aerial : Maxar, 26 April 2022
Boundary : Wood Rodgers
Topographic Contours: Wood Rodgers

Delineation Performed by:
D. Snider (Madrone Ecological) and
G.O. Graening (Natural Investigations Co.)
Map Prepared by: J. Swager
Date Map Prepared: 21 February 2024
Made in accordance with the *Updated Map and Drawing Standards for the South Pacific Division Regulatory Program,* as amended on February 10, 2016
** Small summation errors may occur due to rounding*

N
Feet
0 50 100 200

Map Scale:
1 inch = 100 feet (at 20"x32")
Coordinate System
NAD 1983 State Plane California II (U.S. Feet)

Location Map



Study Area (37.7 acres)
Reference Coordinate (NAD83)
Culvert
Data Point
1' Contour (NAVD88 U.S. Feet)

Aquatic Resources (3.895 acres) *
Wetlands (2.722 acres)
Seasonal Wetland (1.696 acres)
Seasonal Wetland Swale (0.013 acre)
Vernal Pool (1.013 acres)
Other Waters (1.173 acres)
Detention Basin (0.966 acre)
Drainage Ditch (0.195 acre)
Roadside Ditch (0.011 acre)

Aquatic Resources Delineation
Summer Flats
Elk Grove, Sacramento County, California

MADRONE ECOLOGICAL CONSULTING
8421 Auburn Boulevard, Suite 248
Citrus Heights, California 95610
(916) 822.3230 | www.madroneeco.com

P:\Lynch Property (Summerflats) - 22006\Maps\MXDs\MXDs_ARD\US ACE_ARD_SummerFlats_v2.mxd (2/21/2024)

Appendix E

ACORN
ARBORICULTURAL SERVICES INC.

ARBORIST REPORT

April 22, 2022

Bryan Wilson
8940 Elder Creek Rd.
Sacramento, CA 95624

Re: Summerflats City of Elk Grove CA; APNs 127-0150-001 & 002, 127-0150-009

This report documents the findings from the field reconnaissance efforts of the above referenced site on April 12, 2022.

The City of Elk Grove Tree Preservation and Protection Chapter 19.12 regulates both the removal of protected trees and the encroachment of construction activities within the tree's critical root zones (CRZ). The City's adopted regulations apply to four types of trees as follows:

- Landmark trees, which are trees specifically identifies for protection by the City Council;
- Trees of local importance, which are trees of specific varieties greater than six inches in diameter;
- Secured trees, which are trees that were protected as part of the development process for residential subdivisions and commercial developments; and
- Trees on City property or in the public right-of-way.

Trees of Local Importance are the following species with a DSH of six (6") inches or greater:
A. Coast live oak (Quercus agrifolia);
B. Valley oak (Quercus lobata);
C. Blue oak (Quercus douglasii);
D. Interior live oak (Quercus wislizenii);
E. Oracle oak (Quercus X moreha);
F. California sycamore (Platanus racemosa); and
G. California black walnut (Juglans hindsii).

No trees were found on or overhanging the site that meet the above criteria for protected trees.

If you have any questions or require clarification, please feel free to contact me.

Wayne McKee
ISA Certified Arborist WE 0959A, 1992
ISA Tree Risk Assessment Qualified, 2017
B S Forestry, Humboldt State University, 1983

Appendix F

GEOTECHNICAL ENGINEERING REPORT

LYNCH PROPERTY

WKA No. 5971.02

May 19, 2004

WALLACE • KUHL & ASSOCIATES INC.

Geotechnical Engineering Report

LYNCH PROPERTY

Elk Grove, California

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WALLACE · KUHL
& ASSOCIATES INC.

Geotechnical Engineering

Engineering Geology

Environmental Consulting

Remediation Services

Construction Inspection

Materials Testing

Geotechnical Engineering Report

LYNCH PROPERTY

Waterman Road

Elk Grove, California

WKA No. 5971.02

May 19, 2004

INTRODUCTION

We have completed a geotechnical engineering investigation for the proposed residential subdivision to be constructed at the Lynch property, located east of Waterman Road and north of Elk Grove Boulevard in Elk Grove, California. The purposes of our work have been to explore the existing soil and ground water conditions, and to provide geotechnical engineering conclusions and recommendations for the design and construction of the planned residential subdivision. This report presents the results of our work.

Work Scope

Our scope of work for this project included the following tasks:

1. site reconnaissance;
2. review of historic USGS topographic maps and aerial photographs of the property;
3. subsurface exploration, including the drilling and sampling of four borings to a maximum depth of approximately 16½ feet;
4. collection of bulk samples of near-surface soils;
5. laboratory testing of selected soil samples;
6. engineering analyses; and,
7. preparation of this report

CORPORATE OFFICE
3050 Industrial Boulevard
West Sacramento
CA 95691
Tel 916.372.1434
Fax 916.372.2565

ROCKLIN OFFICE
500 Menlo Drive
Suite 100
Rocklin, CA 95765
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STOCKTON OFFICE
3410 West Hammer Lane
Suite F
Stockton, CA 95219
Tel 209.234.7722
Fax 209.234.7727

Previous Work

Our office has previously prepared an *Environmental Site Assessment* (WKA No. 5971.01, dated April 30, 2004) for the subject property. Information contained in that report was used in preparation of this report.

Plates and Attachments

This report contains a Vicinity Map as Plate No. 1, a Site Plan showing test boring locations as Plate No. 2, and Logs of Test Borings as Plates No. 3 through 7. An explanation of the symbols and classification system used on the logs is contained on Plate No. 8. Appendix A contains general information regarding project concepts, exploratory methods used during our field investigation, and laboratory test results not included on the logs. Appendix B contains *Earthwork Specifications* that may be used in the preparation of contract documents.

Proposed Development

Based on preliminary information, we understand that development of the site will involve construction of a residential subdivision on approximately 27.8 acres. The eastern portion of the site will not be developed with residential structures due to power lines running overhead. We assume construction will consist of typical residential buildings with conventional foundations and slab-on-grade interior floors. Relatively light structural loads are anticipated, consistent with one- and two-story, wood-framed construction. Associated development will include construction of underground utilities, exterior flatwork, sound walls, and interior residential streets. Grading plans were not available during the preparation of this report; however, based on site topography, we anticipate maximum cuts and fills on the order of one to three feet to develop the site.

FINDINGS

Site Description

The roughly rectangular-shaped property encompasses approximately 27.8 acres located south of Bond Road, east of Waterman Road, and north of Elk Grove Boulevard in Elk Grove, California (see Plate No. 1). The subject property is bounded to the north by fallow fields beyond which is Bond Road; to the east by a residential subdivision; to the south by a rural residence; and, to the west by Waterman Road.

Topography of the site is essentially flat with little topographic relief across the property. The surface elevation across the property is approximately +50 feet relative to mean seal level (msl), based on review of the United States Geological Survey, *7.5-Minute Topographic Map of the Elk Grove Quadrangle*, California (photorevised, 1979).

At the time of our field investigation on April 23, 2004 the property was observed to be vacant and undeveloped, and was covered with a low to moderate growth of volunteer weeds and grasses. Large towers carrying power lines run from north to south along the eastern portion of the site.

A review of available historical aerial photographs indicates the site has remained relatively unchanged since the earliest photo reviewed (1961).

Soil Conditions

Results of our subsurface exploration indicates surface and near-surface soils consisting of brown to light brown, fine sandy, clayey silts underlain by discontinuous layers of silty clays and fine sandy silts. Beneath these surface soils are alternating layers of silty fine sands, clayey fine sands, and fine sand and clay silts. A discontinuous layer of fine sandy gravel was encountered in two of the five borings performed for the project. The upper eight to 12 inches across the site are disturbed due to previous uses.

For detailed soil conditions at a particular location, please refer to the boring logs presented as Plates No. 3 through 7.

Ground Water

Free ground water was not encountered within the test borings performed on April 23, 2004. To supplement our ground water information, we have reviewed the California Department of Water Resources website. The map indicates that regional ground water beneath the site is generally located at an elevation of approximately -40 feet msl, or approximately 90 feet below the existing ground surface.

CONCLUSIONS

Seismic Code Parameters

The entire State of California is considered to be subject to ground shaking from numerous active fault systems across the state. Based on tables provided in the 1997 edition of the Uniform Building Code (UBC), the proposed project site has the following site characteristics. The site is located within Seismic Zone 3. The site soil conditions most closely approximate an S_D profile. The site is not located within 15 kilometers of an active or potentially active fault; therefore, near-fault effects will not be a factor in seismic design, nor is a seismic source type assigned using the 1997 UBC. The site is underlain by interbedded dense, stiff, and partially cemented native soils, and ground water is indicated to be around 90 feet below the ground surface. Therefore, it is our opinion that liquefaction of soils beneath the planned subdivision during seismic events is very unlikely.

Building Support

The upper eight to twelve inches across the site are disturbed due to previous activities and will require processing and recompaction. Our work indicates that recompacted surface soils and engineered fill, when placed and compacted in accordance with the recommendations of this report, will be capable of supporting the proposed residential structures. Field and laboratory test results indicate the undisturbed native soils encountered in our test borings are capable of supporting the proposed residential structures.

Excavation Conditions

Based on our experience on nearby projects, the native soils on the site should be readily excavatable with conventional earthmoving and trenching equipment typically used in the area. Excavations within the gravelly soils will be slower to excavate; however, special excavation equipment should not be necessary.

Shallow excavations should stand at near-vertical inclinations without significant sloughing or caving for the relatively short duration of construction. Excavations or trenches that will be entered by workers and exceed five in depth must conform to current Cal/OSHA requirements (i.e., sloped or braced/shored).

Soil Expansion Potential

Laboratory test results indicate that the near-surface silty clays possess a low expansion potential. In our opinion, these soils are capable of developing minor expansion pressures on building foundations, interior floor slabs and exterior flatwork with varying soil moisture contents. However, our experience in the area indicates clay soils posses moderate to high expansion potentials may be present on the site. We are providing specific recommendations regarding site preparation, grading and pad preparation to mitigate the effects of expansive soils if encountered.

Soil Suitability for Engineered Fill Construction

In our opinion, the on-site soils encountered in our test borings are considered suitable for use in engineered fill construction, provided these materials are free of organics, rubble, and other deleterious debris.

Pavement Subgrade Quality

Laboratory testing of anticipated pavement subgrade soils indicate that these materials exhibit poor subgrade qualities for support of asphalt concrete pavements with a resistance value (R-value) of 9 and 16 when tested in accordance with California Test 301 (see Plate No. A3). Based on the laboratory testing, in our opinion an R-Value of five should be used for calculation of pavement sections.

Ground Water

Free ground water was encountered in our borings performed at the site. Available data indicates that a permanent ground water table is located approximately 90 feet below the ground surface.

Seasonal moisture and landscape irrigation will assure that high soil moisture contents will exist below interior floor slabs throughout their lifetime. Moisture vapor penetration resistance should be a significant consideration in design and construction of interior floor slabs. During the winter and spring months, infiltrating surface run-off water will create saturated surface soil conditions due to the impervious nature of the underlying cemented soils. It is probable that grading operations attempted following the onset of winter rains and prior to prolonged drying periods will be hampered by high soil moisture contents. Such soils, intended for use as engineered fill, will require a prolonged period of dry weather and/or considerable aeration to reach a moisture content suitable for proper compaction.

Soil Corrosion Potential

Two samples of the surface and near-surface soils were submitted to Sunland Analytical Lab, Inc. for testing to determine pH, resistivity, sulfate and chloride concentrations to help evaluate the potential for corrosive attack upon reinforced concrete. The test results for the samples revealed resistivity values of 1630 and 2650 ohm-centimeters (Ω-cm) with a soil pH of 6.93 and 5.56 respectively. Sulfates were recorded at 4.1 and 11.8 parts per million (ppm) and chlorides at 22.6 and 31.7 ppm respectively. Results of testing performed by Sunland Analytical Lab are summarized in Appendix A, Plate No. A3 and A4.

Published literature[1] indicates soils with a chloride concentration greater than or equal to 500 ppm, a sulfate concentration greater than or equal to 2000 ppm, or with a pH of 5.5 or less, may significantly increase corrosion of buried metals and reinforced concrete structures. Based in this criterion we did not encounter a corrosive area within the site for the samples tested. Table 19-A-4 of the 1997 UBC, *Requirements for Concrete Exposed to Sulfate-Containing Solutions,* indicates the sulfate exposure for the samples tested is *Negligible*. Ordinary Type I-II Portland

[1] California Department of Transportation Division of Engineering Services Materials Engineering and Testing Services Corrosion Technology Branch, Corrosion Guidelines Version 1.0, September 2003.

cement is indicated to be suitable for use on this project, assuming a minimum cover is maintained over the reinforcement.

Wallace-Kuhl & Associates are not corrosion engineers. Therefore, to further define the soil corrosion potential at the site, or to determine the need or design parameters for cathodic protection or grounding systems, a corrosion engineer could be consulted.

RECOMMENDATIONS

Grading plans for the project have not been prepared yet; therefore, for the purposes of preparing this report we have assumed maximum excavations and fills of around one to three feet to develop the site.

The recommendations presented below are appropriate for typical construction in the late spring through fall months. The on-site soils likely will be saturated by rainfall in the winter and early spring months, and will not be compactable without drying by aeration or chemical treatment with lime or similar additive. Should the construction schedule require work to continue during the wet months, additional recommendations can be provided, as conditions warrant.

Site Clearing and Preparation

Initially, the site should be cleared of all debris and any underground utilities designated to be removed or relocated, including all trench backfill. Tree removal should include the rootball and all roots larger than ½-inch in diameter. Adequate removal of tree roots will likely require laborers and hand-picking to clear the subgrade soils to the satisfaction of our on-site representative, prior to further site preparation. Excavations or depressions resulting from the removal of these items should be restored to grade with engineered fill placed and compacted in accordance with the recommendations contained in this report. Any water wells at the site should be abandoned in accordance with Sacramento County Environmental Health Division requirements.

Following site clearing, any remaining surface organics should be removed by stripping. *Strippings should not be used in general fill construction, but may be used in landscaped areas (such as backyards), provided they are kept at least five feet from the building pads and*

pavements, moisture conditioned and compacted. Discing of organics into the surface soils may be a suitable alternative to stripping depending upon the quantity and condition of the surface vegetation at the time of grading. Discing will be allowed only with our prior approval. Discing operations should be observed by our representative and must be continuous until organics are adequately mixed with the soil to provide a compactable mixture. Discing of vegetation greater than 12 inches tall and pockets or concentrations of organics will not be allowed.

Areas to remain at-grade or to receive fill should be scarified to a depth of at least 12 inches. Adequate removal of debris and tree roots may require handpicking by laborers to clear the subgrade soils to the satisfaction of our on-site representative, prior to further site preparation. The processed soil should then be moisture conditioned to at least the optimum moisture content for granular soils and at least two percent above the optimum for clay soils, and uniformly compacted to at least 90 percent of the ASTM 1557 maximum dry density.

Compaction of soil subgrade should be achieved using a heavy, self-propelled, sheepsfoot compactor (Caterpillar 815 or equivalent) and must be performed in the presence of our representative who will evaluate the performance of the subgrade under the compaction loads and identify any loose or unstable soil conditions that could require additional excavation. Loose, soft or saturated soil deposits encountered below the depth of scarification during compaction operations should be removed to expose firm undisturbed soils as identified by our representative and backfilled with engineered fill as recommended in this report.

Engineered Fill

On-site soils are considered suitable for use in engineered fill construction, if free from significant quantities of rubble, rubbish, vegetation, and are at a workable moisture content. Clods, large rocks or hard lumps exceeding six inches in final size should not be allowed in the upper two feet of any fill supporting buildings. Expansive clay soils if encountered, should not be used within one foot of finished pad subgrade.

Imported fill materials (if necessary) should be granular materials with non-plastic fines (Plasticity Index of 15 or less) and be free of particles greater than four inches in largest dimension, and have an Expansion Index less than 20. Proposed import soils must be approved by our office prior to being transported to the project site. The above soil parameters are considered ideal for import fill soils. If import of these soils becomes unfeasible or if these soils

are not available, we can evaluate the use of lower quality materials for use as engineered fill and provide revised recommendations as necessary.

Engineered fill should be placed in lifts not exceeding six inches in compacted thickness with each lift being uniformly moisture conditioned to at least the optimum moisture content for granular soils and at least two percent above the optimum for clay soils, and compacted to not less than 90 percent of the maximum dry density as defined above.

Permanent excavation and fill slopes should be constructed no steeper than two horizontal to one vertical (2:1).

Site preparation should be accomplished in accordance with the recommendations of this section and the *Earthwork Specifications* provided in Appendix B. ***It is essential that our representative be present on a regular basis during all clearing and grading operations to verify adequate removal of remnants from former construction, and also to verify thorough recompaction of disturbed soils and observe and test fill materials, as necessary.***

Utility Trench Backfill

We recommend that native soils (in lieu of select gravel or sand backfill) be used as backfill for utility trenches located within the building footprints to minimize water transmission beneath the structures. The native soil backfill should extend at least five feet beyond the perimeter of the buildings. Bedding and initial backfill of utility lines should conform to City of Elk Grove Standards and the pipe manufacturers recommendations. Utility trench backfill should be placed in maximum 12-inch lifts and mechanically compacted to at least 90 percent of the maximum dry density as determined by ASTM D1557. The upper six inches of utility trench backfill within the limits of pavement areas should be compacted to at least 95 percent of the maximum dry density.

Foundation Design

The proposed one- and two-story structures may be supported upon continuous and/or isolated spread foundations that extend at least 12 inches into the compacted building pad, as measured from lowest adjacent soil grade. For this project, the building pad subgrade is defined as the soil surface on which capillary break gravel is placed. A continuous, reinforced foundation should be utilized for the perimeter of the structures to act as a "cut-off" to help minimize moisture infiltration and variations beneath the interior slab-on-grade areas of the structures. Continuous foundations should be at least 12 inches wide; isolated spread foundations should maintain a minimum 18-inch dimension.

Foundations should bear in recompacted native soils, engineered fill, or a combination of those materials and may be sized for maximum allowable soil pressures of 2000 psf for dead plus live load with a one-third increase to include the short-term effects of seismic or wind forces. The weight of the foundation concrete extending below adjacent soil grade may be disregarded in sizing computations.

We recommend that all foundations be adequately reinforced to provide structural continuity, mitigate cracking and permit spanning of local soil irregularities. The structural engineer should determine final foundation reinforcing requirements. However, *as a minimum,* we recommend that continuous foundations be reinforced with at least two No. 4 steel reinforcing bars, placed one each near the top and bottom of the foundations.

Resistance to lateral displacement of shallow foundations may be computed using an allowable friction factor of 0.25 multiplied by the effective vertical load on each foundation. Additional lateral resistance may be achieved using an allowable passive earth pressure against the vertical projection of the foundation equal to an equivalent fluid pressure of 250 psf per foot of depth. These two modes of resistance should not be added unless the frictional component is reduced by 50 percent since mobilization of the passive resistance requires some horizontal movement, effectively reducing the frictional resistance.

Interior Floor Slab Support

Conventional concrete slabs-on-grade may be suitably supported upon soil subgrades prepared in accordance with the recommendations in this report. Interior concrete slab-on-grade floors, including garage floors, should be at least four inches thick. From a crack-control standpoint, a light gauge 6x6/W1.4xW1.4 welded-wire fabric (in rolls) would be suitable for slab reinforcement; however, it has been our experience that it is more difficult to consistently locate the lighter gauge wire mesh at mid-slab depth. Accurate and consistent location of the reinforcement at mid-slab is essential to its performance and the risk of uncontrolled drying shrinkage slab cracking is increased if the reinforcement is not properly located within the slab. Therefore, we recommend consideration be given to using a heavier gauge 6x6/W2.9xW2.9 wire (flat sheets) placed on chairs, or No. 3 rebar at 24-inch centers each way in the slab. The structural engineer should determine final slab thickness and reinforcing based upon the anticipated floor loads.

Interior floor slabs may be underlain by a layer of free-draining gravel, serving as a deterrent to migration of capillary moisture. The gravel layer should be about four inches thick or more, and should have a gradation such that 100 percent passes a one-inch sieve and none passes a No. 4 sieve. Additional moisture protection may be provided by placing a water vapor retarder (10-mil or thicker) directly over the gravel. The vapor retarder should meet or exceed the standard specifications contained in ASTM E1745. An optional, thin layer of clean sand above the vapor retarder is acceptable, as an aid to curing of the slab concrete.

The recommendations presented above are provided to help minimize soil-related cracking of slab-on-grade floors. Equally important to the performance and appearance of Portland cement concrete slabs is the quality of the concrete, the skill of the concrete contractor, curing techniques utilized and the spacing of control joints.

Floor Slab Moisture Penetration Resistance

It is considered likely that floor slab subgrade soils will become wet to near-saturated at some time during the life of the structures. This is a certainty when slabs are constructed during the wet seasons or when constantly wet ground or poor drainage conditions exist adjacent to structures. For this reason, it should be assumed that all slabs in living areas, as well as those intended for moisture-sensitive floor coverings or materials, require protection against moisture

or moisture vapor penetration. Standard practice includes the gravel, water vapor retarder and sand outlined above. However, the gravel and vapor retarder offer only a limited, first-line of defense against soil-related moisture. Recommendations contained in this report concerning foundation and floor slab design are presented as *minimum* requirements, only from the geotechnical engineering standpoint.

It is emphasized that we are not slab moisture-proofing or moisture protection experts. We are expressly stating that we make no guarantee nor provide any assurance that use of the sub-slab gravel and vapor retarder will reduce slab moisture penetration to any specific amount or level, particularly those required by floor covering manufacturers or to prevent damage to other building components. The builder and designers should consider all available measures for slab moisture protection. It is commonly accepted that the quality and thickness of the concrete slab are of primary importance to reducing moisture and moisture vapor penetration.

Exterior Flatwork

Areas to receive exterior flatwork should be scarified, thoroughly moisture conditioned, and properly compacted just prior to placement of concrete. Exterior concrete flatwork may be constructed directly upon the soil subgrade uniformly compacted to 90 percent relative compaction (ASTM D1557). Uniform moisture conditioning of subgrade soils is important to reduce the risk of non-uniform moisture withdrawal from the concrete and the possibility of plastic shrinkage cracks. The moisture condition of the subgrade soils should be verified by our office immediately prior to concrete placement.

Consideration should be given to reinforcing the slabs with rebar or welded wire fabric for crack control. Areas adjacent to new slabs-on-grade should be landscaped to maintain more uniform soil moisture conditions adjacent to and under the slabs. We recommend that final landscaping plans not allow fallow ground adjacent to or exterior concrete flatwork.

Practices recommended by the Portland Cement Association for proper placement and curing of concrete, and joint spacing, construction and placement should be followed during exterior concrete flatwork construction. Flatwork should be independent of the building foundations and felt strips should be used to separate concrete slabs from adjacent existing concrete structures.

Sound Wall Systems

Foundations for sound wall systems should be based within firm undisturbed ground, engineered fill placed and compacted in accordance with the recommendations of this report, or a combination of these materials, as confirmed by our representative. Sound wall foundations should extend at least 12 inches below the lowest adjacent soil grades and maintain a width of at least 12 inches. Sound wall foundations may be designed using a maximum allowable soil bearing pressure of 2000 psf for dead plus live load conditions. Lateral resistance may be computed using an equivalent fluid pressure of 250 psf per foot of depth with the understanding the upper six inches be disregarded to allow for local soil irregularities. For pier foundations, the lateral resistance may be computed using 1½-pier diameters times the depth of the pier.

If the walls will be constructed on sloping ground or at the top of a soil berm, the passive resistance should be computed below a depth at which at least five feet of engineered fill or undisturbed native soil is present in front of the foundation, as measured from the exterior edge of the foundation to the face of the slope.

Site Drainage

Final site grading should be accomplished to provide positive drainage of surface water away from the structures and prevent ponding of water adjacent to foundations or slabs. The grade adjacent to the structures should be sloped away from the foundations at a minimum two percent slope for a distance of at least five feet, where possible. Roof gutter downspouts and surface drains should be connected to solid PVC piping and directed towards appropriate drainage facilities, or the downspouts should drain onto concrete surfaces sloping away from the structures.

Pavement Design

Based upon laboratory test results on anticipated pavement subgrade soils and using City of Elk Grove or the Sacramento County Standards for anticipated interior roadways, we have calculated the following alternate pavement sections. The procedures used for design are in general conformance with the County of Sacramento Public Works Agency, *Improvement Standards*, dated June 1, 1999, and the procedures contained in Chapter 600 of the *Caltrans Highway Design Manual*, dated July 1992.

Pavement Design Alternates

R-Value = 5

Traffic Condition	Traffic Index (TI)	Type B Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
40 to 50 Foot Widths	5.0	2½ 3*	11 11
56 to 74 Foot Widths, Cul-de-sacs	6.5	2½ 3½*	17 15
84 Foot Widths	9.0	4 5½*	23 21
108 and 130 Foot Widths	10.0	5 6½*	26 24

* = Asphalt thickness includes Caltrans Factor of Safety.

As stated above, the recommended pavement sections are based upon the assumption that pavement subgrade soils possess an R-value of five. We emphasize that the performance of the pavement is critically dependent upon uniform and adequate compaction of the soil subgrade, as well as all engineered fill and utility trench backfill within the limits of the pavement. The upper six inches of the subgrade soils should be compacted to at least 95 percent relative compaction at a moisture content no less than the optimum moisture. Final scarification, moisture conditioning and compaction of pavement subgrades should be accomplished within 72 hours of aggregate base placement, after the underground utilities have been completed. All aggregate base should be compacted to at least 95 percent relative compaction.

Materials, quality and construction of the structural section of the pavement should conform to the applicable provisions of the *Caltrans Standard Specifications* and *City of Elk Grove Improvement Standards,* latest editions.

Construction Testing and Observation

Geotechnical testing and observation services during construction are considered a continuation of our geotechnical engineering investigation. Wallace - Kuhl & Associates, Inc. (WKA) should be retained to provide testing and observation services during site grading, and foundation construction.

LIMITATIONS

Our recommendations are based upon the information provided regarding the proposed construction, combined with our analysis of site conditions revealed by the field exploration and laboratory testing programs. We have used our best engineering judgment based upon the information provided and the data generated from our investigation. If the proposed construction is modified or relocated or, if it is found during construction that subsurface conditions differ from those we encountered at our test borings, we should be afforded the opportunity to review the new information or changed conditions to determine if our conclusions and recommendations must be modified.

We would appreciate the opportunity to review the final plans and specifications to determine if the intent of our recommendations has been implemented in those documents.

We emphasize that this report is applicable only to the proposed construction and the investigated site. This report should not be utilized for construction on any other site.

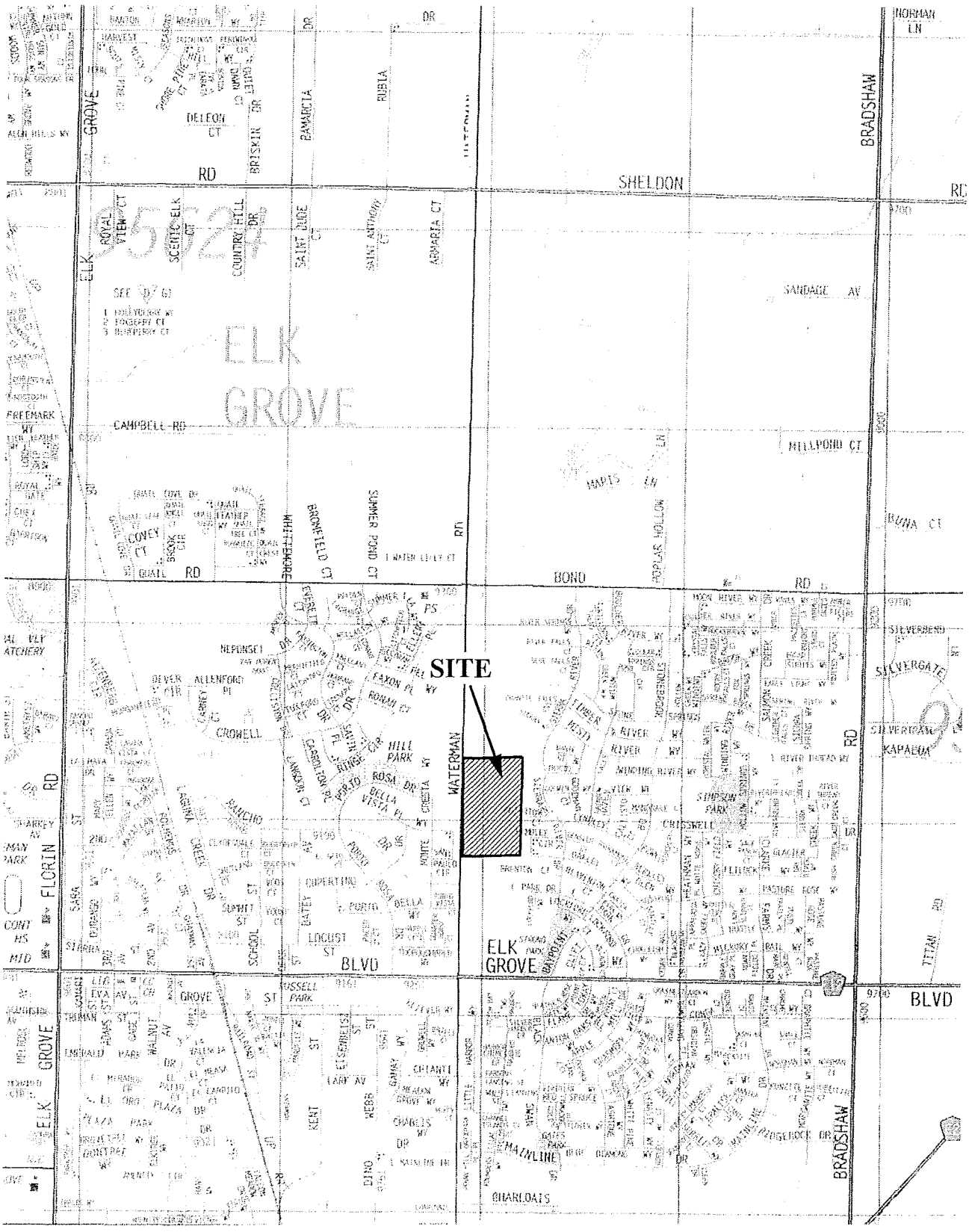
Wallace - Kuhl & Associates, Inc.

Troy W. Kamisky
Staff Engineer

Todd G. Kamisky
Project Engineer

REGISTERED PROFESSIONAL ENGINEER
TODD G. KAMISKY
No. 2587
Exp. 12/31/05
GEOTECHNICAL
STATE OF CALIFORNIA

TWK:TGK



Adapted from the Thomas Guide
Sacramento and Solano Counties
Street Guide and Directory, 2004 edition.

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VICINITY MAP

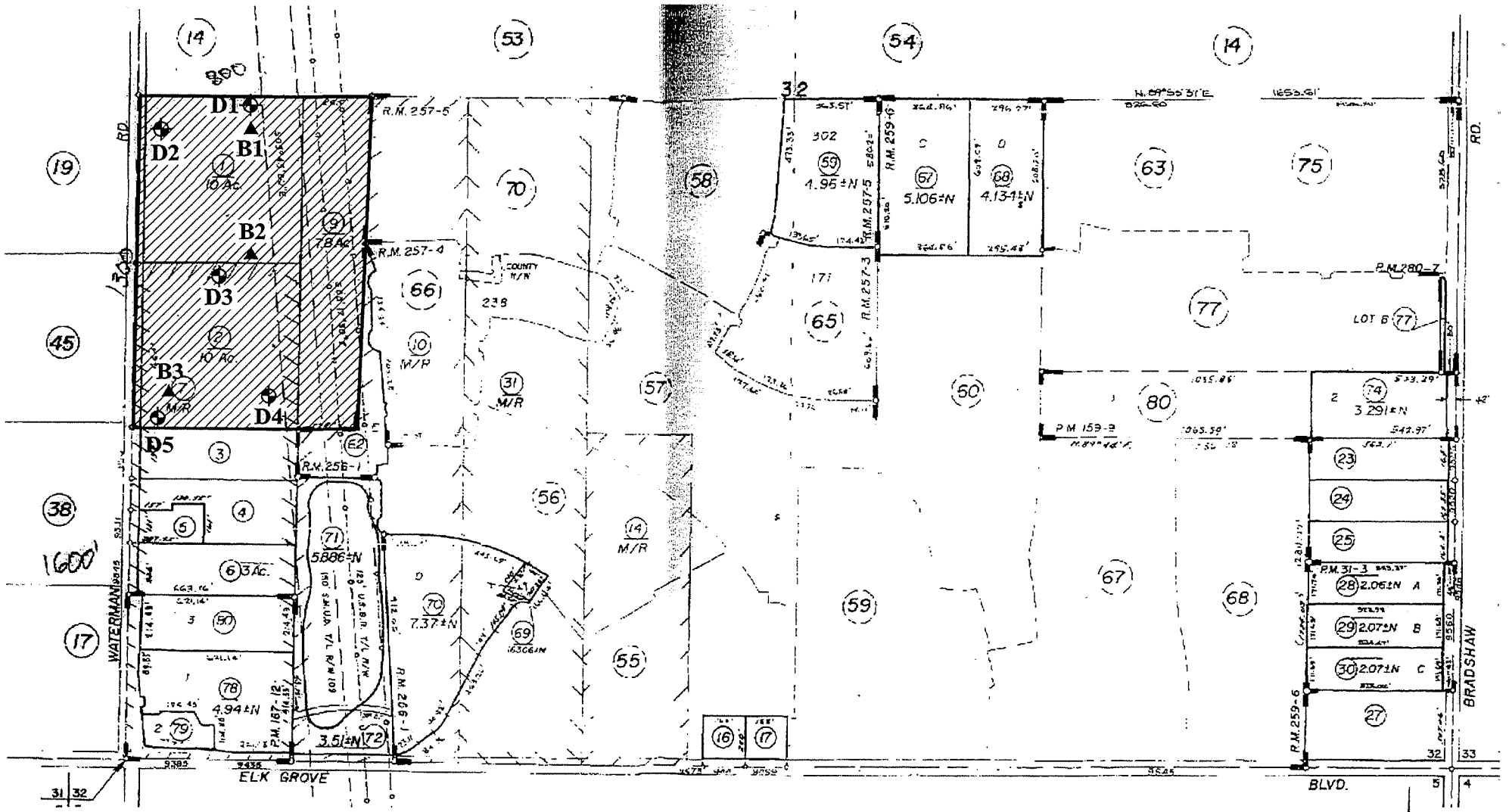
LYNCH PROPERTY

Elk Grove, California

WKA NO: 5971.02

DATE: 05/04

PLATE NO: 1



Note:

Adapted from an Assessor's Map Bk. 127-Pg. 15, County of Sacramento, California.

Legend:

- ⌖ -Approximate soil boring locations
- ▲ -Approximate bulk sample locations

0 300 600
Scale in Feet

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GEOLOGIC & ENVIRONMENTAL SERVICES

Drawn By: HCS
Checked By: TWK

SITE PLAN
LYNCH PROPERTY
Elk Grove, California

WKA NO: 5971.02
DATE: 05/04
PLATE NO: 2

BORING NUMBER: D1
DATE DRILLED: 4/23/04
LOGGED BY: AN

DRILL RIG/METHOD:
CME-75/6 INCH
HOLLOW STEM AUGERS

DEPTH (feet)	SAMPLER	SAMPLE NUMBER	BLOWS/FT.	DRY UNIT WT. (PCF)	MOISTURE CONTENT (%)	OTHER TESTS	USCS	GRAPHIC LOG	SOIL DESCRIPTION AND REMARKS
0							ML		Light brown, fine sandy, clayey silt
		D1-1II	50	101	9.2	9.2 (TSF) UCC	CL		Dark brown, fine sandy, silty clay
							ML		Light brown, partially cemented, fine sandy silt with gravel
5		D1-2I	50/3"	108	7.7		GC		Brown, clayey, fine sand with gravel
							ML		Gray, fine sandy silt
		D1-3I	50/5"	94	19.5				
15									
20									

Notes:

1. This log depicts conditions only at the boring location, see Plate No. 2, and only on the date of field exploration.
2. Ground water was not encountered in the boring.
3. For an explanation of the symbols used in the boring log, see Plate No. 8.

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LOG OF BORING

LYNCH PROPERTY

Elk Grove, California

WKA NO: 5971.02

DATE: 05/04

PLATE NO: 3

BORING NUMBER: D2
DATE DRILLED: 4/23/04
LOGGED BY: AN

DRILL RIG/METHOD: CME-75/6 INCH HOLLOW STEM AUGERS

DEPTH (feet)	SAMPLER	SAMPLE NUMBER	BLOWS/FT.	DRY UNIT WT. (PCF)	MOISTURE CONTENT (%)	OTHER TESTS	USCS	GRAPHIC LOG	SOIL DESCRIPTION AND REMARKS
0							ML		Light brown, fine sandy, clayey silt
		D2-1I					ML		Brown, fine sandy silt with gravel
		D2-2I	13	121	8.2				
5		D2-3I	7						
		D2-4I	50/5"	92	23.9		ML		Gray, fine sandy, clayey silt
							ML/ SM		Gray, silty fine sand/ fine sandy silt
10									
		D2-5I	83				SM/ SP		Gray, slightly silty fine sand
15									
20									

Notes:

1. This log depicts conditions only at the boring location, see Plate No. 2, and only on the date of field exploration.
2. Ground water was not encountered in the boring.
3. For an explanation of the symbols used in the boring log, see Plate No. 8.

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LOG OF BORING

LYNCH PROPERTY

Elk Grove, California

WKA NO: 5971.02

DATE: 05/04

PLATE NO: 4

BORING NUMBER: D3
DATE DRILLED: 4/23/04
LOGGED BY: AN

DRILL RIG/METHOD:
CME-75/6 INCH
HOLLOW STEM AUGERS

DEPTH (feet)	SAMPLER	SAMPLE NUMBER	BLOWS/FT.	DRY UNIT WT. (PCF)	MOISTURE CONTENT (%)	OTHER TESTS	USCS	GRAPHIC LOG	SOIL DESCRIPTION AND REMARKS
							ML		Light brown, fine sandy, clayey silt with gravel
		D3-1I	20	111	8.9		ML		Brown, fine sandy silt with gravel
		D3-2I	50/5"				GM		Light brown, silty, fine sandy gravel
5							SM		Light brown, silty fine sand with coarse sand
		D3-3I	44	92	15.6		SM/ ML		Light brown, silty fine sand /fine sandy silt
15									
20									

Notes:

1. This log depicts conditions only at the boring location, see Plate No. 2, and only on the date of field exploration.
2. Ground water was not encountered in the boring.
3. For an explanation of the symbols used in the boring log, see Plate No. 8.

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LOG OF BORING

LYNCH PROPERTY

Elk Grove, California

WKA NO: 5971.02

DATE: 05/04

PLATE NO: 5

BORING NUMBER: D4
DATE DRILLED: 4/23/04
LOGGED BY: AN

DRILL RIG/METHOD:
CME-75/6 INCH
HOLLOW STEM AUGERS

DEPTH (feet)	SAMPLER	SAMPLE NUMBER	BLOWS/FT.	DRY UNIT WT. (PCF)	MOISTURE CONTENT (%)	OTHER TESTS	USCS	GRAPHIC LOG	SOIL DESCRIPTION AND REMARKS
0							ML		Light brown, fine sandy, clayey silt
		D4-1I	13	113	7.5	3.0 (TSF) UCC			brown, with gravel
									light brown
							ML		Gray, clayey, fine sandy silt
5		D4-2I	50/5"	98	20.7				
							SM/ SP		Gray, slightly silty fine sand
10							ML		Gray, partially cemented, fine sandy silt
		D4-3I	61	86	31.1				
15									
		D4-4I	84						
20									

Notes:

1. This log depicts conditions only at the boring location, see Plate No. 2, and only on the date of field exploration.
2. Ground water was not encountered in the boring.
3. For an explanation of the symbols used in the boring log, see Plate No. 8.

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GEOTECHNICAL ENGINEERING
GEOLOGIC & ENVIRONMENTAL SERVICES

LOG OF BORING

LYNCH PROPERTY

Elk Grove, California

WKA NO: 5971.02

DATE: 05/04

PLATE NO: 6

BORING NUMBER: D5
DATE DRILLED: 4/23/04
LOGGED BY: AN

DRILL RIG/METHOD:
CME-75/6 INCH
HOLLOW STEM AUGERS

DEPTH (feet)	SAMPLER	SAMPLE NUMBER	BLOWS/FT.	DRY UNIT WT. (PCF)	MOISTURE CONTENT (%)	OTHER TESTS	USCS	GRAPHIC LOG	SOIL DESCRIPTION AND REMARKS
0							ML		Brown, fine sandy, clayey silt with gravel no clay
		D5-1I	50	100	8.8				
							CL		Brown, fine sandy, silty clay
5		D5-2I	31	102	20.4				
							ML		Brown, fine sandy silt
							ML		Gray, fine sandy, clayey silt
		D5-3I	72						
15									
20									

Notes:
1. This log depicts conditions only at the boring location, see Plate No. 2, and only on the date of field exploration.
2. Ground water was not encountered in the boring.
3. For an explanation of the symbols used in the boring log, see Plate No. 8.

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GEOLOGIC & ENVIRONMENTAL SERVICES

LOG OF BORING
LYNCH PROPERTY
Elk Grove, California

WKA NO: 5971.02
DATE: 05/04
PLATE NO: 7

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		SYMBOL	CODE	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of soil > no. 200 sieve size)	GRAVELS (More than 50% of coarse fraction > no. 4 sieve size)	GW		Well graded gravels or gravel - sand mixtures, little or no fines
		GP		Poorly graded gravels or gravel - sand mixtures, little or no fines
		GM		Silty gravels, gravel - sand - silt mixtures
		GC		Clayey gravels, gravel - sand - clay mixtures
	SANDS (50% or more of coarse fraction < no. 4 sieve size)	SW		Well graded sands or gravelly sands, little or no fines
		SP		Poorly graded sands or gravelly sands, little or no fines
		SM		Silty sands, sand - silt mixtures
		SC		Clayey sands, sand - clay mixtures
FINE GRAINED SOILS (50% or more of soil < no. 200 sieve size)	SILTS & CLAYS LL < 50	ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL		Organic silts and organic silty clays of low plasticity
	SILTS & CLAYS LL ≥ 50	MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH		Inorganic clays of high plasticity, fat clays
		OH		Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOILS		Pt		Peat and other highly organic soils

OTHER SYMBOLS

= Drive Sample: 2-1/2" O.D. Modified California sampler

= Drive Sample: no recovery

= Initial Water Level

= Final Water Level

= Estimated or gradational material change line

= Observed material change line

Laboratory Tests

PI = Plasticity Index
EI = Expansion Index
UCC = Unconfined Compression Test
TR = Triaxial Compression Test
GR = Gradational Analysis (Sieve)
K = Permeability Test

GRAIN SIZE CLASSIFICATION

CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVEL coarse (c) fine (f)	3" to No. 4 3" to 3/4" 3/4" to No. 4	76.2 to 4.76 76.2 to 19.1 19.1 to 4.76
SAND coarse (c) medium (m) fine (f)	No. 4 to No. 200 No. 4 to No. 10 No. 10 to No. 40 No. 40 to No. 200	4.76 to 0.074 4.76 to 2.00 2.00 to 0.420 0.420 to 0.074
SILT & CLAY	Below No. 200	Below 0.074

APPENDIX A

APPENDIX A

A. GENERAL INFORMATION

The preparation of a geotechnical engineering report and pavement design of the site for a proposed residential subdivision, located south of Bond Road east of Waterman Road in Elk Grove, California, was authorized by Mr. Gary Parker of Reynen & Bardis Development, LLC., on April 21, 2004. Authorization was for an investigation as described in our proposal letter of April 21, 2004, sent to our client, Mr. Gary Parker c/o Reynen & Bardis Development, LLC., whose mailing address is 9848 Business Park Drive, Suite H, Sacramento, California 95827; telephone (916) 366-3665; facsimile (916) 364-3570.

B. FIELD EXPLORATION

At the approximate locations as indicated on Plate No. 2, five test borings were drilled on April 23, 2004, utilizing a CME-75 truck-mounted drill rig. The borings were drilled to a maximum depth of approximately 16½ feet below existing grade using six-inch diameter hollow-stem helical augers. At various intervals, relatively undisturbed soil samples were recovered with a 2½-inch O.D., 2-inch I.D., California sampler using a hydraulically operated, 70-pound hammer, dropped 30-inches. The number of blows of the hammer required to drive the 18-inch long sampler each 6-inch interval was recorded with the sum of the blows required to drive the sampler the lower 12-inch interval, or portion thereof, being designated the penetration resistance or "blow count" for that particular drive.

The samples were retained in 2-inch diameter by 6-inch long thin-walled brass tubes contained within the sampler. Immediately after recovery, the soils in the tubes were visually classified by the field geologist and the ends of the tubes were sealed to preserve the natural moisture contents.

The Boring Logs, Plates No. 3 through 7, contain descriptions of the soils encountered in each boring. A Boring Legend explaining the Unified Soil Classification System and the symbols used on the logs is contained on Plate No. 8.

Bulk samples were collected of near-surface soils; the approximate locations of these samples are indicated on Plate No. 2. The samples were taken to our laboratory for additional soil classification and selection of samples for testing.

C. LABORATORY TESTING

Selected undisturbed soil samples were tested to determine dry unit weight (ASTM D2937), natural moisture content (ASTM D2216), and unconfined compressive strength (ASTM D2166). The results of the moisture/density and unconfined compression tests are included on the boring logs at the depth each tested sample was obtained.

Two samples of near-surface soils were subjected to Expansion Index testing (ASTM D4829); the results of this tests are presented on Plates No. A1 and A2.

Two samples of anticipated pavement subgrade soils were subjected to Resistance-value ("R") testing in accordance with California Test 301. Results of the R-value tests, which were used in the pavement design, are contained on Plates No. A3 and A4.

Two near-surface soil samples were submitted to Sunland Analytical of Rancho Cordova, California, to determine the soil pH and minimum resistivity (California Test 643), Sulfate concentration (California Test 417) and Chloride concentration (California Test 422). Results from those tests are included as Plates No. A5 and A5.

/

EXPANSION INDEX TEST RESULTS

UBC Standard No. 29-2

ASTM D4829-88

MATERIAL DESCRIPTION: Light brown, fine sandy, clayey silt

LOCATION: B-1

Sample Depth	Pre-Test Moisture (%)	Post-Test Moisture (%)	Dry Density (pcf)	Expansion Index *
0-2'	14.1	28.1	101	**48**

CLASSIFICATION OF EXPANSIVE SOIL **

EXPANSION INDEX	POTENTIAL EXPANSION
0 - 20	Very Low
21 - 50	**Low**
51 - 90	Medium
91 - 130	High
Above 130	Very High

* Corrected to 50% Saturation

** From UBC Table 29-C

EXPANSION INDEX TEST RESULTS

UBC Standard No. 29-2

ASTM D4829-88

MATERIAL DESCRIPTION: Light brown, fine sandy, clayey silt

LOCATION: B-3

Sample Depth	Pre-Test Moisture (%)	Post-Test Moisture (%)	Dry Density (pcf)	Expansion Index *
0-2'	9.9	19.6	108	**32**

CLASSIFICATION OF EXPANSIVE SOIL **

EXPANSION INDEX	POTENTIAL EXPANSION
0 - 20	Very Low
21 - 50	**Low**
51 - 90	Medium
91 - 130	High
Above 130	Very High

* Corrected to 50% Saturation

** From UBC Table 29-C

RESISTANCE VALUE TEST RESULTS
(California Test 301)

MATERIAL DESCRIPTION: Brown, fine sandy, clayey silt

LOCATION: B1 (0-2')

Specimen No.	Dry Unit Weight (pcf)	Moisture @ Compaction (%)	Exudation Pressure (psi)	Expansion Pressure (dial)	Expansion Pressure (psf)	R Value
1	109	18.3	271	6	26	11
2	111	17.3	303	19	82	15
3	117	16.4	637	36	156	34

R-Value at 300 psi exudation pressure = 16

RESISTANCE VALUE TEST RESULTS
(California Test 301)

MATERIAL DESCRIPTION: Brown, fine sandy, silty clay

LOCATION: B3 (0-2')

Specimen No.	Dry Unit Weight (pcf)	Moisture @ Compaction (%)	Exudation Pressure (psi)	Expansion Pressure (dial)	Expansion Pressure (psf)	R Value
1	112	15.9	215	5	22	9
2	114	15.0	303	6	26	13
3	118	14.2	438	7	30	27

R-Value at 300 psi exudation pressure = 9

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 04/30/2004
Date Submitted 04/26/2004

To: Troy Kamisky
Wallace-Kuhl & Associates,Inc.
3050 Industrial Blvd.
West Sacramento, Ca 95691

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 5971.02\LYNCH PROP. Site ID : B-1.
Your purchase order number is 2970.
Thank you for your business.

* For future reference to this analysis please use SUN # 41701-81329.

EVALUATION FOR SOIL CORROSION

Soil pH	6.93		
Minimum Resistivity	1.63	ohm-cm (x1000)	
Chloride	22.6 ppm	00.00226	%
Sulfate	4.1 ppm	00.00041	%

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 04/30/2004
Date Submitted 04/26/2004

To: Troy Kamisky
Wallace-Kuhl & Associates,Inc.
3050 Industrial Blvd.
West Sacramento, Ca 95691

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 5971.02\LYNCH PROP. Site ID : B-2.
Your purchase order number is 2970.
Thank you for your business.

* For future reference to this analysis please use SUN # 41701-81330.

EVALUATION FOR SOIL CORROSION

Soil pH	5.56		
Minimum Resistivity	2.65	ohm-cm (x1000)	
Chloride	31.7 ppm	00.00317	%
Sulfate	11.8 ppm	00.00118	%

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

APPENDIX B

APPENDIX B

GUIDE EARTHWORK SPECIFICATIONS

LYNCH PROPERTY

Elk Grove, California

WKA No. 5971.02

GEOTECHNICAL ENGINEERING REPORT

A Geotechnical Engineering Report (WKA No. 5971.02; dated May 19, 2004) has been prepared for this site by Wallace - Kuhl & Associates, Inc., Geotechnical Engineers of West Sacramento, California; (916) 372-1434. A copy is available for review at the office of Wallace - Kuhl & Associates, Inc. The information contained in the Geotechnical Engineering Report was obtained for design purposes only.

GENERAL DESCRIPTION

This item shall include all clearing and grubbing, site demolition, preparation of land to be filled, spreading, compaction, observation and testing of the fill, and all subsidiary work necessary to complete the grading of the site to conform with the lines, grades and slopes as shown on the accepted plans.

CLEARING, GRUBBING AND PREPARING BUILDING AND PAVEMENT AREAS

The site shall be cleared of surface and subsurface structures designated for removal, including but not limited to underground irrigation lines, rubble, deleterious debris, water wells, and any underground utilities or tanks designated to be removed or relocated, including all trench backfill. Trees and shrubs designated to be removed shall include the entire rootball and all roots larger than one-half inch (½") in diameter. Water wells shall be destroyed in accordance with Sacramento County Environmental Management Department requirements. Depressions

resulting from the removal of these items, as well as any loose, soft or saturated soils, shall be cleaned out to firm native soils and backfilled with engineered fill.

All significant vegetation shall be removed from construction areas by stripping. Discing, if approved by the Geotechnical Engineer prior to grading, shall be allowed only if minor quantities of organics will be incorporated into the upper soils and provided a uniform, compactable mixture can be achieved that is free of clumps, layers or pockets of organics.

All areas of the site shall be scarified to a depth of at least twelve inches (12") until the surface is free from ruts or the uneven features that would tend to prevent uniform compaction by the equipment to be used.

After the foundation for fill within building pad and pavement areas has been cleared and scarified, and is free from large clods, it shall be brought to at least two percent (2%) above the optimum moisture content for clay soils and at least the optimum moisture content for granular soils and compacted to not less than ninety percent (90%) of the maximum dry density as determined by the ASTM D1557 Test Method.

MATERIALS

Proposed fill material shall be free from organic matter and other unsuitable substances and shall be approved by the Geotechnical Engineer. Clods, rocks, hard lumps or cobbles exceeding six inches (6") shall be removed from any fill supporting the buildings. Imported fill material shall be granular having a plasticity index of fifteen (15) or less when tested in accordance with ASTM D4318, an Expansion Index less than twenty (20) when tested in accordance with ASTM D4829/UBC 29-2, and a maximum four-inch (4") particle size. All imported fill sources shall be sampled, tested and approved by the Geotechnical Engineer prior to being transported to the site.

PLACING, SPREADING AND COMPACTING FILL MATERIAL

The selected fill material shall be placed in layers which when compacted shall not exceed six inches (6") in compacted thickness. Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to promote uniformity of material in each layer.

When the moisture content of the fill material is less than the recommended moisture, water shall be added until the proper moisture content is achieved.

When the moisture content of the fill material is too high to permit the specified compaction to be attained, the fill material shall be aerated by blading or other methods until the moisture content is satisfactory.

After each layer has been placed, mixed and spread evenly, it shall be thoroughly compacted to not less than ninety percent (90%) of the maximum dry density as determined by the ASTM D1557 Test Method. Compaction shall be undertaken with a heavy, self-propelled, sheepsfoot compactor, (Caterpillar 815 or equivalent) capable of achieving the specified density and shall be accomplished while the fill material is at the required moisture content. Each layer shall be compacted over its entire area until the desired density has been obtained.

SEASONAL LIMITS

Fill materials shall not be placed, spread or rolled during unfavorable weather conditions. When heavy rains interrupt the work, fill operations shall not be resumed until field tests indicate that the moisture content and density of the fill are satisfactory.

FIELD DENSITY TESTS

The Geotechnical Engineer or his representative shall make field density tests after compaction of each layer of fill. Additional layers of fill shall not be spread until field density tests indicate the specified density has been obtained.

FINAL SUBGRADE PREPARATION

The upper twelve inches (12") of all final building pad subgrades shall be uniformly compacted to at least ninety percent (90%) of the maximum dry density as determined by the ASTM D1557 Test Method, regardless of whether final subgrade elevation is attained by filling, excavation or is left at existing grade. If expansive soil conditions are observed in the slab subgrades, the upper 12 inches of the affected subgrades should be brought to a uniform, near saturated moisture condition by liberal watering or sprinkling, immediately prior to slab concrete placement. Site conditions should be field checked by our representative within 48 hours prior to slab construction. The upper six inches (6") of all final pavement subgrades shall be uniformly compacted to at least ninety-five percent (95%) of the maximum dry density as determined by the ASTM D1557 Test Method.

TESTING

Observation and testing by the Geotechnical Engineer or his representative shall be provided during all filling and compaction operations. The grading contractor shall give at least twenty-four (24) hours notice prior to beginning such operations to allow proper scheduling of the work.

Appendix G

PHASE I ENVIRONMENTAL SITE ASSESSMENT

of a

KALWANI (WATERMAN) PROPERTY
APN: 127-0150-001, -002, AND -009
ELK GROVE, CALIFORNIA 95624

Prepared for:

MR. BRYAN WILSON
SHELDON BUSINESS PARK
8940 ELDER CREEK ROAD
SACRAMENTO, CALIFORNIA 95829

Prepared by:

P.O. Box 904
Clayton, California 94517

(925) 673-5500 (toll free)

PEI Project #22-5793

Issue Date: June 10, 2024

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PHASE I ESA EXECUTIVE SUMMARY OVERVIEW Kalwani Property APNs: 127-0150-001, -002, and -009, Elk Grove, CA					
Section Topic	**No RECs Identified**	**Non-REC Issue Identified**	**RECs Identified**	**Phase II Recommended**	**Comments**
Historical Usage	✔				The subject property has been undeveloped since at least 1909. A powerline easement was established through the eastern portion of the subject property by 1950s.
Regulatory Database Review (on-site)	✔				
Regulatory Database Review (nearby sites)			✔		The former Elk Grove Landfill is located on the northwestern adjoining property.
On-site Operations	✔				The subject property is currently utilized as agricultural land with a power-line easement along the eastern portion.
Haz. Mat. Handling	✔				This site does not use or store hazardous materials onsite.
Haz. Waste Handling	✔				This site does not generate or store hazardous waste.
USTs/ ASTs	✔				No signs of USTs were found during the site visit or in the records available.
ACMs	✔				
LBP/ Lead in H2O	✔				
PCBs	✔				
Radon	✔				
Other	✔				An onsite water well is associated with the subject property. If the wells are not designed for future use, they should be abandoned in accordance with local regulations. If planned for consumptive use, water from the wells should be analyzed for drinking water parameters.

SECTION I.
EXECUTIVE SUMMARY & RECOMMENDATIONS

Pinnacle Environmental, Inc. (PEI) was retained by Mr. Bryan Wilson (Client) to perform a Phase I Environmental Site Assessment (Phase I ESA or Assessment) of a site located east of Waterman Road (APNs: 127-0150-001, -002, and -009) in Elk Grove, California. Research conducted by PEI through this investigation revealed additional current and/or historical addresses associated with the subject property as described in Section IV.

A project overview is presented below:

Project Overview	
Site Visit	
Site Visit Date	June 27th, 2023
Site Inspection Personnel	Peter Cloven and Travis Stansbery
Accompanied By	During the site visit, which was performed by public access methods, the PEI Assessor was unaccompanied. However, the Key Site Manager was notified in advance of the visit and permission for site access was granted to PEI.
Subject Property Parcel	
Number of Parcel(s)	Three (3)
APN(s)	127-0150-001 – Northwestern parcel 127-0150-002 – Southwestern parcel 127-0150-009 – Eastern parcel
Total Size of Parcel(s)	127-0150-001 – 9.43-acres 127-0150-002 – 10.31-acres 127-0150-009 – 7.13-acres Total – 26.87-acres
Subject Structure	
Number of Structure(s)	Zero (0)
Nature of Structure(s)	The property was structurally undeveloped, agricultural land. The property is improved with pylons along the eastern portion associated with the power-line easement through the subject property.
Total Size of Structure(s)	n/a
Tenants Onsite	
Total Number of Tenant(s)	Zero (0)
Occupant(s) + Nature of Use	The subject property is utilized as agricultural (grazing) land
General Location	
Nature of Area	Residential and agricultural
Side of Street	East of Waterman Road
Distance to the Closest Intersection	125 ft. north of the intersection of Waterman Road and Rancho Drive

This Phase I ESA was performed in general accordance with the scope and limitations of the *American Society for Testing and Materials (ASTM) Phase I ESA Standard E1527-2021* (equivalent to the USEPA's All Appropriate Inquiry [AAI] Standard), the scope of work defined in this report, as well as the signed service agreement. Exceptions or deviations from the standard are typically expressed as data gaps, data failure or limitations, which are primarily discussed in Sections II and IV-H. The following summarizes PEI's independent conclusions and best professional judgment based upon information available to us during the course of this Assessment.

Based upon the limited site reconnaissance, historical review, regulatory records review, and other information detailed within this report, this Assessment identified the following evidence of ASTM Recognized Environmental Conditions (RECs) or other issues in connection with the subject property:

- The former Elk Grove Landfill abuts the subject property to the northwest, across Waterman Road. According to information on Geotracker, Elk Grove Landfill operated from 1969 to 1978 as a municipal waste landfill. The landfill is currently owned and maintained by the Sacramento County Department of Waste Management and Recycling. In the past decade, the landfill has not had any violations issued by the local enforcement agency (LEA). The landfill is also under Waste Discharge Requirements Order No. R5-2013-0134 with the Central Valley Regional Water Quality Control Board (CVRWQCB) concerning groundwater protection. Groundwater data from a groundwater monitoring well (MW-13) closest to the subject property (approximately 300 feet west of the northwest corner) indicated VOCs at trace concentrations well below MCLs in 2015. In addition, PFAS concentrations from that well (considered the "downgradient well" for the landfill) indicated "*no concentrations exceed the NLs, there does not appear to be any significant PFAS contamination present at Elk Grove Landfill*". In a telephone conversation with Mr. Todd Del Frate of CVRWQCB, he stated that the landfill has a methane gas collection system. However, the landfill does not generate enough methane to necessitate the use of a flare but rather uses granular activated carbon vessels as a scrubbing system.

  Based on the distance from the subject property, and the cross-gradient location with respect to the assumed hydrogeological gradient (westerly to northwesterly), it does not appear this site has significantly impacted the subject property.

  A May 24, 2018, Meeting Summary Letter between Sacramento County Environmental Health (SCEH) and the city of Elk Grove Development Service Department discussed the status of the Elk Grove Closed Landfills. The letter discusses potential landfill gas concerns and references regulations (27 CCR 21190(g)) that require structures within 1,000 feet of the disposal area to incorporate specific design and construction features to prevent gas migration inside unless an exemption has been issued. It is unknown whether future development will be included within that 1,000-foot radius and whether design and construction requirements will be necessary. PEI recommends communication with the city and county relative to future design requirements relative to the proximity to the Elk Grove Landfill.

No other RECs, Controlled RECs or Historic RECs were identified in connection with the subject property.

An Executive Summary Overview is also included in the previous section. However, when making any decisions concerning the findings of this Assessment, please also refer to the remainder of this report, which may present other items of interest that are not discussed in the Executive Summary, or further details regarding the above items. In addition, please refer to the Data Gaps section (IV-H) of this report regarding information that may have been unavailable or incomplete which may have a bearing on the findings or usage of this report.

SECTION II.
SCOPE OF WORK & LIMITATIONS

PURPOSE

This Phase I Environmental Site Assessment is intended to assist the client regarding one of the requirements for the "innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on CERCLA liability." (42 U.S.C.§9601 et seq.) Qualification for these limitations is predicated on the assumption that "the defendant must have undertaken, at the time of acquisition, all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice in an effort to minimize liability." However, no warranty is made that this report constitutes all appropriate inquiry since numerous other factors, including user responsibilities, are required.

PROTOCOL

The *American Society for Testing and Materials (ASTM) Phase I ESA Standard E1527-2021* is the most current method used in attempting to perform the due diligence required to achieve the above purpose. The E1527-2021 Standard Practice was created by the ASTM "*to define good commercial and customary practice in the United States of America for conducting an environmental site assessment of a parcel of commercial real estate with respect to the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. § 9601) and petroleum products".* The ASTM Standard E1527-2021 is intended to identify recognized environmental conditions (RECs) in connection with a given property. The term recognized environmental conditions is not intended to include *de minimus* conditions that generally do not present a material risk of harm and that are unlikely to be the subject of enforcement actions by governmental agencies.

SCOPE OF WORK

Generally utilizing ASTM Standard Practice E1527-2021, as well as the scope of work discussed below and in the signed work authorization document (including all conditions and limitations therein), this Assessment involved: a site reconnaissance of the subject property, limited observations of adjoining properties, a review of the historical usage of the subject property, and a review of readily available relevant documentation provided by various public and private sources (including the client and/or owner of the subject property). The purpose of this Assessment is to identify conditions indicative of releases or threatened releases of hazardous substances, as defined in CERCLA Section 101 (14) U.S.C. § 312.1(c), and to evaluate the presence or likely existence of recognized environmental conditions, specified by ASTM E1527-2021 as:

> *"(1) the presence of hazardous substances or petroleum products in, on or at the subject property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on or at the subject property due to a release or likely release to the environment; or (3) the presence of hazardous substances or petroleum products in, on or at the subject property under conditions that pose a material threat of a*

future release to the environment. A de minimis condition is not a recognized environmental condition."

A brief and general evaluation of limited other potential environmental issues, including suspect asbestos-containing materials, lead-based paint, polychlorinated bi-phenyls, and radon gas is not addressed in this Assessment unless specifically discussed. In addition, no lab analyses, quantification, or in-depth observations or discussion will be included in this Assessment.

LIMITATIONS

In addition to the limitations described in this report, it is also subject to the terms and conditions of the service agreement with the Client, and related engagement or subsequently provided information, if applicable. As discussed in ASTM E1527-2021, no Phase I ESA can eliminate uncertainty regarding the potential for RECs in connection with a property. This investigation is intended to reduce uncertainty within reasonable limits of time and cost.

Refer to Section VI-A for a brief discussion of some (but not necessarily all) specific limitations to PEI's subject property observations at the time of the site visit. The observations contained within this Assessment are based upon conditions readily observable during the site visit. These observations are typically unable to address conditions of areas which are not inspected or which are hidden from view, such as subsurface soil, groundwater, soil vapor, USTs, neighboring properties, and the like, unless specifically mentioned. It is not the purpose of this Assessment to determine the actual presence, or extent of contamination (if any) at the subject property. Unless specifically noted within this report, this Assessment does not include evaluation, observations, testing, or sampling to address groundwater, soil, or extraneous materials contamination (including mold and/or bio-hazardous/medical waste issues) in or on the subject property. PEI is not providing geological interpretations or recommendations. PEI is not evaluating substances about which human understanding is evolving, such as per- and polyfluoroalkyl substances ("PFAS"). Electromagnetic issues (e.g., high-voltage power lines) or radiologic issues (e.g., X-ray usage, or other radiation emitting items) are also not evaluated. This Assessment does not include or address reasonably ascertainable environmental liens recorded against the subject property, unless stated. A regulatory compliance audit or health and safety review also is not included.

PEI makes no warranties or guarantees as to the accuracy or completeness of information obtained from or compiled by others. Information may also exist which was beyond the scope of this investigation, or which was not provided to PEI, that may have an impact on the conclusions of this Assessment. This Assessment does not attempt to address past or forecast future site conditions. PEI also cannot forecast or be responsible for changes in regulatory guidelines or protocols, industry standards or the like, which may affect the conclusions and/or future usage of this report.

This Assessment has been conducted and prepared in accordance with generally accepted practices and procedures exercised by reputable professionals under similar circumstances. PEI makes no other warranties or guarantees, either expressed or implied, as to the findings,

opinions, or recommendations contained in the report, or as to the existence or non-existence of RECs or other issues at the subject property.

SECTION III.
GENERAL SITE DESCRIPTION

Pinnacle Environmental, Inc. (PEI) was retained by Mr. Bryan Wilson (Client) to perform a Phase I Environmental Site Assessment (Phase I ESA or Assessment) of a site located east of Waterman Road (APNs: 127-0150-001, -002, and -009) in Elk Grove, California. Research conducted by PEI through this investigation revealed additional current and/or historical addresses associated with the subject property as described in Section IV.

A project overview is presented below:

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Site Inspection Personnel	Peter Cloven and Travis Stansbery
Accompanied By	During the site visit, which was performed by public access methods, the PEI Assessor was unaccompanied. However, the Key Site Manager was notified in advance of the visit and permission for site access was granted to PEI.
Subject Property Parcel	
Number of Parcel(s)	Three (3)
APN(s)	127-0150-001 – Northwestern parcel 127-0150-002 – Southwestern parcel 127-0150-009 – Eastern parcel
Total Size of Parcel(s)	127-0150-001 – 9.43-acres 127-0150-002 – 10.31-acres 127-0150-009 – 7.13-acres Total – 26.87-acres
Subject Structure	
Number of Structure(s)	Zero (0)
Nature of Structure(s)	The property was structurally undeveloped, agricultural land. The property is improved with pylons along the eastern portion associated with the power-line easement through the subject property.
Total Size of Structure(s)	n/a
Tenants Onsite	
Total Number of Tenant(s)	Zero (0)
Occupant(s) + Nature of Use	The subject property is utilized as agricultural (grazing) land
General Location	
Nature of Area	Residential and agricultural
Side of Street	East of Waterman Road
Distance to the Closest Intersection	125 ft. north of the intersection of Waterman Road and Rancho Drive

The subject property location is shown on various Figures in the appendix.

Mr. Bryan Wilson, Principal of Summer Flats (owner of the subject property), was identified as the "Key Site Manager." As defined by ASTM E1527-2021, the Key Site Manager is that person having good knowledge of the uses and physical characteristics of the subject property, who is in a position to provide reasonably accurate information for the Key Site Manager Environmental Questionnaire. This person may or may not be the property owner. Mr. Wilson completed the Key Site Manager Environmental Questionnaire subsequent to the site visit.

Mr. Wilson did not answer 'yes' to any of the questions on the questionnaire. No RECs were identified as a result of the questionnaire review. A copy of the questionnaire is included in the appendix of this report.

A. CLIENT AND/OR KEY SITE MANAGER PROVIDED INFORMATION

As discussed in ASTM E1527-2021, the User (e.g., Client) is required to perform certain tasks or provide certain information to PEI in order to identify potential RECs. Tasks or information to be provided or performed by the Client/User include: 1) review of judicial and title records for environmental liens, environmental deed restrictions or activity and use limitations (AULs); 2) provision of specialized, actual, commonly known or reasonably ascertainable knowledge regarding the property; and 3) identification of reasons for a significantly lower purchase price (if applicable).

The Client or Key Site Manager (as applicable) has not provided or reported to PEI any information which indicates the subject property is being sold, purchased, or valued at a significantly reduced price due to outstanding environmental issues. Nor has the Client or Key Site Manager provided or reported to PEI information indicating a specific knowledge of RECs, historic RECs, Environmental Liens, Activity and Use Limitations, or Environmental Deed Restrictions related to the subject property.

However, PEI was not privy to the original purchase price versus valuation metrics of the property by the current owner or seller (as applicable), and therefore cannot evaluate this parameter. The Client/User of this report may wish to perform such an evaluation.

The Client provided PEI with the following documentation:

Client Provided Documentation		
Document	**Date**	**Comment**
Site Plans	9/26/2022	The site plans illustrate the planned residential development

This information is augmented or superseded by the research performed for this Phase I report and therefore will not be discussed in detail other than the comments above.

In addition, no previous environmental documentation (Phase I ESAs, Phase II ESAs, etc.) concerning the subject property was provided to PEI or reported to exist by the Client or Key Site Manager. It is possible information contained in prior reports (if any) could change PEI's

conclusions or recommendations herein. If previous environmental documentation becomes available to the Client or subject property owner, a copy should be provided to PEI for review. PEI reserves the right to alter its conclusions herein based upon such new information.

B. ADJOINING AND ADJACENT PROPERTIES

As discussed in ASTM E1527-2021, an adjoining property is any real property whose border is contiguous or partially contiguous with the subject property or would be if the properties were not separated by a roadway, street or other public thoroughfare.

Specifically, the subject property is bordered by the following:

Adjoining Properties		
Direction	**Immediately By**	**Then By**
North	Undeveloped land	Single-family residential property (9291 Waterman Rd.)
	Comments: n/a	
East	Single-family residential housing tract	An elementary school to the east-northeast surrounded by more single-family residential properties
	Comments: The closest addresses in the single-family residential tract are (listed north to south): 9378-9387 Bruckner Ct., 9378-9379 Briartown Ct., 9340-9368 Hambley Cir., and 9370 Brenton Ct.	
South	Single-family residential property (9501 Waterman Rd.)	More single-family residential properties
	Comments: n/a	
West	Waterman Road	A cemetery to the north (Hilltop Cemetery at 9420 Waterman Rd.) and a single-family residential housing tract to the south
	Comments: The closest addresses in the single-family residential tract are (listed north to south): 9436-9472 San Paulo Cir., and 9289 Rancho Dr.	

C. USGS TOPOGRAPHIC MAP

The subject property's physical setting was researched employing a United States Geological Survey (USGS) 7.5 Minute Topographic Quadrangle (Quad) Map relevant to the subject property. The USGS 7.5 Minute Quad Map has an approximate scale of 1 inch to 2,000 feet, and shows physical features such as wetlands, roadways, mines, and buildings. The USGS 7.5 Minute Quad Map was used as the Standard Physical Setting Source and is sufficient as a single reference. A copy is included in the appendix.

The Elk Grove, California Quad Map (dated 1968) shows no physical features that are likely to environmentally impact the subject property. The subject property is identified as undeveloped

land (white shading with powerlines depicted along the eastern portion). No mines, wells, aboveground storage tanks, or wetlands were depicted in the immediate area of the subject property. The elevation of the subject property is approximately 58 feet above mean sea level with a slight topographic gradient to the south.

D. GENERAL HYDROGEOLOGIC CHARACTERISTICS

Elk Grove lies in the south-central portion of the Sacramento Valley, a structural trough bounded on the east by the north-south trending foothills of the Sierra Nevada and on the west by the similarly trending Coast Range. The valley extends from north of Red Bluff southward to the Sacramento-San Joaquin Delta. Stream channels and floodplains of the southward flowing Sacramento River and its tributaries are the dominant features of the relatively flat valley floor. The Sacramento County Drainage Easement located at the northern property boundary is contiguous with Elk Grove Creek.

The predominant geologic unit in this area is the Victor Formation (DWR, 1978). The Victor Formation is composed of a heterogeneous assemblage of fluvial sediments deposited by streams that drained the Sierra Nevada during the mid- to late Pleistocene. These deposits consist of sand and gravel in stream channels which grade laterally and vertically into silt and clay. The Victor Formation typically contains a thick clay layer within its surface soils and is up to 90 feet thick in most of Sacramento County.

At depths below 90 feet, the area is underlain by a sequence of Pliocene Age sediments (Fair Oaks Formation) which consist of consolidated silts, sands, and clays with intermittent hardpan layers. The Fair Oaks is distinguished from the Victor Formation by the presence of white to gray tuffaceous silts.

Underlying the Fair Oaks Formation is the Mehrten Formation. The Mehrten Formation is estimated to be mid-Miocene to mid-Pliocene in age. Dark andesite sandstone interbedded with tuff breccia is the primary component of the Mehrten Formation. Soft sands, believed to have washed down from the nearby mountains, also contribute to this formation.

Although site-specific groundwater information for the subject property was unavailable, according to information obtained from the State Water Resources Control Board's on-line GeoTracker database (www.geotracker.swrcb.ca.gov), the closest LUST site with available on-line groundwater data indicates the following hydrogeological characteristics at that site as follows:

Hydrogeological Information			
Reference Site	Elk Grove Paint and Wallpaper	Address	9097 Elk Grove Blvd.
Distance + Direction	~3,000 ft. SW	Reference Source	Case Closure Summary
Prepared By	Sacramento Co. Environmental Management Dept.	Reference Date	9/29/2010
Depth to First Groundwater	54.18 to 103.67 ft. bgs.	Gradient	Westerly to northwesterly
Comments: n/a			

However, local groundwater can be influenced by several factors, and may not conform to the reported nearby pattern. Shallower groundwater zones may also occur. Please note that PEI is not providing geological interpretation or recommendations in this Assessment.

SECTION IV.
HISTORICAL REVIEW

The site historical review is used to develop an understanding of the previous uses of the subject property and surrounding area in an effort to identify the likelihood of past uses or activities which have environmentally impacted the subject property. The historical review consisted of a search of various public and private Standard Historical Sources, as detailed in the sections below.

As defined by ASTM E1527-2021, a Standard Historical Source is considered complete if the information contained within the source identifies all uses of the subject property from the time the property was first used for residential, agricultural, commercial, industrial, or governmental purposes. Ideally, the information should be available in either five-year intervals or site milestone events (i.e., initial construction activities, demolition activities, etc.). However, available public and private historical sources do not always fulfill this goal, in which case, the closest approximation is made based upon the sources readily available at the time of historical review.

Historical Review Summary: From the historical information review discussed below, PEI concludes that the subject property has been structurally undeveloped land from at least 1909 (per topographic maps) through the present. Dry farming agricultural use was observed on the southern portion of the property in a 1947 aerial photograph. Overhead powerlines were noted in aerial photography to traverse the property beginning in the 1950s. Residential tract development was observed on the western adjoining property in the early 1990s, with increasing residential tract development noted to the east in the late 1990s/early 2000s. No dry cleaners, gasoline stations, major landfills, military bases, manufacturing facilities, or heavy industrial businesses were identified on the subject property.

A. AERIAL PHOTOGRAPH REVIEW

Aerial photographs were reviewed to evaluate past land-use patterns of the subject property and vicinity. The photos were supplied by HistoricAerials.com and GoogleEarth. Copies of representative aerial photographs are included in the Site Maps appendix. This review revealed the following:

Aerial Photography Review		
Year	**Description**	
1947	Subject Property	
	The subject property is undeveloped land with the southwest portion noted as dry farming agricultural use.	
	Adjoining Properties	
	North	Immediately and further by undeveloped land.
	East	Immediately and further by undeveloped land.
	South	The southern parcels are not included in this aerial photograph.

	West	Immediately by Waterman Road, then by undeveloped land. Disturbed land is observed to the northwest.
1957	Subject Property	
	The subject property is undeveloped land with the southern border noted as dry farming agricultural use.	
	Adjoining Properties	
	North	Immediately and further by undeveloped land.
	East	Immediately and further by undeveloped land.
	South	Immediately by residential homesteads, then further by agricultural use land.
	West	Immediately by Waterman Road, then by undeveloped land. Disturbed land is observed to the northwest.
1964	Subject Property	
	Conditions at the subject property appear similar to those observed in the previous aerial photograph, with the exception that power lines are observed on the eastern border.	
	Adjoining Properties	
	Conditions at the adjoining properties appear similar to those observed in the previous aerial photograph, with the exception of somewhat greater development in the general area (e.g., scattered residential to the south). Grading efforts are noted to the northwest.	
1967	Subject Property	
	Conditions at the subject property appear similar to those observed in the previous aerial photograph.	
	Adjoining Properties	
	Conditions at the adjoining properties appear similar to those observed in the previous aerial photograph.	
1984	Subject Property	
	Conditions at the subject property appear similar to those observed in the previous aerial photograph.	
	Adjoining Properties	
	Conditions at the adjoining properties appear similar to those observed in the previous aerial photograph, with the exception of somewhat greater agricultural use (east) and scattered residential development in the general area.	
1993	Subject Property	
	The subject property is undeveloped land	
	Adjoining Properties	
	North	Immediately and further by undeveloped land.
	East	Immediately and further by agricultural use land.
	South	Immediately by residential homesteads, then further by agricultural use land.
	West	Immediately by Waterman Road, then by tract development (south) and undeveloped land (north)

1998	Subject Property	
	Conditions at the subject property appear similar to those observed in the previous aerial photograph.	
	Adjoining Properties	
	Conditions at the adjoining properties appear similar to those observed in the previous aerial photograph, with the exception of somewhat greater agricultural use (east) and scattered residential development in the general area.	
2002	Subject Property	
	The subject property is undeveloped land	
	Adjoining Properties	
	North	Immediately and further by undeveloped land.
	East	Immediately and further residential tract housing
	South	Immediately by residential homesteads, then further by undeveloped land.
	West	Immediately by Waterman Road, then by tract development (south) and undeveloped land (north)
2009, 2012, 2018	Subject Property	
	Conditions at the subject property appear similar to those observed in the previous aerial photograph.	
	Adjoining Properties	
	Conditions at the adjoining properties appear similar to those observed in the previous aerial photograph, with the exception of somewhat greater agricultural use (east) and scattered residential development in the general area.	
2023	Subject Property	
	The subject property is undeveloped land with power lines traversing the eastern border as observed during the site visit.	
	Adjoining Properties	
	The surrounding land usage is also similar to that observed during the site visit.	

B. BUILDING PERMIT REVIEW

In an effort to evaluate the official construction and demolition history of the subject property, PEI requested city of Elk Grove Building Department (EGBD) information for the subject property. No history building permit information was available for the subject property.
In a further effort to evaluate the development history of the subject property, PEI reviewed Sacramento County Assessor's (SCA) information obtained from the SCA's website. Review of this information indicated the following:

County Assessor Information				
Assessor Parcel Number – Address				
Parcel Size	**(Total) Structure Size**	**Structure Built**	**Land Use Code**	**Last Transfer**
127-0150-001				
10-acres	n/a	n/a	Vacant residential	2021
127-0150-002				
10-acres	n/a	n/a	Vacant residential	2021
127-0150-009				
7.8-acres	n/a	n/a	Vacant residential	2021

C. SANBORN FIRE INSURANCE MAP REVIEW

PEI attempted to review Sanborn Fire Insurance Maps for the area of the subject property as provided by EDR. Sanborn Maps are detailed drawings that show the location and use of structures on a given property during specific years. These maps were originally utilized by insurance companies to assess fire risk but are now utilized as a valuable source of historical and environmental-risk information. However, according to EDR, no maps were available for the subject property.

D. CITY STREET DIRECTORY REVIEW

PEI reviewed available historical city street directories as provided by Sherman Library in Corona Del Mar, California, in an effort to evaluate the prior uses and occupancies of the subject property. City street directories list property occupants by address, allowing an historical search of occupant at the subject property. That review revealed the following information:

Subject Property City Directory Review	
Address Reviewed	
Date(s)	**Occupants Listed**
9300 & 9400 Block of Waterman Road (evens)	
1972, 1977, 1982, 1987 , 1992, 1997, 2002	Addresses not listed

Nearby Properties City Directory Review	
Address Reviewed	
Date(s)	**Occupants Listed**
9420 Waterman – West (Northwest) Adjoining	
1972, 1977, 1982, 1987 , 1992, 1997, 2002	Address not listed
9501 Waterman – Southern Adjoining	
1972, 1977	Address not listed (9545 residential listing)
1982, 1987	Address not listed (9531 & 9545 residential listing)
1992, 1997, 2002	Residential listing (9531 & 9545 residential listing)

E. HISTORICAL TOPOGRAPHIC MAP REVIEW

In a further effort to evaluate the prior uses of the subject property, PEI reviewed historical topographic maps covering the subject property area, which were obtained by PEI from HistoricalAerials.com. That review revealed the following information:

Year	Description	
1909, 1942, 1947	Subject Property	
	The subject property is undeveloped land	
	Adjoining Properties	
	North	Immediately and further by undeveloped land
	East	Immediately and further by undeveloped land
	South	Immediately and further by undeveloped land
	West	Immediately by Waterman Road, then by cemetery and undeveloped land
1957	Subject Property	
	Conditions at the subject property appear similar to those observed in the previous topographic map, with the exception that power lines are now marked as traversing the property along the eastern border.	
	Adjoining Properties	
	Conditions at the adjoining properties appear similar to those observed in the previous topographic map, with the exception of somewhat greater development in the general area.	

1970, 1977, 1980	Subject Property	
	Conditions at the subject property appear similar to those observed in the previous topographic map, with the exception that two additional powerlines are observed traversing the eastern border of the subject property.	
	Adjoining Properties	
	North	Immediately and further by undeveloped land
	East	Immediately and further by undeveloped land
	South	Immediately by three structures, then by scattered structures. land
	West	Immediately by Waterman Road, then by the "Odd Fellows" cemetery (north), undeveloped land, and a convalescent home/hospital to the southwest.
2012, 2018	Subject Property	
	No structures or general land use shading is depicted on this topographic map.	
	Adjoining Properties	
	No structures or general land use shading is depicted on this topographic map; however, the road infrastructure for the western and eastern residential tract home developments are observed.	

F. INTERVIEWS

As specified in ASTM E1527-2021, interviews were conducted with parties including present landowners and occupants, past landowners and occupants, and adjoining property owners, as appropriate and as available. PEI interviewed the following parties during the course of this Assessment:

Interview(s)		
Name	**Relationship to the Subject Property**	**Length of Knowledge**
Conducted Via	**Contact Information**	
Bryan Wilson	Principal, Summer Flat (owner)	3 years
Questionnaire	bryanrcwr@gmail.com	
Information from Interview: Mr. Wilson stated that he acquired the subject property in 2021. Mr. Wilson reported that the subject property has been undeveloped land (open space). Mr. Wilson was unaware of any hazardous material contamination from the current operations or from past subject property usage.		

G. RECORDED LAND TITLE RECORDS

As specified in ASTM E1527-2021, recorded land titles are records usually maintained by the municipal or county recorder of deeds which detail ownership fees, leases, land contracts, easements, and other encumbrances attached to or recorded against the subject property. Due to state land trust regulations and laws, land-title records typically only provide trust names, owner's names, or easement holders, and not information concerning previous uses or occupants of the subject property. Therefore, this Assessment has relied upon other standard historical information sources which are typically more informative than recorded land titles.

The Client also has not provided an environmental liens/activity usage limitation search for PEI's review or requested that such a search be performed by PEI. According to the ASTM E1527-2021 guidelines, it is the responsibility of the User of this report to perform such a review.

H. DATA GAPS

As specified in ASTM E1527-2021, data gaps are defined as "a lack or inability to obtain information required by the standards and practices listed in the regulation despite good faith efforts by the Environmental Professional or prospective landowner to gather such information." Data failure is one form of a data gap and occurs when historical research does not identify standard historical sources that are "reasonably ascertainable" and "likely to provide useful information to identify prior uses of the property." Per ASTM E1527-13, the assessment must document data failure and give reasons why historical sources were not available or excluded (if applicable).

Based on PEI's research, the following data gap(s) and/or data failure was/were identified:

> Information relative to prior environmental investigations, deed restrictions and environmental liens, a title search, and completion of a pre-survey questionnaire from the report User were not provided by the Client. Based on the other information reviewed as part of this assessment, it appears unlikely this data gap will significantly affect PEI's report conclusions.
>
> Historical data was not available in five-year increments. However, based on the sources reviewed, and the previously structurally undeveloped status of the subject property and neighboring properties as observed in the aerial photographs reviewed, it is unlikely this data gap will impact the findings and conclusions of this assessment.

SECTION V.
AGENCY RECORDS REVIEW

In an effort to evaluate whether the subject property and/or nearby sites have reported USTs, hazardous waste generation, or hazardous material releases, regulatory information from the federal, state, and local agencies listed below were reviewed. The database report was compiled by a third-party database provider and is reportedly the most recent database information available from each agency. A copy of the database report is included in the appendix. According to the database provider, their search of the various databases conforms to ASTM E1527-2021 Standards. However, the accuracy of the information provided by the agencies is not without error or omission, and the information listed is limited to that which was reported to or gathered by that agency. A limited discussion of the number of sites identified, and of their potential impact to the subject property, follows the database descriptions. In addition, PEI may request state and/or local regulatory agency information for the subject property, targeting those agencies most likely to provide information useful for this Assessment. The primary databases reviewed, and their general search range criteria are listed below:

Federal Database	Search Range
USEPA NPL/Superfund databases:	Target Property to 1.0 mile
USEPA SEMS databases:	Target Property to 0.5 mile
USEPA RCRIS facilities databases	
Corrective Action Sites:	1.0 mile
TSD Facilities:	0.5 mile
Generators:	0.25 mile
USEPA ERNS database:	Target Property
US Engineering Controls:	0.5 mile
US Institutional Controls:	0.5 mile
US DOD/FUDS databases:	1.0 mile
US Brownfields:	0.5 mile
State/Local Database	**Search Range**
State Superfund databases: EnviroStor/Response databases: Hist Cal-Sites: CA Bond Exp. Plan	1.0 mile
State Landfills database:	0.5 mile
State Cortese	0.5 mile
State/Local LUST databases:	0.5 mile
State Spills databases:	
SLIC:	0.5 mile
CHMIRS:	Target Property
State/Local UST/AST databases:	0.25 mile
State Liens database:	Target Property
State Deed database:	0.5 mile
State VCP database:	0.5 mile
State HAZNET database:	Target Property
Local Haz-Mat/Cleanup databases:	Target Property

A. REVIEW OF FEDERALLY REPORTED ENVIRONMENTAL DATA

The review of the federal environmental databases listed below attempts to identify environmental problem sites, activities, and occurrences from the records of the U.S. Environmental Protection Agency (USEPA). The detailed listing, and a map showing the location of the sites relative to the subject property, is included in the appendix.

National Priorities List (NPL) of Superfund Sites:

The NPL is the USEPA's database of hazardous waste sites currently identified and targeted for priority cleanup action under the Superfund program. This search includes Proposed NPL sites, Delisted NPL sites, and NPL Recovery sites. NPL sites may encompass relatively large areas. As such, polygon coverage for the site boundaries (for a majority of the NPL sites), as produced by the EPA may be provided.

National Priorities List Liens (NPL Liens):

The NPL Liens database contains a list of filed notices of Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property to recover remedial action expenditures when the property owner received notification of potential liability.

Superfund Enterprise Management System (SEMS):

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly known as CERCLIS, was renamed SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies, and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Superfund Enterprise Management System (SEMS) - Archive

SEMS-ARCHIVE tracks sites no longer of further interest of the Federal Superfund Program, based on available information. The list was formerly known as the CERCLIS-NFRAP and was renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates 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 the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site but only that, based upon available information, the location is no longer judged to be potential NPL site.

RCRIS Corrective Action (RCRIS-CA) Sites:

The RCRIS-CA report contains information pertaining to hazardous waste handling facilities which have conducted, or are currently conducting, corrective actions regulated by the Resource Conservation and Recovery Act.

Resource Conservation and Recovery Act Information System (RCRIS) Treatment, Storage, and Disposal (TSD) Facilities:

The RCRA program identifies and tracks hazardous waste from generation source to the point of ultimate disposal. The RCRIS-TSD facilities database is the composite of reporting facilities that transport, store, or dispose of controlled or hazardous waste. Identification on this list does not indicate that a site has impacted the environment.

RCRIS Generator Facilities:

The RCRIS program identifies and tracks hazardous waste from generation source to the point of ultimate disposal. The RCRIS generator facilities database (large and small quantity generators and various derivations) is the composite of reporting facilities that generate hazardous waste. Identification on these lists does not indicate that a site has impacted the environment.

Emergency Response Notification System (ERNS):

The ERNS database is the historical record of releases of hazardous substances reported to the USEPA.

EPA Engineering and Institutional Controls (US ENG/INST CONTROL) Sites:

These databases include listings of sites with engineering or institutional controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care

requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are required as part of the institutional controls.

Department of Defense (DOD) Sites:

The Unites States Geological Survey (USGS) maintains the DOD database, which consists of federally owned or administered lands, administered by the DOD, that have an area equal to or greater than 640 acres of the United States, Puerto Rico, and the US Virgin Islands. Identification on this database does not necessarily indicate that a site has impacted the environment.

Formerly Used Defense Sites (FUDS):

The U.S. Army Corps of Engineers database contains a listing of locations of Formerly Used Defense Sites (FUDS) where the U.S. Army Corps of Engineers is actively working or will take necessary cleanup actions. Identification on this database does not indicate that a site has impacted the environment.

US Brownfields Sites (Brownfields):

The US Brownfields site includes brownfield properties addressed by Cooperative Agreement Recipients (CAR) and brownfield properties addressed by Targeted Brownfields Assessments (TBA). EPA's TBA program is designed to help states, tribes, and municipalities minimize the uncertainties of contamination often associated with brownfields. Cooperative Agreement Recipients (states, political subdivisions, territories, and Indian tribes) become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the USEPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

CERCLA Lien Information (LIENS 2):

A Federal Superfund Lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Facility Index System (FINDS) sites:

The FINDS Report is a computerized inventory of all facilities that are regulated or tracked by the U.S. Environmental Protection Agency. These facilities are assigned a unique identification number that serves as a cross-reference for databases in the

EPA's program system. Identification on this database does not indicate that a site has impacted the environment.

B. REVIEW OF STATE-REPORTED ENVIRONMENTAL DATA

A general description of the databases searched and the corresponding responsible state or local agency. The detailed listing, and a map showing the location of the sites relative to the subject property, is included in the appendix.

State Hazardous Waste Site (SHWS) Databases:

State Hazardous Waste Site records are the states' equivalent to CERCLIS (refer to CERCLIS discussion).

California EnviroStor Databases:

The Department of Toxic Substances Control's (DTSC's) CalSites database contains potential or confirmed hazardous substance release properties. The CalSites database was created by the DTSC, but DTSC no longer up-dates the CalSites database. The CalSites database was replaced by the EnviroStor database. The DTSC's RESPONSE database identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk at the time of listing. The DTSC's Site Mitigation and Brownfields Reuse Program's (SMBRPs) EnviroStor database identifies sites that have reported contamination or sites for which there may be reason to investigate further. The database includes the following site types: Federal Superfund Sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Solid Waste Facilities, Landfills and Recycling Facilities:

The State Solid Waste Facilities and Landfills and Recycling databases include an inventory of active, closed, and inactive solid waste disposal facilities, landfills, refuse transfer stations, and recycling facilities (non-landfill sites).

Historical Cortese Database:

The Historical Cortese list contains hazardous waste and substance sites compiled pursuant to Assembly Bill 3750 (Cortese, Chapter 1048, Statutes of 1986). The information included in this list was compiled with information from the California DTSC, the State Water Resources Control Board, and the California Waste Management Board. This database contains primarily LUST sites, although other types of sites may be included.

Leaking Underground Storage Tanks (LUSTs):

State and/or local agencies maintain inventories of LUSTs (also known as LTANKS) in a statewide database.

State/Local Spills Databases:

The Spills, Leaks, Investigations, and Cleanup (SLIC) Cost Recovery Listing program is designed to protect and restore water quality from spills, leaks, and similar discharges. The databases included in this section are the states' equivalent to the ERNS report and generally contain information for reported hazardous material/waste surface or groundwater contamination release investigations reported in that state or locality. The California Hazardous Material Incident Report System (CHMIRS) database contains information on reported hazardous waste material incidents (accidental releases or spills).

Underground Storage Tanks (USTs)/Aboveground Storage Tanks (ASTs):

USTs are regulated under Subtitle I of the RCRA (as well as various state regulations) and must be registered with the State Underground Storage Tank Program. These are registered USTs only, and identification on this list) does not necessarily indicate that the site has impacted the environment. This search includes review of the Active UST Facilities (UST) database, Facility Inventory Database (CA FID UST), Hazardous Substance Storage Container Database (HIST UST), and SWEEPS UST Listing database (SWEEPS UST). Also potentially included in this section are sites identified on historic UST databases that are no longer maintained. The AST database is the State Water Resources Control Board's Hazardous Substance Storage Container Database for registered ASTs. Note: The nature of this listing indicates a UST and/or AST has been reported at the respective address; however, the nature of the UST and/or AST listing does not indicate whether the presence of the UST(s) and/or AST(s) has resulted in an impact to the environment. UST/AST sites with reported releases are typically identified on other listed databases which indicate a reported release or environmental impact and are discussed accordingly.

Environmental Liens Listing (LIENS):

The Department of Toxic Substances Control's (DTSC) LIENS database includes a listing of property locations with environmental liens for California where DTSC is a lien holder.

Deed Restriction Listing (DEED):

The Department of Toxic Substances Control's (DTSC) DEED database includes a listing of Site Mitigation and Brownfields Reuse Program (SMBRP) Facility Sites with Deed Restrictions and Hazardous Waste Management Program Facility Sites with Deed/Land Use Restrictions. The 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 deed restrictions that are active, and some sites have multiple deed restrictions. The 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.

Voluntary Cleanup Program (VCP):

The DTSC's VCP database contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have requested that DTSC oversee the investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

State and/or Local Agency Generators (HWTS/HAZNET):

The Hazardous Waste Tracking System (HWTS or HAZNET) data is extracted from copies of hazardous waste manifests kept by the Cal-EPA-DTSC. These manifests track hazardous wastes from generation source to the point of ultimate disposal. Permit data is generally culled from local agency database(s) for hazardous material handlers and generators. Identification on these lists does not indicate that a site has impacted the environment and the data has not always been verified for accuracy by the DTSC or local agencies.

National Pollutant Discharge Elimination System (NPDES) Database:

The National Pollutant Discharge Elimination System (NPDES) includes sites that have had or have a permit for the discharge of wastewater or stormwater issued by the Regional Water Quality Control Board or a local agency (e.g., Public Works

Department). Identification on this database does not necessarily indicate that a site has impacted the environment, only that permitted discharge(s) have occurred.

State and/or Local Agency Air Emissions Database (EMI):

The EMI data is extracted from permits for air emissions kept by the state or local air resources agency. The nature of the EMI listings indicates the emission of volatile materials to the air; however, the nature of the EMI listings does not indicate whether the related activities resulted in an impact to the environment. Sites with reported releases are typically identified on other listed databases which indicate a reported release or reported impact to the environment (e.g., LUST, SLIC, Cortese) and are discussed accordingly.

Drycleaners Database:

The California Department of Toxic Substance Control (DTSC) maintains a listing of drycleaners and drycleaner related facilities that have EPA ID numbers. EPA ID numbers are assigned to facilities with certain SIC codes (power laundries, garment pressing and cleaner's agents, etc.). The nature of the Drycleaners listings indicates the facility has been given an EPA ID number due to a SIC code assignment; however, the nature of the Drycleaners listings does not indicate whether the related activities resulted in an impact to the environment. Sites with reported releases are typically identified on other listed databases which indicate a reported release or reported impact to the environment (e.g., LUST, SLIC, Cortese) and are discussed accordingly.

Notify 65 Database:

Notify 65 listings generally indicate that some type of release and/or groundwater impact have occurred which was required to be reported under Proposition 65 rules. These types of listings typically indicate groundwater has been impacted by the listed site; however, details are typically not provided in this type of database.

EDR Historical Auto Stations, Historical Cleaners, & Manufactured Gas Plants Databases:

These databases include former gas stations, auto repair shops, drycleaners, laundromats, and manufactured gas plants that are typically no longer active. Identification on these databases does not necessarily indicate that such activities actually occurred at that site or that a site has impacted the environment.

Local Regulatory Databases:

The County Environmental Health Department or equivalent local Certified Unified Program Agency (CUPA) typically maintains lists that may include some or all of the following: hazardous material handlers, hazardous waste generators, USTs, ASTs, LUST sites, and other potentially contaminated sites. Unless identified as a LUST or other contaminated site, identification on this database typically does not indicate whether or not a site has impacted the environment.

Database Discussion – Below is a brief discussion of those sites listed in the database as at or nearby the subject property, and potentially sites at a further distance that, in PEI's experience, have an obvious potential to impact the subject property (e.g., NPL sites).

Subject Property Database Listings	
Site Name and Address	
Database(s)	**Information**
No Listings for the Subject Property	

Selected Off-Site Database Listings		
Site Name and Address		
Distance & Direction	**Gradient Position**	**Status**
Database(s)	**Information**	
Elk Grove Class III Landfill; Elk Grove Disposal Site at Waterman Rd. & Bond Rd.		
271 ft. WNW 1,398 ft. NNW 2,190 ft. North	Cross-gradient	No release reported
PFAS	The PFAS database indicates this site is contaminated with PFAS. The listing notes the site use for Drinking Water Wells. The status is listed as "not reported".	
SWF/LF	The SWF/LF indicates this site is a closed solid waste landfill.	
WMUDS/SWAT	The WMUDS/SWAT database notes this site as a nonhazardous, solid waste facility and reports the site as a moderate threat to water quality.	
Discussion: The intersection of Waterman Road and Bond Road is located approximately 2,600 ft. to the north. According to information on Geotracker, Elk Grove Landfill operated from 1969 to 1978 as a municipal waste landfill. The landfill is currently owned and maintained by the Sacramento County Department of Waste Management and Recycling. In the past decade, the landfill has not had any violations issued by the LEA. The landfill is also under Waste Discharge Requirements Order No. R5-2013-0134 with the Central Valley Regional Water Quality Control Board (CVRWQCB) concerning groundwater protection. Groundwater data from a groundwater monitoring well (MW-13) closest to the subject property (approximately 300 feet west of the northwest corner) did not indicate VOCs at trace concentrations well below MCLs in 2015. In addition, PFAS concentrations from that well (considered the "downgradient well" for the landfill) indicated "*no concentrations exceed the NLs, there does not appear to be any significant PFAS contamination present at Elk Grove Landfill*".		

Based on the distance from the subject property, and the cross-gradient location with respect to the assumed hydrogeological gradient (westerly to northwesterly), it does not appear this site has significantly impacted the subject property.

However, a May 24, 2018 Meeting Summary Letter between SCEH and the city of Elk Grove Development Service Department discussed the status of the Elk Grove Closed Landfills. The letter discusses potential landfill gas concerns and references regulations (27 CCR 21190(g)) that require structures within 1000 feet of the disposal area to incorporate specific design and construction features to prevent gas migration inside unless an exemption has been issued. It is unknown whether future development will be included within that 1,000-foot radius and whether design and construction requirements will be necessary. PEI recommends communication with the city and county relative to future design requirements relative to the proximity to the Elk Grove Landfill.

Harcrow Property at 9251 Elk Grove		
1,461 ft. SSW	Cross-gradient	LUST: Completed – Case Closed as of 11/28/1994
Sacramento Co. ML	The Sacramento Co. ML does not provide any relevant information.	
CERS	According to the CERS database, this site is listed with CERS ID T0606700774 noted with the description "Leaking Underground Storage Tank Cleanup".	
Sacramento Co. CS, CORTESE, Hist CORTESE, LUST	This site is identified on the Sacramento Co. CS, CORTESE, and Hist CORTESE databases due to the LUST identification. The LUST database listing indicates a diesel release was discovered at this site in 1994, the release affected soil only, and the status is noted as "Completed – Case Closed" as of 11/28/1994.	
Discussion: Based on the distance from the subject property, the media affected (soil only), the regulatory status (case closed as of 11/28/1994), and the cross-gradient location with respect to the assumed hydrogeological gradient (westerly to northwesterly), it does not appear this site has significantly impacted the subject property.		

Cresleigh Ranch No. 39 at Elk Grove Blvd. & Foulks Ranch Drive		
1,942 ft. WSW	Cross- to Downgradient	ENVIROSTOR: No Action Required as of 2/27/2002
SCH, ENVIROSTOR	The ENVIROSTOR and SCH databases list Facility ID 34010016, listed with "No Contaminants found". The status listed as "No Action Required" as of 2/27/2002.	
Discussion: Based on the distance from the subject property, the media affected (soil only), the regulatory status (no action required as of 2/27/2002), and the cross- to downgradient location with respect to the assumed hydrogeological gradient (westerly to northwesterly), it does not appear this site has significantly impacted the subject property.		

Based upon the distance, status, type of listing and/or down- to cross-gradient location, the above and remaining database listings appear unlikely to have significantly environmentally impacted the subject property.

Unlocatable / Unplottable Sites:
Unplottable "orphan" sites are those which could not be plotted by the database provider using conventional geo-coding methods, typically because the information provided in the original

government database was unclear, incorrect, or missing. A listing of orphan sites (if any) appears at the end of the database, immediately after the last plottable site description.

PEI reviewed the orphan list for sites with the same name as the subject property (if applicable) and/or the same or similar property address. This review is inherently limited by the incomplete and/or possibly incorrect data reported in the orphan listings. For orphans apparently not related to the subject property, only those obviously located adjoining or within a short distance that may affect the property are discussed. Orphan sites which are also listed in the plotted section are not re-discussed.

> PEI's review of the unlocatable / orphan list revealed no obvious sites of concern listed at or adjoining the subject property.

C. LOCAL AGENCY RECORDS SEARCH

The following is a discussion of the results of PEI's written records requests, online regulatory database review, and/or personal/telephone contacts (as applicable) made to state and/or local government agencies in an effort to obtain potential information relevant to the subject property. Please note that, as discussed in the ASTM E1527-13 Standard, Section 8.1.5, records are considered available within a *reasonable time and cost*, only if available within 20 calendar days of the request and for a nominal cost (only covering the source's cost of retrieving and/or duplicating the information):

USEPA ECHO Databases:

PEI reviewed the online ECHO databases in an effort to identify potential hazardous materials handling, hazardous waste generation, inspections, violations or similar issues associated with the subject property address. That search revealed no listings for the subject property.

California EPA - Department of Toxic Substances Control (DTSC):

To evaluate whether hazardous materials usage, hazardous waste generation, or hazardous material incidents have been reported at the subject property address(es), PEI contacted the DTSC. The DTSC informed PEI that no related information is on file for the subject property.

California EPA - Department of Toxic Substances Control – Hazardous Waste Tracking System (HWTS):

PEI attempted to review CalEPA-DTSC's Hazardous Waste Tracking System (HWTS) online database (http://hwts.dtsc.ca.gov) to identify potential hazardous waste generation/disposal activities associated with the subject property address(es). However, due to the lack of an address associated with the subject property, such a search is impractical. Based upon the historically undeveloped nature of the property and on PEI's other research performed, this lack of a searchable request is unlikely to affect the conclusions of this report.

California SWRCB GeoTracker & DTSC-EPA EnviroStor Databases:

To identify potential USTs, hazardous materials releases or similar issues associated with the subject property address, PEI reviewed the online GeoTracker and EnviroStor databases. That search revealed no listings for the subject property. However, information was reviewed for nearby site(s) of interest as discussed in Section V-B above.

California Department of Conservation, Geologic Energy Management Division of Oil, Gas and Geothermal Resources (CalGEM) Maps:

To identify whether oil or gas wells have been reported in the vicinity of the subject property, PEI reviewed maps available on the CalGEM website. According to the CalGEM website mapping interface, no oil or gas wells are reported in the immediate subject property area (within 1/8-mile).

Central Valley Regional Water Quality Control Board (RWQCB):

To evaluate whether hazardous material incidents, USTs, and/or LUSTs have been reported at the subject property address(es), PEI contacted the CVRWQCB. The CVRWQCB informed PEI that no hazardous material incident, UST or LUST information is on file for the subject property, however, indicated the subject parcels are adjacent to the Elk Grove Landfill. The CVRWQCB representative provided a link to the GeoTracker listings for the landfill with the most recent files and documentation (discussed in Section V, excerpts of that documentation included in the appendix)

Sacramento Metropolitan Air Quality Management District (SMAQMD):

To evaluate whether hazardous material-related emissions records were available for the subject property, PEI contacted the SMAQMD. According to the SMAQMD, no information was on file for the subject property.

Sacramento County Environmental Management (SCEM):

To evaluate whether hazardous materials usage, hazardous waste generation, hazardous material incidents, USTs, and/or LUSTs have been reported at the subject property address(es), PEI contacted the SCEM. According to the SCEM, information was on file for the subject property related to an on site water well. PEI reviewed available information on file for the subject property address(es). The following is a brief summary of information on file which is most significant to this ESA.

SCEM Files Reviewed			
Date	**File Type**	**Issued By**	**Issued To**
7/27/2010	Letter	SCEM	PacCapital LLC
Discussion: Letter requesting access to assess the condition of the onsite well			

3/28/2011	Application/Permit	SCEM	PacCapital LLC
Discussion: Permit for temporary "well inactivation"			
7/23/2013	Letter	SCEM	PacCapital LLC
Discussion: Letter regarding inactivation permit expiration			
9/13/2013	Letter	SCEM	PCPB Properties Inc.
Discussion: Letter regarding approval Well Inactivation Permit #WP0049044			
5/20/2015	Letter	SCEM	PCBP Props Inc.
Discussion: Letter regarding inactivation permit expiration			
7/1/2015	Inspection	SCEM	N/A
Discussion: Site photos of existing well			
7/13/2015	Letter	SCEM	PCBP Properties
Discussion: Letter regarding approval Well Inactivation Permit #WP0049044			

Please also note that this review was general in nature, was focused on potential hazardous materials usage, and does not constitute a regulatory compliance or health and safety review.

No USTs, releases, major violations or other significant environmental concerns were reported in the files reviewed above.

Cosumnes Community Services District, Fire Department (CCSD, FD):

To evaluate whether hazardous materials usage, hazardous waste generation, hazardous material incidents, USTs, and/or LUSTs have been reported at the subject property address(es), PEI contacted the CCSD, FD. The CCSD, FD informed PEI that no related information is on file for the subject property.

D. VAPOR ENCROACHMENT SCREENING

PEI has performed a limited Vapor Encroachment Screening (VES) for the subject property as mentioned in ASTM Standard Practice E2600-15. The purpose of this VES was to identify existing Vapor Encroachment Conditions (VECs), defined by ASTM E2600-15 as "the presence or likely presence of chemical of concern vapors in the subsurface of the target property caused by the release of vapors from contaminated soil and/or groundwater either on or near the target property." However, the review was general in nature and may not encompass all aspects of the E2600-15 guidelines. PEI has reviewed known or reported releases of petroleum hydrocarbon or other constituents of concern (COCs, including volatile organic compounds - VOCs) to subsurface soils and/or groundwater within the vicinity of ASTM-specified distances from the subject property, as reported within the radius report. It should be noted that since this review only addresses sites with reported releases in the radius report, it does not address potential unreported impact from nearby sites, if any.

Based on the PEI's review, the following is indicated about the sites with known releases relative to a potential vapor encroachment condition (VEC) at the subject property.

Sites Identified with Petroleum Releases (<528 feet)	
Name and Address	
VEC Exists	VEC Does Not Exist
No Sites Within Range Listed by the Database	

Sites Identified with VOC Releases (<1,742 feet)	
Name and Address	
VEC Exists	VEC Does Not Exist
No Sites Within Range Listed by the Database	

Based upon the above review, a VEC at the subject property from off-site database listings has not been identified.

E. TRIBAL RECORDS SEARCH

According to ASTM E1527-2021, records for local and tribal records shall be checked to satisfy all appropriate inquiry for this assessment. The following is a discussion of the results of PEI's written records requests, online regulatory database review, and/or personal/telephone contacts (as applicable) made to tribal governmental agencies in an effort to obtain potential information relevant to the subject property:

> The subject property is not located on tribal property and therefore no inquiry was necessary.

SECTION VI.
SITE VISIT OBSERVATIONS

A. SURFACE CHARACTERISTICS

At the time of the site visit, the subject property consisted of three contiguous undeveloped agricultural parcels totaling approximately 26.87-acres parcel of land. The landscaping generally appeared to be in good condition with no signs of unnatural or chemically induced stress. Minor surface staining was observed on the parking areas and was likely the result of leaking vehicles. No pits, ponds, lagoons, swales, or surface impoundments potentially containing hazardous materials were observed on the subject property. Weather conditions at the time of the site visit consisted of clear skies, with temperatures in the 80s. The soils of the subject property were dry from the heat.

The subject property is accessible from Waterman Road along the western border. The subject property consists of three contiguous, undeveloped parcels. The parcels were reportedly recently used as grazing land for goats for fire control. The subject property features a powerline easement along the eastern portion of the property. The easement consists of pylons supporting high-voltage powerlines suspended above the property.

The subject property features a slight topographical gradient to the south. An approximately 1-1.5 ft. earthen "step" was observed approximately between the northwestern and southwestern parcels. An inactive (capped) water well was located on a concrete pad in the southern portion of the property. The concrete pad was surrounded by four bollards with a power pole located adjoining to the northwest.

Several patches of unvegetated areas were observed in the southern portion of the subject property. No staining was observed in these areas, and the cause of the bare patches was not readily ascertained during the site visit.

During the site visit, the exterior areas of the subject property were visited. Areas not visited and/or where observations were limited included: areas covered by natural vegetation (approximately 80 percent).

B. WASTEWATER AND STORMWATER MANAGEMENT

At the time of the site inspection, the subject property was undeveloped land, and no wastewater generating activities were observed.

C. POTABLE WATER SUPPLY AND SEWER SERVICE

The subject property utilizes water and sewer service supplied by the city of Elk Grove. During the course of the site visit, an inactive (capped) water well was observed on a concrete pad in the southern portion of the property. The concrete pad was surrounded by four bollards with a power pole located adjoining to the northwest.

D. STRUCTURE CONSTRUCTION

The subject property was undeveloped land at the time of the site inspection. No structures or evidence of past structures (e.g., foundations, etc.) were noted.

E. BUSINESS OPERATIONS DESCRIPTION

At the time of the site visit, the subject property was undeveloped, unoccupied agricultural land. Hazardous materials handling and/or hazardous waste generation was not observed above *de minimus* quantities. PEI's research indicates no dry cleaners, gasoline stations, military bases, industrial facilities, or major manufacturing operations have occupied the subject property.

PEI concludes that the subject property has been structurally undeveloped land from at least 1909 (per topographic maps) through the present. Dry farming agricultural use was observed on the southern portion of the property in a 1947 aerial photograph. Overhead powerlines were noted in aerial photography to traverse the property beginning in the 1950s. Residential tract development was observed on the western adjoining property in the early 1990s, with increasing residential tract development noted to the east in the late 1990s/early 2000s

SECTION VII.
HAZARDOUS MATERIAL/WASTE OBSERVATIONS

A. HAZARDOUS MATERIALS HANDLING AND STORAGE

At the time of the site visit, the subject property consisted of undeveloped land. No hazardous materials handling and/or storage activities were observed at the subject property during the site visit.

B. WASTESTREAM GENERATION, STORAGE AND DISPOSAL

At the time of the site visit, the subject property consisted of undeveloped land. Wastestream/hazardous waste generation, storage, and/or disposal activities were not observed at the subject property during the site visit.

C. SOLID WASTE DISPOSAL

At the time of the site visit, the subject property consisted of undeveloped land. Solid waste disposal activities were not observed at the subject property during the site visit.

D. ABOVEGROUND STORAGE TANKS (ASTs)

Visual or physical indicators of current or former hazardous material ASTs were not observed at the subject property during the site visit.

E. UNDERGROUND STORAGE TANKS (USTs)

As discussed in the Section V (Agency Records Review) of this report, no USTs were reported at the subject property. In addition, no visual or physical evidence of current or past USTs was discovered during the site visit in the readily visible areas of the property. In particular, PEI searched for: fill pipes, vent pipes, manways, manholes, access covers, concrete pads not homogeneous with surrounding surfaces, concrete built-up areas potentially indicating pump islands, abandoned pumping equipment, or fuel pumps.

SECTION VIII.
OTHER POTENTIAL ISSUES OF CONCERN

A. PCB-CONTAINING EXTERIOR ELECTRICAL TRANSFORMERS

Exterior pad-mounted, pole-mounted, or below-ground (vaulted) electrical transformers were not observed at the subject property during the site visit.

B. OTHER PCB-CONTAINING INTERIOR OR EXTERIOR EQUIPMENT

At the time of the site visit, the subject property consisted of undeveloped land, and no structures with fluorescent light fixtures containing PCBs, or other evidence of any other equipment likely containing PCB-contaminated fluid (e.g., interior electric transformers, hydraulic elevators, hydraulic hoists/lifts, hydraulic loading dock ramps, other fluid containing equipment, etc.) was observed.

C. SUSPECT ASBESTOS-CONTAINING MATERIALS (ACMs)

At the time of the site visit, the subject property consisted of undeveloped land. Therefore, suspect asbestos-containing building materials were not observed. However, this report does not address the potential presence of naturally occurring asbestos or asbestos-like minerals which may or may not be present on-site. Such research is beyond the scope of this report.

D. LEAD-BASED PAINT (LBP)

At the time of the site visit, the subject property consisted of undeveloped land. Therefore, suspect lead-based paint covered building materials were not observed.

E. LEAD IN DRINKING WATER

At the time of the site visit, the subject property consisted of undeveloped land. Therefore, drinking water plumbing systems related to structures were not observed.

F. AIR QUALITY

Unusual smells, noxious odors, or visual emissions were not observed during the inspection of the subject property. However, these observations are general in nature and should not be construed as an air quality assessment.

G. WATER INTRUSION/MOLD

At the time of the site visit, the subject property consisted of undeveloped land. Therefore, water intrusion and/or mold issues related to structures were not observed.

H. RADON

According to the USEPA, the general area of the site has a predicted average indoor screening level of less than the EPA guideline action level of 4.0 picoCuries per liter of air (EPA Radon Zone Level of 2 or 3). Therefore, based upon the reported subsurface characteristics of the area, the subject property exhibits a low potential for high-level radon exposure.

I. RAILROAD RIGHTS-OF-WAY

There are several potential environmental risks associated with railroad rights-of-way, including the usage of herbicides, pesticides, petroleum materials and related heavy metals (e.g., arsenic) to maintain the tracks, as well as the potential spillage of hazardous materials from railcars. During the site visit, railroad rights-of-way, spurs, or related features were not observed on or immediately adjoining the subject property.

SECTION IX.
ADJOINING PROPERTY OBSERVATIONS

As discussed below, based upon limited observations of the adjoining properties from publicly accessible locations, as well as a review of federal, state, and local environmental databases, none of the adjoining properties appeared to have significantly environmentally impacted the subject property at this time.

Historically, nearby properties (the Elk Grove Landfill) may have utilized various hazardous materials, and some of these sites may have impacted the environment (refer to Section V). However, based upon the limited database information available to PEI, these sites do not appear to have significantly environmentally impaired the subject property at this time.

A. ADJOINING PROPERTIES MATERIALS STORAGE

Visual observations of the portions of the adjoining properties visible from the subject property or public roadways did not indicate the exterior storage of hazardous materials or wastes. No indications of spillage or staining were observed in the observable exterior areas of these sites. Additionally, no obvious indications of improper hazardous material storage or unusual or suspicious materials handling or storage practices were observed.

B. ADJOINING PROPERTIES WASTESTREAM DISPOSAL

No unusual or suspicious wastestream disposal activities were observed on the portions of the adjoining properties visible from the subject property or public roadways.

SECTION X.
STATEMENT OF THE ENVIRONMENTAL PROFESSIONALS

This Assessment has been performed for the exclusive use and benefit of the addressee(s) identified on the cover of this report, or agents directly specified by it (them), for the transaction at issue concerning the subject property described in this report. This Assessment shall not be used or relied upon by others without the prior written consent of Pinnacle Environmental, Inc. and of the addressee(s) named on the cover of this report. In addition to any limitations described in this report, it is also subject to the terms and conditions of the signed service agreement with the Client.

STATEMENT OF QUALITY ASSURANCE

The conclusions contained within this Assessment are based upon site conditions that were readily observed and were reasonably ascertainable and present at the time of the site visit, and upon the other research performed as detailed within this report. The findings and conclusions represent our best professional opinion and judgment. In addition, the conclusions and recommendations stated in this report are based upon personal observations made by PEI and upon information provided by others and such information is presumed accurate.

Signature of Environmental Assessor or Professional –*Travis J. Stansbery, EP:*

Signature/Environmental Professional

STATEMENT OF QUALITY CONTROL

I declare that, to the best of my professional knowledge and belief, I meet the definition of an Environmental Professional as defined in 40 CFR §312.10. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Signature of Environmental Professional - *Peter K. Cloven, CEM #1313, EP:*

Signature/Environmental Professional

PINNACLE ENVIRONMENTAL, INC.
QUALIFICATIONS OF
PERSONNEL INVOLVED IN THIS ASSESSMENT

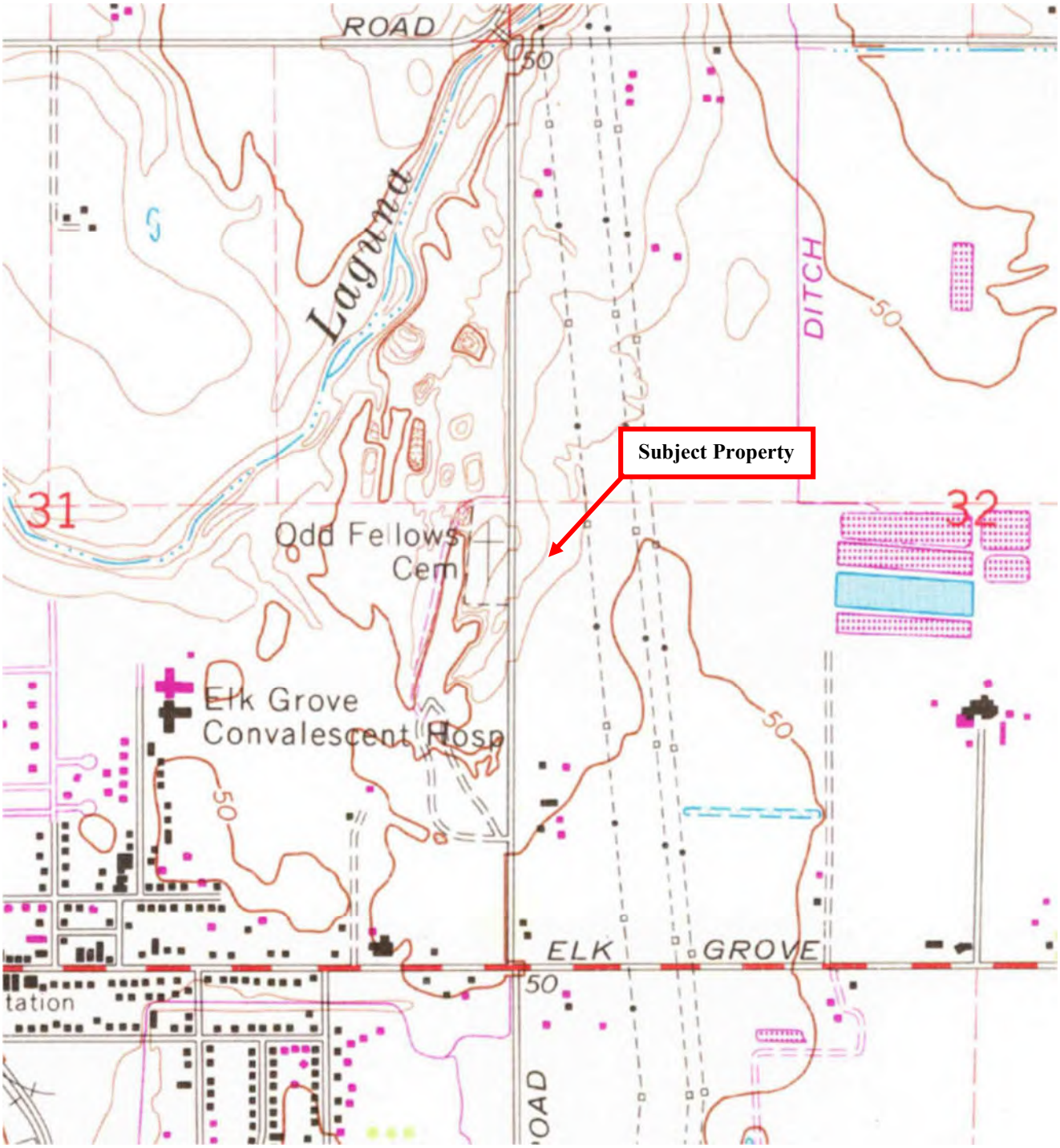
PETER K. CLOVEN, NEVADA C.E.M. #1313

Mr. Cloven earned a B.A. degree in Biochemistry from the University of California, Berkeley (1986). He has more than 20 years of experience within the environmental consulting industry including field work, project sales, and staff/personnel management. His project experience includes over 1,500 Phase I assessments, turn-key management of underground storage tank projects (removal, assessment, remediation, and installation), dozens of Phase II site characterization projects (including soil gas surveys, Geoprobe® sampling of soil and groundwater, hollow stem auger sampling and monitoring well installation), Risk Based Corrective Action (RBCA) risk assessment, remediation, design implementation, operation and maintenance, and site closure. Mr. Cloven's clients have included the US Air Force, US Army Corp or Engineers, Nevada Department of Transportation, Sacramento Regional Transit District, insurance companies, lending institutions, developers and attorneys. Mr. Cloven has also performed environmental audits and prepared stormwater and air quality permits for industrial facilities. Mr. Cloven was formerly a Registered Environmental Assessor in the state of California (through 2012 when the REA program was discontinued), is a Certified Environmental Manager in the state of Nevada, and has ASTM certifications in RBCA and Vapor Intrusion Assessments, and USEPA 40-hour HAZWOPER training (with required 8-hour annual refreshers).

TRAVIS J. STANSBERY

Mr. Stansbery earned a B.S. in Chemical Engineering from the University of California Berkeley in 2015. He has been working with Pinnacle Environmental Inc. since 2010 when he began as an intern providing data analysis, mapping, and research activities for special projects. Mr. Stansbery is trained as a field assessor but truly excels in data evaluation and research for the "hard to get" data that makes the difference when forming conclusions upon writing a report.

SITE MAPS



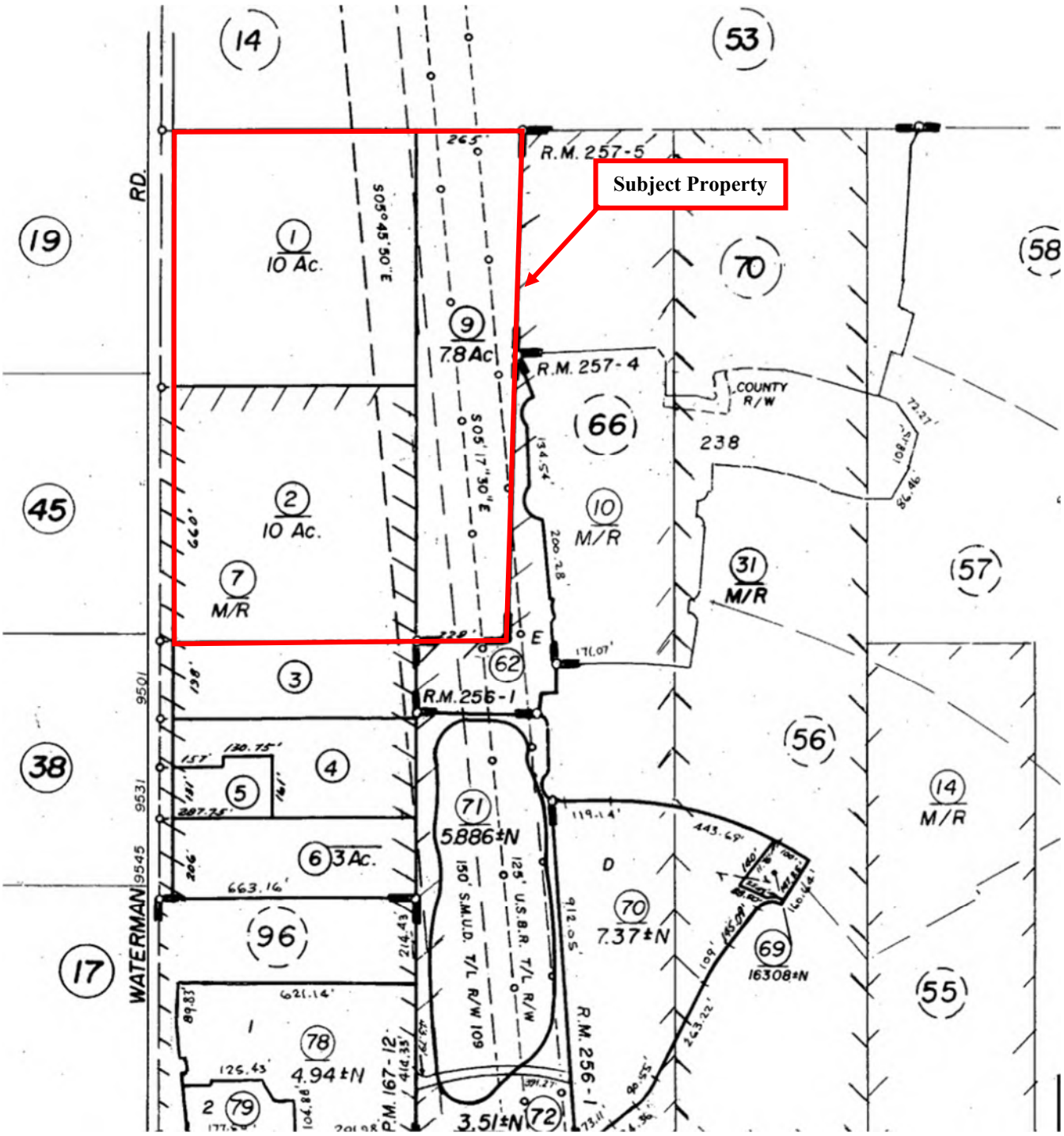
Pinnacle Environmental Inc.

USGS 7.5 Minute Topographic Map
1968 Elk Grove, CA Quadrangle

NORTH

FIGURE: 1

East of Waterman Road (APNs: 127-0150-001, -002, and -009), Elk Grove, CA



Assessor Parcel Map

NORTH

FIGURE: 2

East of Waterman Road (APNs: 127-0150-001, -002, and -009), Elk Grove, CA

Pinnacle Environmental Inc.

Site Map – Aerial Photo - 2023

NORTH

FIGURE: 3

East of Waterman Road (APNs: 127-0150-001, -002, and -009), Elk Grove, CA

Pinnacle Environmental Inc.

Aerial Photo - 2018

NORTH

FIGURE: 4

East of Waterman Road (APNs: 127-0150-001, -002, and -009), Elk Grove, CA

Pinnacle Environmental Inc.

Aerial Photo - 2012

NORTH

FIGURE: 5

East of Waterman Road (APNs: 127-0150-001, -002, and -009), Elk Grove, CA

Pinnacle Environmental Inc.

Aerial Photo - 2009

NORTH

FIGURE: 6

Pinnacle Environmental Inc.

Aerial Photo - 2002

NORTH

FIGURE: 7

East of Waterman Road (APNs: 127-0150-001, -002, and -009), Elk Grove, CA

Pinnacle Environmental Inc.

Aerial Photo - 1998

NORTH

FIGURE: 8

Pinnacle Environmental Inc.

Aerial Photo - 1993

NORTH

FIGURE: 9

Pinnacle Environmental Inc.

Aerial Photo - 1984

NORTH

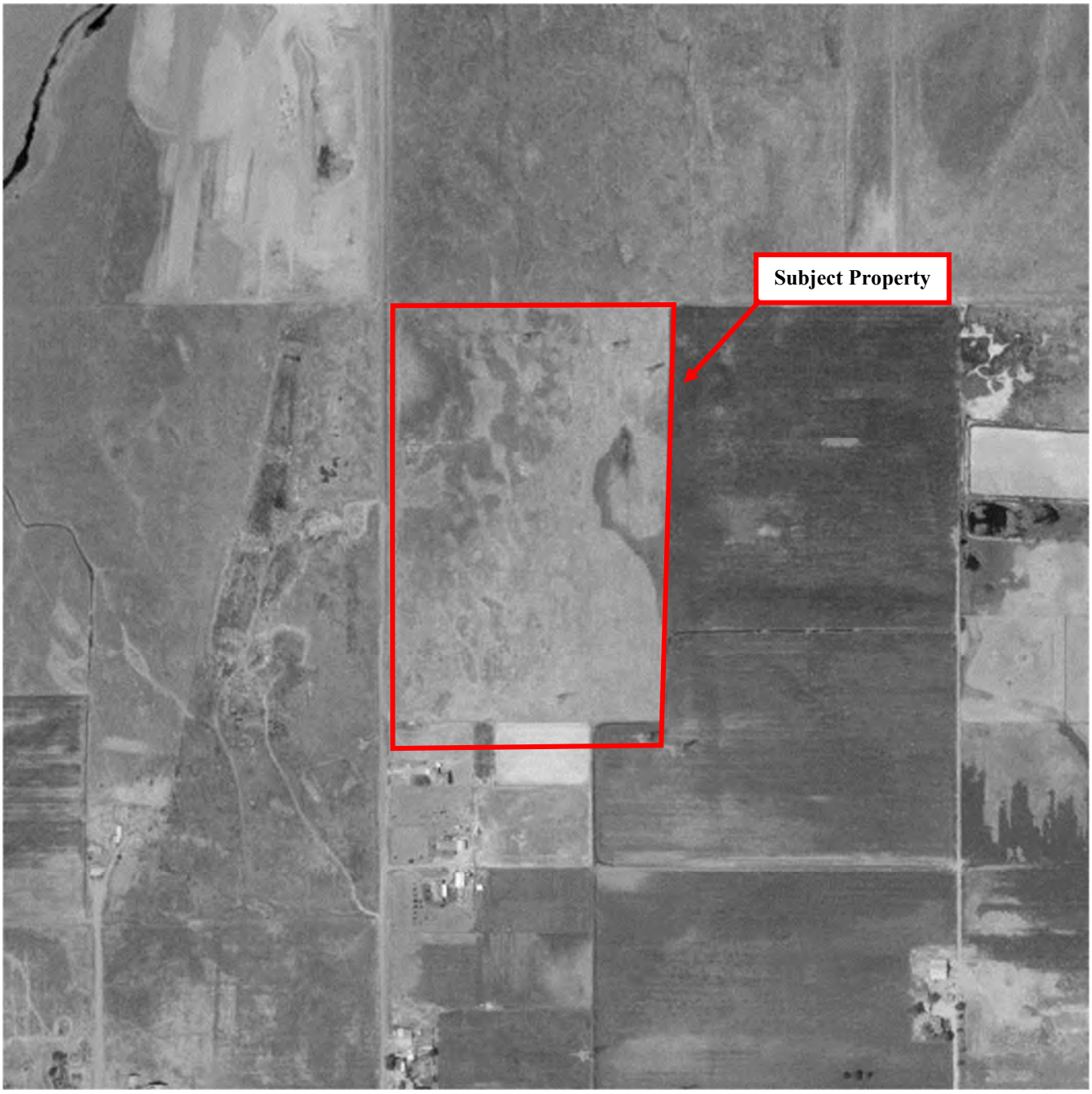
FIGURE: 10

Pinnacle Environmental Inc.

Aerial Photo - 1967

NORTH

FIGURE: 11



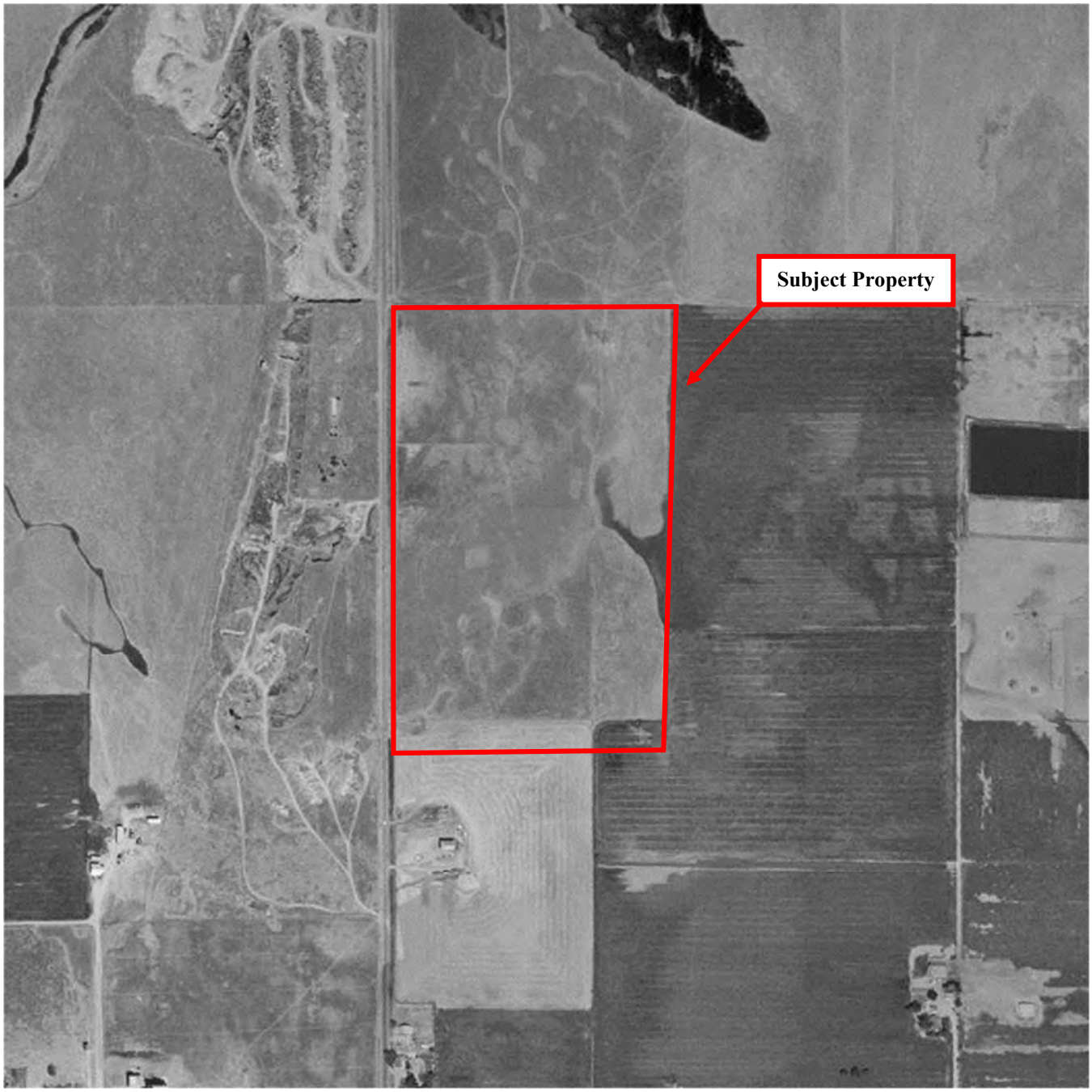
Pinnacle Environmental Inc.

Aerial Photo - 1964

NORTH

FIGURE:

12



Pinnacle Environmental Inc.

Aerial Photo - 1957

NORTH

FIGURE: 13

Pinnacle Environmental Inc.

Aerial Photo - 1947

NORTH

FIGURE: 14

SITE PHOTOGRAPHS

Photo #1:
View of subject property's northern boundary (gate entrance) – view to the east

Photo #2:
View of subject property from northern boundary – view to south

Photo #3:
View of subject property's eastern boundary – view to the south

Photo #4:
View of subject property's western boundary – view to the south

Photo #5:
Southeastern corner of subject property (view to east)

Photo #6:
Eastern adjoining property (single family dwellings)

Photo #7:
Southern adjoining property
(and southwestern corner)

Photo #8:
Western adjoining property
(north side) - cemetery

Photo #9:
Southeastern corner of subject
property (view to south)

Photo #10:
Rolled fencing and stakes in the central portion of the property

Photo #11:
Miscellaneous refuse on eastern border

Photo #12:
Rock pile on northwestern portion of subject property

Photo #13:
Southwestern corner of subject property (view to west)

Photo #14:
Watering troughs on south-central portion

Photo #15:
Southern area void of vegetation (no staining)

Photo #16:
Concrete pad with groundwater well in southern portion

Photo #17:
Concrete pad with groundwater well

Photo #18:
Base of power lines traversing the property

SANBORN MAPS

23-5793

Not Reported

ELK GROVE, CA 95624

Inquiry Number: 7359670.5

June 08, 2023

Certified Sanborn® Map Report

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

Certified Sanborn® Map Report

06/08/23

Site Name:

23-5793
Not Reported
ELK GROVE, CA 95624
EDR Inquiry # 7359670.5

Client Name:

Pinnacle Environmental Inc.
PO Box 904
Clayton, CA 94517
Contact: Travis Stansbery

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Pinnacle Environmental Inc. were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 6E27-4F8D-9A21

PO # NA

Project 23-5793

UNMAPPED PROPERTY

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Sanborn® Library search results

Certification #: 6E27-4F8D-9A21

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- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

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TOPOGRAPHIC MAPS

Historical Topo Map – 2018

NORTH

FIGURE: 1

East of Waterman Road (APNs: 127-0150-001, -002, and -009), Elk Grove, CA

Historical Topo Map – 2012

NORTH

FIGURE: 2

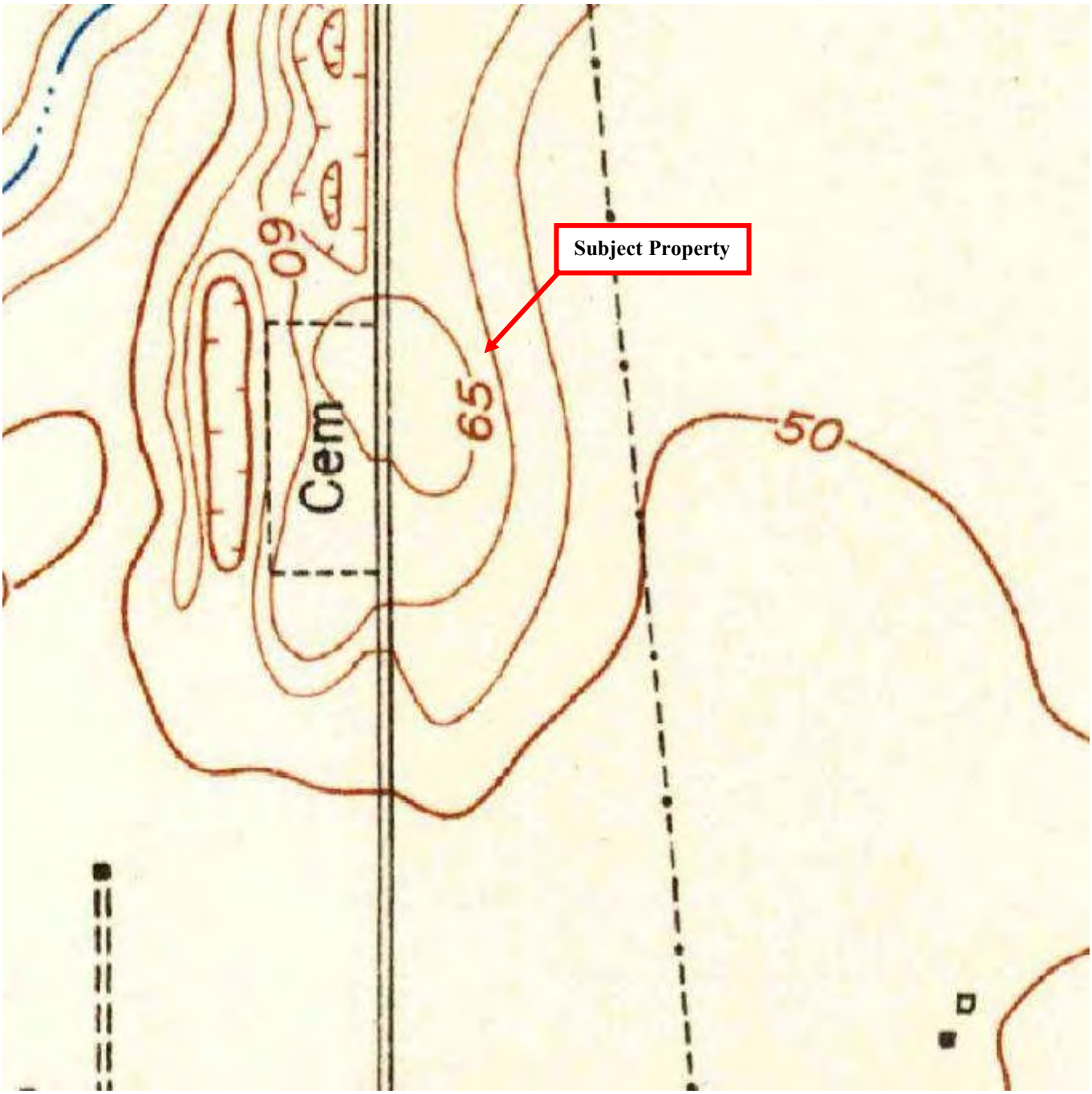
East of Waterman Road (APNs: 127-0150-001, -002, and -009), Elk Grove, CA

Historical Topo Map – 2012

NORTH

FIGURE: 3

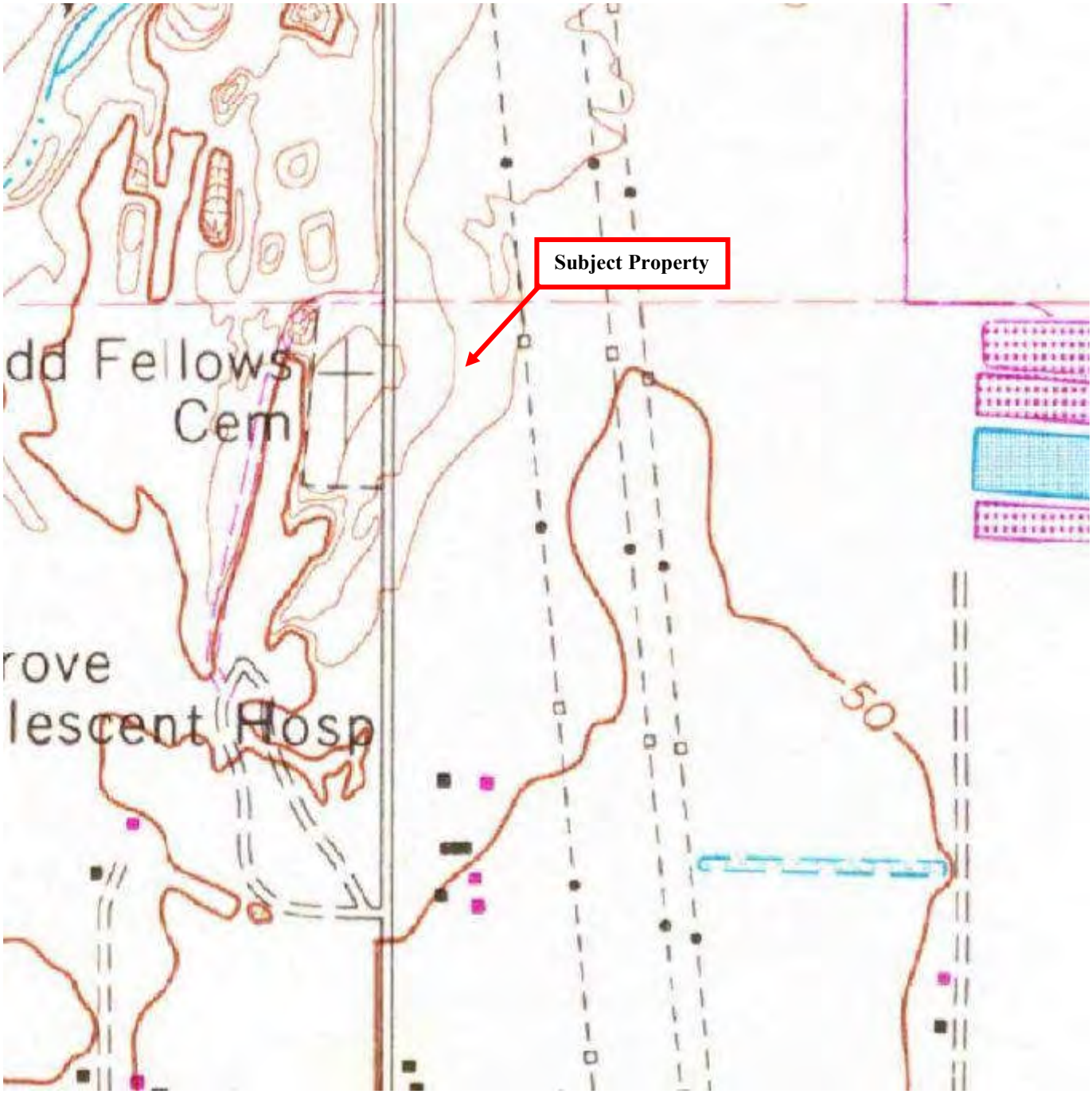
East of Waterman Road (APNs: 127-0150-001, -002, and -009), Elk Grove, CA



Historical Topo Map – 1984

NORTH

FIGURE: 4

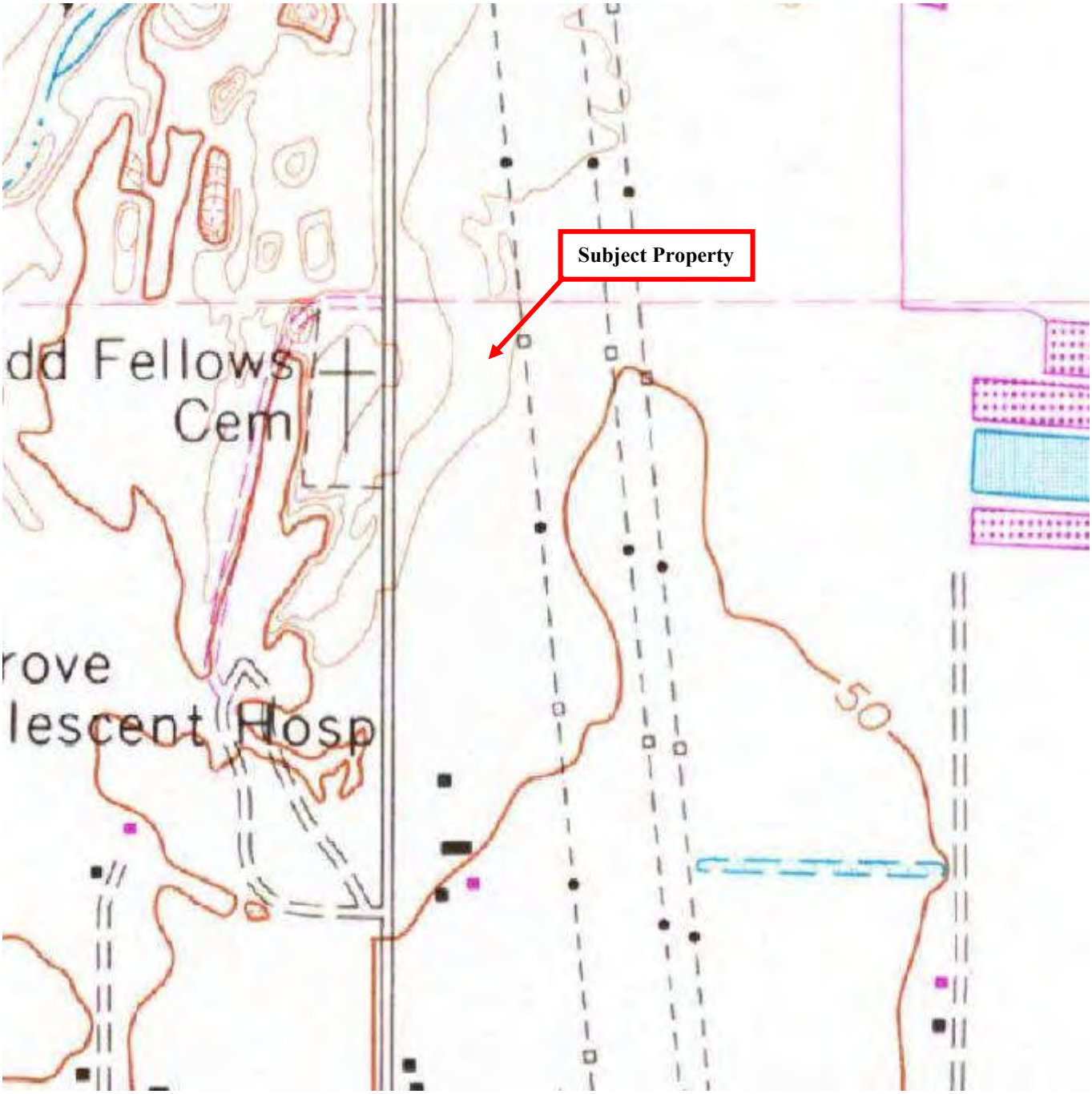


Historical Topo Map – 1980

NORTH

FIGURE: 5

East of Waterman Road (APNs: 127-0150-001, -002, and -009), Elk Grove, CA



Historical Topo Map – 1977

NORTH

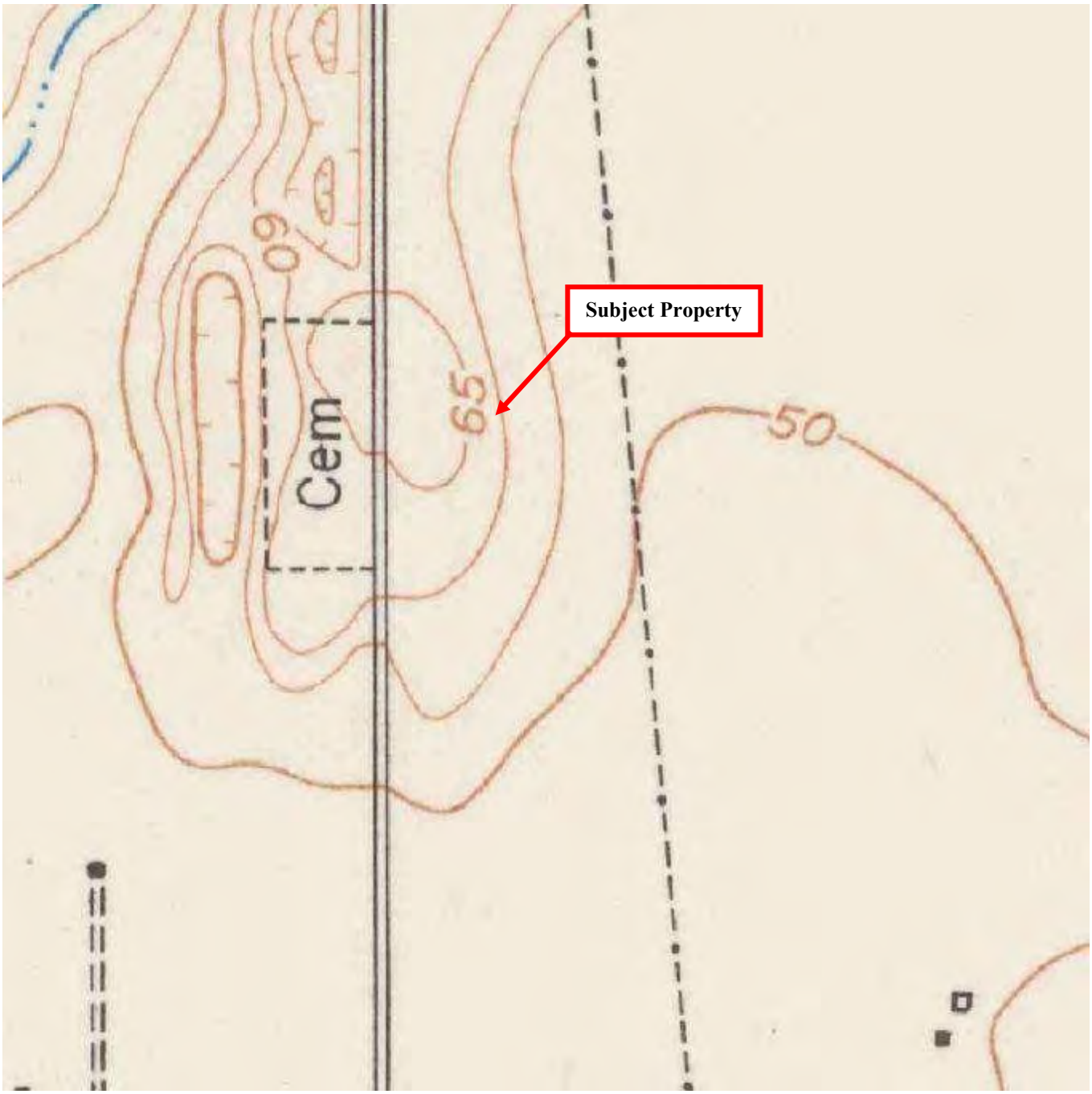
FIGURE: 6

East of Waterman Road (APNs: 127-0150-001, -002, and -009), Elk Grove, CA

Historical Topo Map – 1970

NORTH

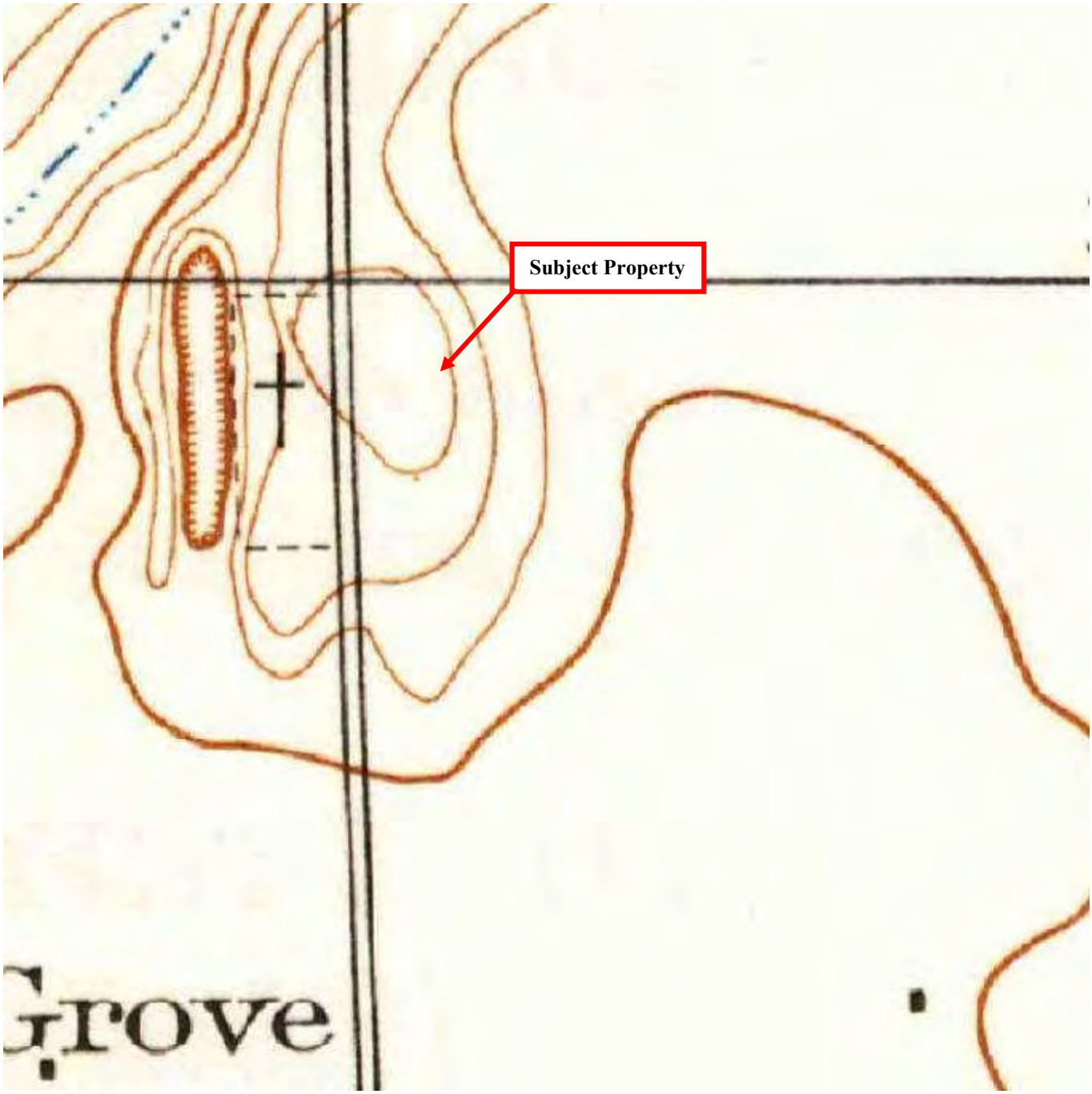
FIGURE: 7



Historical Topo Map - 1957

NORTH

FIGURE: 8

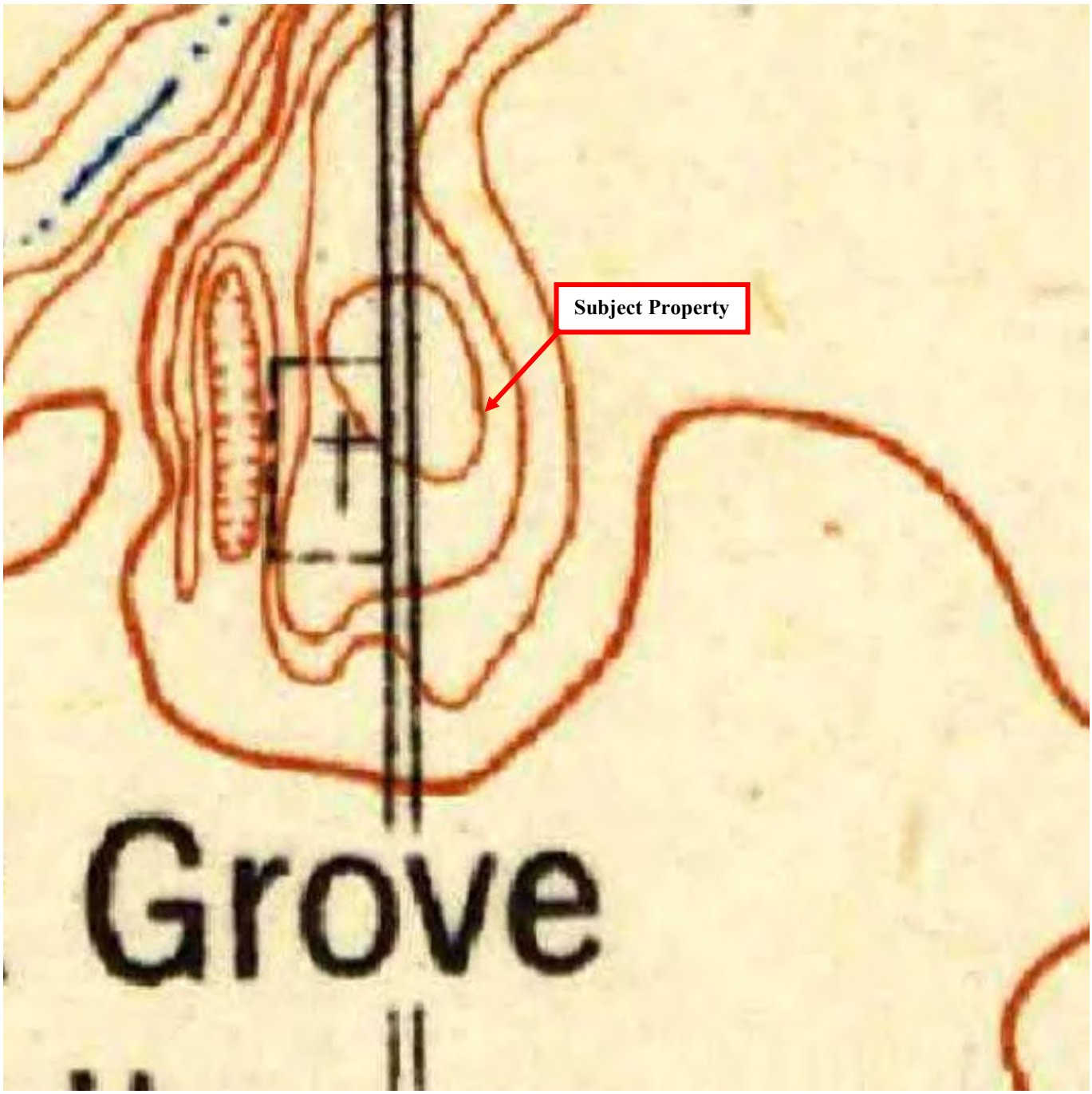


Pinnacle Environmental Inc.

Historical Topo Map - 1947

NORTH

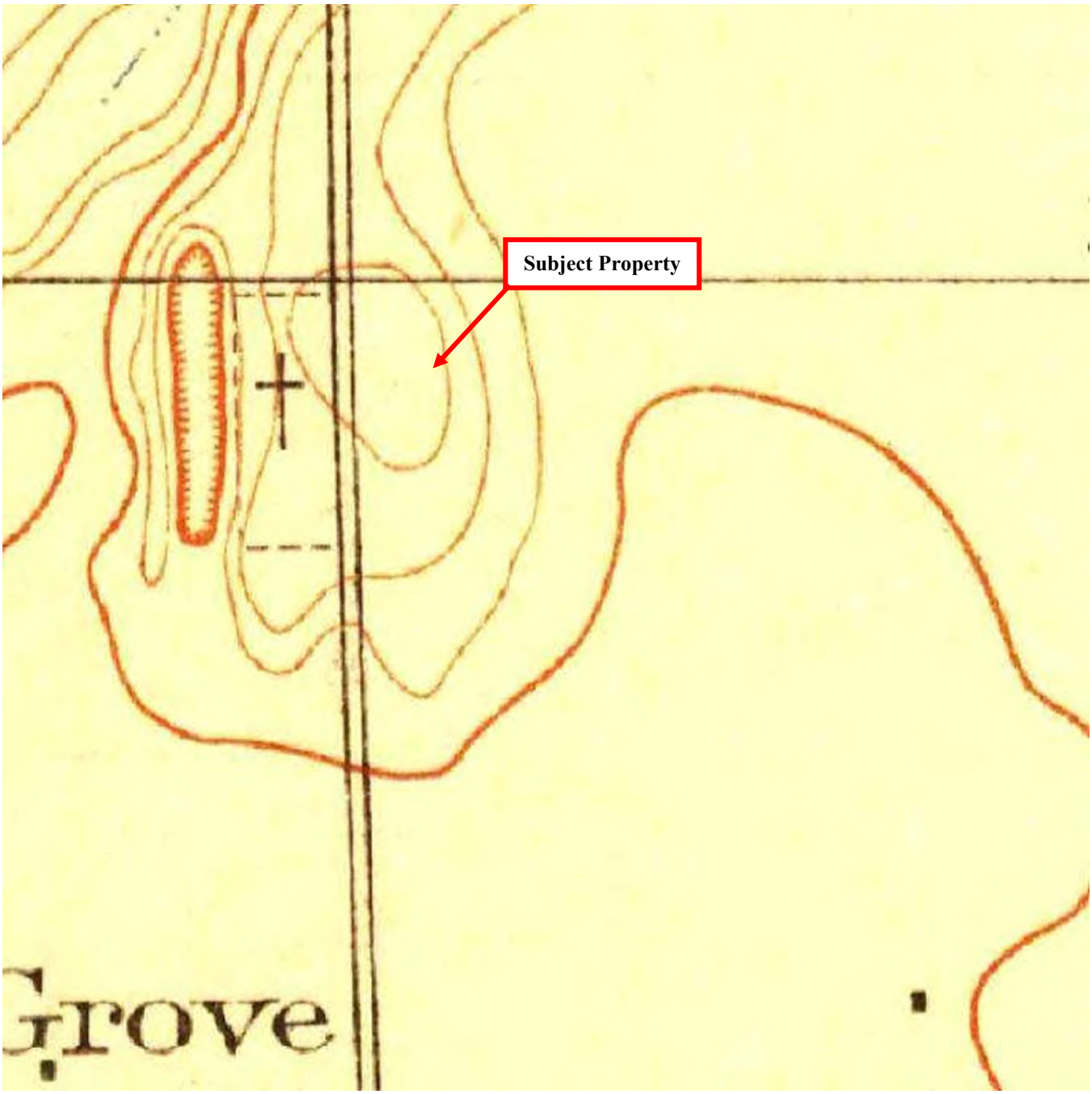
FIGURE: 9



Historical Topo Map - 1942

NORTH

FIGURE: 10



Pinnacle Environmental Inc.

Historical Topo Map - 1909

NORTH

FIGURE: 11

REGULATORY
DATABASE SEARCH

23-5793
Not Reported
ELK GROVE, CA 95624

Inquiry Number: 7359670.2s
June 08, 2023

The EDR Radius Map™ Report

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

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Orphan Summary	82
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

GeoCheck - Not Requested

Thank you for your business.
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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E1527-21), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-22) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

NOT REPORTED
ELK GROVE, CA 95624

COORDINATES

Latitude (North):	38.4154740 - 38° 24' 55.70''
Longitude (West):	121.3519760 - 121° 21' 7.11''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	643880.2
UTM Y (Meters):	4252993.5
Elevation:	58 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	12021595 ELK GROVE, CA
Version Date:	2018

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140621
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
NOT REPORTED
ELK GROVE, CA 95624

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	ELK GROVE CLASS III	WATERMAN & BOND	PFAS	Higher	271, 0.051, WNW
2	MSA: EAST PARK WTP (	9560 BAYPOINT WAY	Sacramento Co. ML	Lower	1043, 0.198, SSE
A3	BEL AIR MARKET #525	9435 ELK GROVE BLVD	CERS HAZ WASTE, Sacramento Co. ML, CERS	Lower	1064, 0.202, South
A4	BEL AIR #525	9435 ELK GROVE BLVD	RCRA NonGen / NLR	Lower	1064, 0.202, South
5	WELL 73 - EAST PARK		PFAS	Lower	1190, 0.225, SE
B6	CVS PHARMACY #9132	9285 ELK GROVE BLVD	RCRA-LQG, ECHO	Lower	1280, 0.242, SSW
B7	CVS PHARMACY #9132	9285 ELK GROVE BLVD	CERS HAZ WASTE, HAZNET, Sacramento Co. ML, HWTS	Lower	1280, 0.242, SSW
C8	ELK GROVE WATER WORK	9257 ELK GROVE BL	Sacramento Co. ML	Lower	1299, 0.246, SSW
C9	ELK GROVE WATER WORK	9257 ELK GROVE BL	Sacramento Co. ML	Lower	1299, 0.246, SSW
C10	ELK GROVE AUTO CARE	9257 ELK GROVE BL	Sacramento Co. ML	Lower	1299, 0.246, SSW
C11	ELK GROVE WATER WORK	9257 ELK GROVE BLVD	Sacramento Co. ML	Lower	1299, 0.246, SSW
12	ELK GROVE DISPOSAL S	CORNER OF WATERMAN &	SWF/LF	Lower	1398, 0.265, NNW
C13	HARCROW PROPERTY	9251 ELK GROVE	LUST, Sacramento Co. CS, Cortese, HIST CORTESE,...	Lower	1461, 0.277, SSW
14	CRESLEIGH RANCH NO.	ELK GROVE BOULEVARD/	ENVIROSTOR, SCH	Lower	1942, 0.368, WSW
15	ELK GROVE CLASS III	CORNER OF WATERMAN &	WMUDS/SWAT	Lower	2190, 0.415, North
16	ELK GROVE-MATHER AUX		FUDS	Lower	2247, 0.426, NE
17	FRANKLIN MEADOWS ELE	FIRE POPPY DRIVE/BLO	ENVIROSTOR, SCH	Lower	2817, 0.534, NNW
18	RESIDENCE	9800 WATERMAN	LUST, Sacramento Co. CS, Cortese, Notify 65, CERS	Lower	3683, 0.698, South
19	ELK GROVE MONTESSORI	BRADSHAW ROAD AND EL	ENVIROSTOR, SCH	Higher	4596, 0.870, ESE
20	PLEASANT GROVE HI/KA	BOND ROAD/BRADSHAW R	ENVIROSTOR, SCH	Higher	5117, 0.969, ENE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Lists of Federal Delisted NPL sites

Delisted NPL ---------- National Priority List Deletions

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS ---------- Corrective Action Report

Lists of Federal RCRA TSD facilities

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Lists of Federal RCRA generators

RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-VSQG ---------- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List

US INST CONTROLS Institutional Controls Sites List

Federal ERNS list

ERNS Emergency Response Notification System

Lists of state- and tribal (Superfund) equivalent sites

RESPONSE State Response Sites

Lists of state and tribal leaking storage tanks

INDIAN LUST Leaking Underground Storage Tanks on Indian Land
CPS-SLIC Statewide SLIC Cases

Lists of state and tribal registered storage tanks

FEMA UST Underground Storage Tank Listing
UST Active UST Facilities
AST Aboveground Petroleum Storage Tank Facilities
INDIAN UST Underground Storage Tanks on Indian Land

Lists of state and tribal voluntary cleanup sites

INDIAN VCP Voluntary Cleanup Priority Listing
VCP Voluntary Cleanup Program Properties

Lists of state and tribal brownfield sites

BROWNFIELDS Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY Recycler Database
HAULERS Registered Waste Tire Haulers Listing
INDIAN ODI Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 Torres Martinez Reservation Illegal Dump Site Locations
ODI Open Dump Inventory
IHS OPEN DUMPS Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL Delisted National Clandestine Laboratory Register
HIST Cal-Sites Historical Calsites Database
SCH School Property Evaluation Program
CDL Clandestine Drug Labs
Toxic Pits Toxic Pits Cleanup Act Sites
US CDL National Clandestine Laboratory Register

EXECUTIVE SUMMARY

Local Lists of Registered Storage Tanks

SWEEPS UST	SWEEPS UST Listing
HIST UST	Hazardous Substance Storage Container Database
CA FID UST	Facility Inventory Database
CERS TANKS	California Environmental Reporting System (CERS) Tanks

Local Land Records

LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information
DEED	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines

FINDS Facility Index System/Facility Registry System
UXO Unexploded Ordnance Sites
ECHO Enforcement & Compliance History Information
DOCKET HWC Hazardous Waste Compliance Docket Listing
FUELS PROGRAM EPA Fuels Program Registered Listing
PFAS NPL Superfund Sites with PFAS Detections Information
PFAS FEDERAL SITES Federal Sites PFAS Information
PFAS TSCA PFAS Manufacture and Imports Information
PFAS RCRA MANIFEST PFAS Transfers Identified In the RCRA Database Listing
PFAS ATSDR PFAS Contamination Site Location Listing
PFAS WQP Ambient Environmental Sampling for PFAS
PFAS NPDES Clean Water Act Discharge Monitoring Information
PFAS ECHO Facilities in Industries that May Be Handling PFAS Listing
PFAS ECHO FIRE TRAINING Facilities in Industries that May Be Handling PFAS Listing
PFAS PART 139 AIRPORT All Certified Part 139 Airports PFAS Information Listing
AQUEOUS FOAM NRC Aqueous Foam Related Incidents Listing
AQUEOUS FOAM Former Fire Training Facility Assessments Listing
CA BOND EXP. PLAN Bond Expenditure Plan
CUPA Listings CUPA Resources List
DRYCLEANERS Cleaner Facilities
EMI Emissions Inventory Data
ENF Enforcement Action Listing
Financial Assurance Financial Assurance Information Listing
ICE ICE
HWP EnviroStor Permitted Facilities Listing
HWT Registered Hazardous Waste Transporter Database
HAZNET Facility and Manifest Data
MINES Mines Site Location Listing
MWMP Medical Waste Management Program Listing
NPDES NPDES Permits Listing
PEST LIC Pesticide Regulation Licenses Listing
PROC Certified Processors Database
HAZMAT Hazardous Material Facilities
UIC UIC Listing
UIC GEO UIC GEO (GEOTRACKER)
WASTEWATER PITS Oil Wastewater Pits Listing
WDS Waste Discharge System
WIP Well Investigation Program Case List
MILITARY PRIV SITES MILITARY PRIV SITES (GEOTRACKER)
PROJECT PROJECT (GEOTRACKER)
WDR Waste Discharge Requirements Listing
CIWQS California Integrated Water Quality System
CERS CERS
NON-CASE INFO NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ Well Stimulation Project (GEOTRACKER)
PFAS TRIS List of PFAS Added to the TRI
MINES MRDS Mineral Resources Data System
HWTS Hazardous Waste Tracking System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP EDR Proprietary Manufactured Gas Plants

EXECUTIVE SUMMARY

EDR Hist Auto ---------- EDR Exclusive Historical Auto Stations
EDR Hist Cleaner ---------- EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF ---------- Recovered Government Archive Solid Waste Facilities List
RGA LUST ---------- Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal RCRA generators

RCRA-LQG: RCRAInfo 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. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

A review of the RCRA-LQG list, as provided by EDR, and dated 03/06/2023 has revealed that there is 1 RCRA-LQG site within approximately 1 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CVS PHARMACY #9132 EPA ID:: CAR000229575	***9285 ELK GROVE BLVD***	***SSW 1/8 - 1/4 (0.242 mi.)***	***B6***	***33***

Lists of state- and tribal hazardous waste facilities

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information

that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 01/23/2023 has revealed that there are 4 ENVIROSTOR sites within approximately 1 of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ELK GROVE MONTESSORI	***BRADSHAW ROAD AND EL***	***ESE 1/2 - 1 (0.870 mi.)***	***19***	***74***
Facility Id: 60001032				
Status: No Action Required				
PLEASANT GROVE HI/KA	***BOND ROAD/BRADSHAW R***	***ENE 1/2 - 1 (0.969 mi.)***	***20***	***77***
Facility Id: 34020002				
Status: Certified				

Lower Elevation	Address	Direction / Distance	Map ID	Page
CRESLEIGH RANCH NO.	***ELK GROVE BOULEVARD/***	***WSW 1/4 - 1/2 (0.368 mi.)***	***14***	***64***
Facility Id: 34010016				
Status: No Action Required				
FRANKLIN MEADOWS ELE	***FIRE POPPY DRIVE/BLO***	***NNW 1/2 - 1 (0.534 mi.)***	***17***	***68***
Facility Id: 34000002				
Status: No Action Required				

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF: The Solid Waste Facilities/Landfill Sites records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. The data come from the Integrated Waste Management Board's Solid Waste Information System (SWIS) database.

A review of the SWF/LF list, as provided by EDR, has revealed that there is 1 SWF/LF site within approximately 1 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
ELK GROVE DISPOSAL S	CORNER OF WATERMAN &	NNW 1/4 - 1/2 (0.265 mi.)	12	58
Database: SWF/LF (SWIS), Date of Government Version: 02/06/2023				
Facility ID: 34-AA-0004				
Operational Status: Closed				
Regulation Status: Permitted				

Lists of state and tribal leaking storage tanks

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there is 1 LUST site within

approximately 1 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
HARCROW PROPERTY	***9251 ELK GROVE***	***SSW 1/4 - 1/2 (0.277 mi.)***	***C13***	***60***
Database: LUST REG 5, Date of Government Version: 07/01/2008				
Database: LUST, Date of Government Version: 03/06/2023				
Status: Completed - Case Closed				
Status: Case Closed				
Global Id: T0606700774				

Sacramento Co. CS: List of sites where unauthorized releases of potentially hazardous materials have occurred.

A review of the Sacramento Co. CS list, as provided by EDR, and dated 11/07/2022 has revealed that there is 1 Sacramento Co. CS site within approximately 1 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
HARCROW PROPERTY	***9251 ELK GROVE***	***SSW 1/4 - 1/2 (0.277 mi.)***	***C13***	***60***
Facility Id: RO0000377				
Date Closed: 12/02/1994				

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: The Waste Management Unit Database System is used for program tracking and inventory of waste management units. The source is the State Water Resources Control Board.

A review of the WMUDS/SWAT list, as provided by EDR, and dated 04/01/2000 has revealed that there is 1 WMUDS/SWAT site within approximately 1 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
ELK GROVE CLASS III	CORNER OF WATERMAN &	N 1/4 - 1/2 (0.415 mi.)	15	66

Local Lists of Hazardous waste / Contaminated Sites

CERS HAZ WASTE: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

A review of the CERS HAZ WASTE list, as provided by EDR, and dated 01/05/2023 has revealed that there are 2 CERS HAZ WASTE sites within approximately 1 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
BEL AIR MARKET #525	***9435 ELK GROVE BLVD***	***S 1/8 - 1/4 (0.202 mi.)***	***A3***	***17***
CVS PHARMACY #9132	***9285 ELK GROVE BLVD***	***SSW 1/8 - 1/4 (0.242 mi.)***	***B7***	***40***

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo 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. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 03/06/2023 has revealed that there is 1 RCRA NonGen / NLR site within approximately 1 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
BEL AIR #525 EPA ID:: CAL000282378	9435 ELK GROVE BLVD	S 1/8 - 1/4 (0.202 mi.)	A4	21

FUDS: The Listing includes locations of Formerly Used Defense Sites Properties where the US Army Corps Of Engineers is actively working or will take necessary cleanup actions.

A review of the FUDS list, as provided by EDR, and dated 02/01/2023 has revealed that there is 1 FUDS site within approximately 1 of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
ELK GROVE-MATHER AUX		NE 1/4 - 1/2 (0.426 mi.)	16	67

PFAS: A listing of PFAS contaminated sites included in the GeoTracker database.

A review of the PFAS list, as provided by EDR, and dated 03/06/2023 has revealed that there are 2 PFAS sites within approximately 1 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ELK GROVE CLASS III	WATERMAN & BOND	WNW 0 - 1/8 (0.051 mi.)	1	9

Lower Elevation	Address	Direction / Distance	Map ID	Page
WELL 73 - EAST PARK		SE 1/8 - 1/4 (0.225 mi.)	5	25

Cortese: The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

A review of the Cortese list, as provided by EDR, and dated 03/20/2023 has revealed that there is 1 Cortese site within approximately 1 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
HARCROW PROPERTY Cleanup Status: COMPLETED - CASE CLOSED	***9251 ELK GROVE***	***SSW 1/4 - 1/2 (0.277 mi.)***	***C13***	***60***

EXECUTIVE SUMMARY

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there is 1 HIST CORTESE site within approximately 1 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
HARCROW PROPERTY	***9251 ELK GROVE***	***SSW 1/4 - 1/2 (0.277 mi.)***	***C13***	***60***
Reg Id: 340935				

Sacramento Co. ML: Sacramento County Master List. Any business that has hazardous materials on site - hazardous materials storage sites, underground storage tanks, waste generators.

A review of the Sacramento Co. ML list, as provided by EDR, and dated 11/07/2022 has revealed that there are 7 Sacramento Co. ML sites within approximately 1 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
MSA: EAST PARK WTP (	9560 BAYPOINT WAY	SSE 1/8 - 1/4 (0.198 mi.)	2	17
BEL AIR MARKET #525	***9435 ELK GROVE BLVD***	***S 1/8 - 1/4 (0.202 mi.)***	***A3***	***17***
CVS PHARMACY #9132	***9285 ELK GROVE BLVD***	***SSW 1/8 - 1/4 (0.242 mi.)***	***B7***	***40***
ELK GROVE WATER WORK	9257 ELK GROVE BL	SSW 1/8 - 1/4 (0.246 mi.)	C8	56
Facility Status: Inactive. Included on a listing no longer updated.				
ELK GROVE WATER WORK	9257 ELK GROVE BL	SSW 1/8 - 1/4 (0.246 mi.)	C9	57
Facility Status: Inactive. Included on a listing no longer updated.				
ELK GROVE AUTO CARE	9257 ELK GROVE BL	SSW 1/8 - 1/4 (0.246 mi.)	C10	57
Facility Status: Inactive. Included on a listing no longer updated.				
ELK GROVE WATER WORK	9257 ELK GROVE BLVD	SSW 1/8 - 1/4 (0.246 mi.)	C11	58

Notify 65: Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

A review of the Notify 65 list, as provided by EDR, and dated 03/09/2023 has revealed that there is 1 Notify 65 site within approximately 1 of the target property.

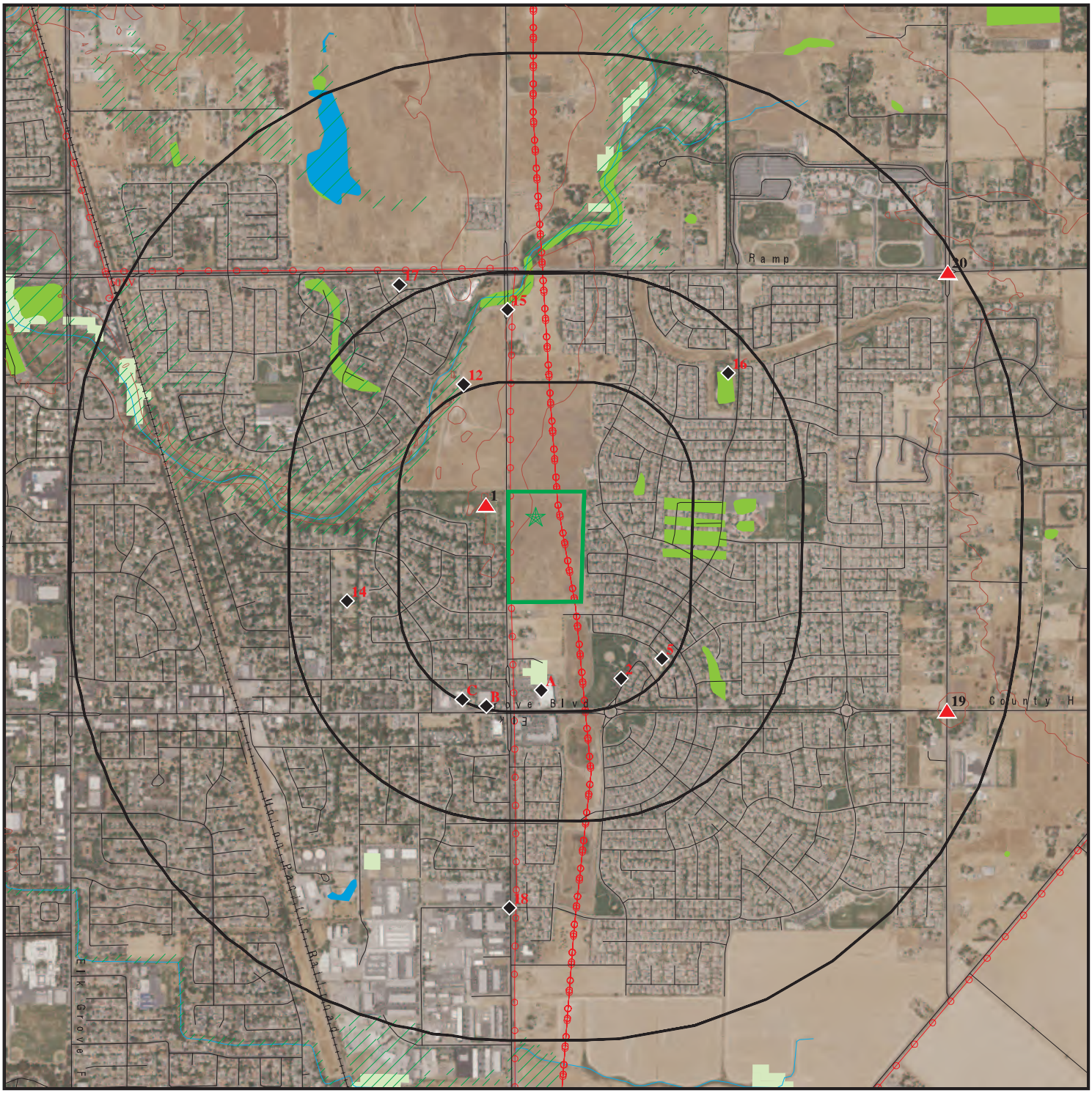
Lower Elevation	Address	Direction / Distance	Map ID	Page
RESIDENCE	***9800 WATERMAN***	***S 1/2 - 1 (0.698 mi.)***	***18***	***71***

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 3 records.

Site Name	Database(s)
PROPOSED CROOKED CREEK ELEMENTARY	ENVIROSTOR, SCH
KINGSFORD CHARCOAL PLANT	Sacramento Co. CS
KINGSFORD CHARCOAL COMPANY	Sacramento Co. CS

OVERVIEW MAP - 7359670.2S



0 1/4 1/2 1 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: 23-5793 ADDRESS: Not Reported ELK GROVE CA 95624 LAT/LONG: 38.415474 / 121.351976	CLIENT: Pinnacle Environmental Inc. CONTACT: Travis Stansbery INQUIRY #: 7359670.2s DATE: June 08, 2023 4:06 pm

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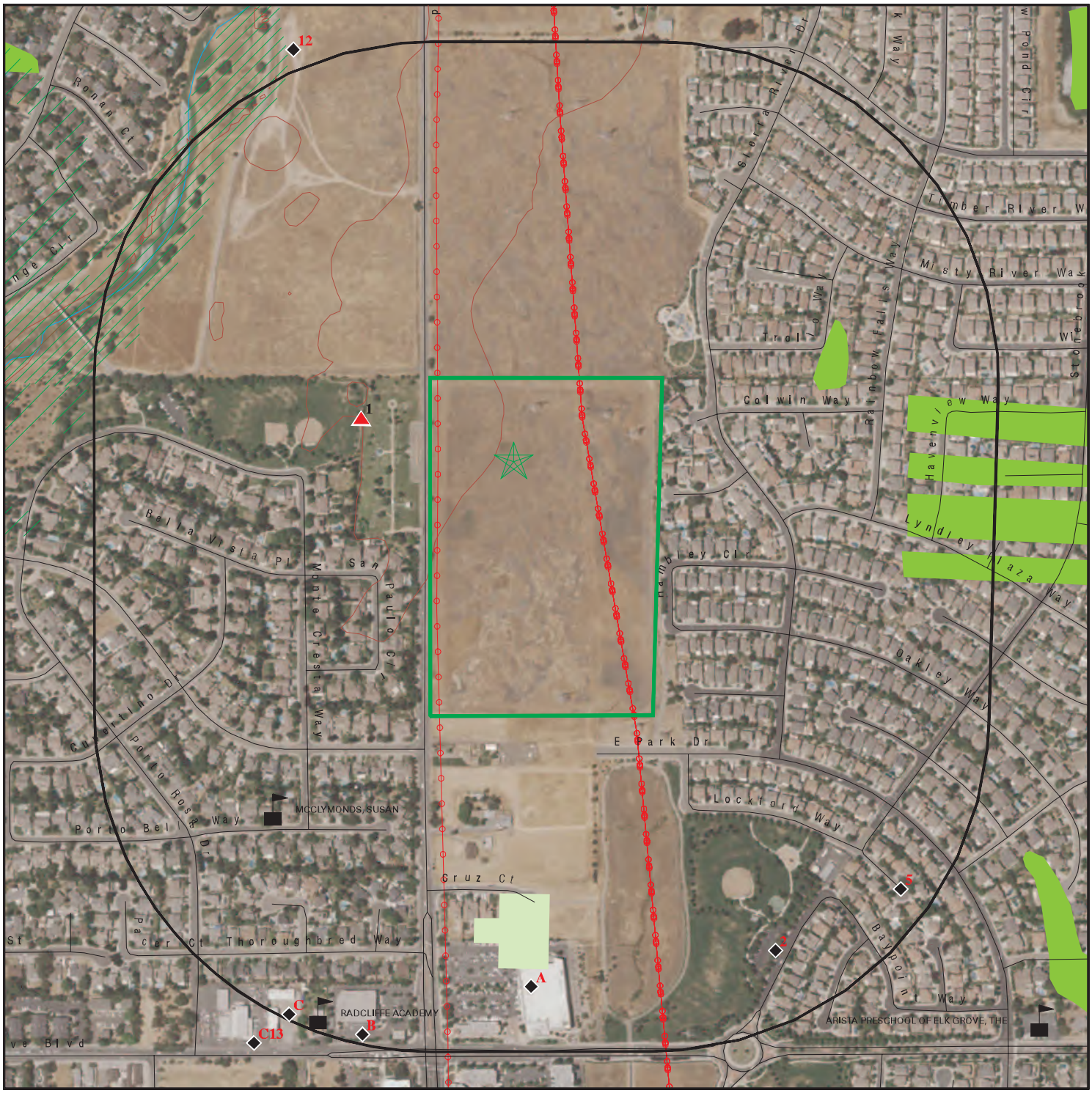
DETAIL MAP - 7359670.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: 23-5793	CLIENT: Pinnacle Environmental Inc.
ADDRESS: Not Reported ELK GROVE CA 95624	CONTACT: Travis Stansbery
LAT/LONG: 38.415474 / 121.351976	INQUIRY #: 7359670.2s DATE: June 08, 2023 4:07 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Lists of Federal NPL (Superfund) sites								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Lists of Federal Delisted NPL sites								
Delisted NPL	1.000		0	0	0	0	NR	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Lists of Federal CERCLA sites with NFRAP								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA facilities undergoing Corrective Action								
CORRACTS	1.000		0	0	0	0	NR	0
Lists of Federal RCRA TSD facilities								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA generators								
RCRA-LQG	0.250		0	1	NR	NR	NR	1
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
Lists of state- and tribal (Superfund) equivalent sites								
RESPONSE	1.000		0	0	0	0	NR	0
Lists of state- and tribal hazardous waste facilities								
ENVIROSTOR	1.000		0	0	1	3	NR	4
Lists of state and tribal landfills and solid waste disposal facilities								
SWF/LF	0.500		0	0	1	NR	NR	1

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
Lists of state and tribal leaking storage tanks								
LUST	0.500		0	0	1	NR	NR	1
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
Sacramento Co. CS	0.500		0	0	1	NR	NR	1
Lists of state and tribal registered storage tanks								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
Lists of state and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
Lists of state and tribal brownfield sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	1	NR	NR	1
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
CERS HAZ WASTE	0.250		0	2	NR	NR	NR	2
US CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
CERS TANKS	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0
LIENS 2	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	1	NR	NR	NR	1
FUDS	1.000		0	0	1	0	NR	1
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
PFAS NPL	0.250		0	0	NR	NR	NR	0
PFAS FEDERAL SITES	0.250		0	0	NR	NR	NR	0
PFAS TSCA	0.250		0	0	NR	NR	NR	0
PFAS RCRA MANIFEST	0.250		0	0	NR	NR	NR	0
PFAS ATSDR	0.250		0	0	NR	NR	NR	0
PFAS WQP	0.250		0	0	NR	NR	NR	0
PFAS NPDES	0.250		0	0	NR	NR	NR	0
PFAS ECHO	0.250		0	0	NR	NR	NR	0
PFAS ECHO FIRE TRAINING	0.250		0	0	NR	NR	NR	0
PFAS PART 139 AIRPORT	0.250		0	0	NR	NR	NR	0
AQUEOUS FOAM NRC	0.250		0	0	NR	NR	NR	0
PFAS	0.250		1	1	NR	NR	NR	2
AQUEOUS FOAM	TP		NR	NR	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	1	NR	NR	1
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
ICE	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	1	NR	NR	1
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
Sacramento Co. ML	0.250		0	7	NR	NR	NR	7
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
PEST LIC	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	1	NR	1
HAZMAT	0.250		0	0	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
UIC GEO	TP		NR	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	TP		NR	NR	NR	NR	NR	0
PROJECT	TP		NR	NR	NR	NR	NR	0
WDR	TP		NR	NR	NR	NR	NR	0
CIWQS	TP		NR	NR	NR	NR	NR	0
CERS	TP		NR	NR	NR	NR	NR	0
NON-CASE INFO	TP		NR	NR	NR	NR	NR	0
OTHER OIL GAS	TP		NR	NR	NR	NR	NR	0
PROD WATER PONDS	TP		NR	NR	NR	NR	NR	0
SAMPLING POINT	TP		NR	NR	NR	NR	NR	0
WELL STIM PROJ	TP		NR	NR	NR	NR	NR	0
PFAS TRIS	0.250		0	0	NR	NR	NR	0
MINES MRDS	TP		NR	NR	NR	NR	NR	0
HWTS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	1	12	8	4	0	25

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1
WNW
< 1/8
0.051 mi.
271 ft.

ELK GROVE CLASS III LANDFILL
WATERMAN & BOND
ELK GROVE, CA

PFAS **S127521946**
N/A

Relative:
Higher

Actual:
62 ft.

PFAS:

Name:	ELK GROVE CLASS III LANDFILL
Address:	WATERMAN & BOND
City,State,Zip:	ELK GROVE, CA
Envirostor ID:	Not reported
Program Type:	Not reported
Status:	Not reported
Status Date:	Not reported
Enviroscreen Score:	Not reported
Site Code:	Not reported
Global ID:	L10008601447
Facility Region:	CENTRAL VALLEY RWQCB (REGION 5S)
Lead Agency:	Not reported
Case worker:	Not reported
Local Agency:	Not reported
Location Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported
Site History:	Not reported
Begin Date:	Not reported
RB Case Number:	Not reported
source_type:	All PFAS Chemicals
Location ID:	MW-13
Matrix:	Liquid
Chemical:	PFBSA
Qualifier:	ND
Value:	0.77
Reporting Limit:	1.6
Detection Limit:	0.41
Lab Notes:	J
Quarterly Running Annual Average:	0
Units:	NG/L
Date:	12/5/2019
Field Pt Class:	MW
Site Use:	MSW Landfill
Site Type:	Land Disposal Site
Latitude:	38.4159214
Longitude:	-121.3540665
Geo Tracker URL:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=L10008601447
Name:	ELK GROVE CLASS III LANDFILL
Address:	WATERMAN & BOND
City,State,Zip:	ELK GROVE, CA
Envirostor ID:	Not reported
Program Type:	Not reported
Status:	Not reported
Status Date:	Not reported
Enviroscreen Score:	Not reported
Site Code:	Not reported
Global ID:	L10008601447
Facility Region:	CENTRAL VALLEY RWQCB (REGION 5S)

ELK GROVE CLASS III LANDFILL (Continued) **S127521946**

Lead Agency:	Not reported
Case worker:	Not reported
Local Agency:	Not reported
Location Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported
Site History:	Not reported
Begin Date:	Not reported
RB Case Number:	Not reported
source_type:	All PFAS Chemicals
Location ID:	MW-13
Matrix:	Liquid
Chemical:	NMEFOSAA
Qualifier:	ND
Value:	0
Reporting Limit:	1.6
Detection Limit:	0.49
Lab Notes:	Not reported
Quarterly Running Annual Average:	0
Units:	NG/L
Date:	12/5/2019
Field Pt Class:	MW
Site Use:	MSW Landfill
Site Type:	Land Disposal Site
Latitude:	38.4159214
Longitude:	-121.3540665
Geo Tracker URL:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=L10008601447
Name:	ELK GROVE CLASS III LANDFILL
Address:	WATERMAN & BOND
City,State,Zip:	ELK GROVE, CA
Envirostor ID:	Not reported
Program Type:	Not reported
Status:	Not reported
Status Date:	Not reported
Enviroscreen Score:	Not reported
Site Code:	Not reported
Global ID:	L10008601447
Facility Region:	CENTRAL VALLEY RWQCB (REGION 5S)
Lead Agency:	Not reported
Case worker:	Not reported
Local Agency:	Not reported
Location Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported
Site History:	Not reported
Begin Date:	Not reported
RB Case Number:	Not reported
source_type:	All PFAS Chemicals
Location ID:	MW-13
Matrix:	Liquid
Chemical:	PFOSA
Qualifier:	ND

ELK GROVE CLASS III LANDFILL (Continued) **S127521946**

Value:	0
Reporting Limit:	1.6
Detection Limit:	0.41
Lab Notes:	Not reported
Quarterly Running Annual Average:	0
Units:	NG/L
Date:	12/5/2019
Field Pt Class:	MW
Site Use:	MSW Landfill
Site Type:	Land Disposal Site
Latitude:	38.4159214
Longitude:	-121.3540665
Geo Tracker URL:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=L10008601447

Name:	ELK GROVE CLASS III LANDFILL
Address:	WATERMAN & BOND
City,State,Zip:	ELK GROVE, CA
Envirostor ID:	Not reported
Program Type:	Not reported
Status:	Not reported
Status Date:	Not reported
Enviroscreen Score:	Not reported
Site Code:	Not reported
Global ID:	L10008601447
Facility Region:	CENTRAL VALLEY RWQCB (REGION 5S)
Lead Agency:	Not reported
Case worker:	Not reported
Local Agency:	Not reported
Location Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported
Site History:	Not reported

Begin Date:	Not reported
RB Case Number:	Not reported
source_type:	All PFAS Chemicals
Location ID:	MW-13
Matrix:	Liquid
Chemical:	PFPA
Qualifier:	=
Value:	2.8
Reporting Limit:	1.6
Detection Limit:	0.41
Lab Notes:	Not reported
Quarterly Running Annual Average:	0
Units:	NG/L
Date:	12/5/2019
Field Pt Class:	MW
Site Use:	MSW Landfill
Site Type:	Land Disposal Site
Latitude:	38.4159214
Longitude:	-121.3540665
Geo Tracker URL:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=L10008601447

Name:	ELK GROVE CLASS III LANDFILL
Address:	WATERMAN & BOND

ELK GROVE CLASS III LANDFILL (Continued) **S127521946**

City,State,Zip:	ELK GROVE, CA
Envirostor ID:	Not reported
Program Type:	Not reported
Status:	Not reported
Status Date:	Not reported
Enviroscreen Score:	Not reported
Site Code:	Not reported
Global ID:	L10008601447
Facility Region:	CENTRAL VALLEY RWQCB (REGION 5S)
Lead Agency:	Not reported
Case worker:	Not reported
Local Agency:	Not reported
Location Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported
Site History:	Not reported
Begin Date:	Not reported
RB Case Number:	Not reported
source_type:	All PFAS Chemicals
Location ID:	MW-13
Matrix:	Liquid
Chemical:	PFDOA
Qualifier:	ND
Value:	0
Reporting Limit:	1.6
Detection Limit:	0.41
Lab Notes:	Not reported
Quarterly Running Annual Average:	0
Units:	NG/L
Date:	12/5/2019
Field Pt Class:	MW
Site Use:	MSW Landfill
Site Type:	Land Disposal Site
Latitude:	38.4159214
Longitude:	-121.3540665
Geo Tracker URL:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=L10008601447
Name:	ELK GROVE CLASS III LANDFILL
Address:	WATERMAN & BOND
City,State,Zip:	ELK GROVE, CA
Envirostor ID:	Not reported
Program Type:	Not reported
Status:	Not reported
Status Date:	Not reported
Enviroscreen Score:	Not reported
Site Code:	Not reported
Global ID:	L10008601447
Facility Region:	CENTRAL VALLEY RWQCB (REGION 5S)
Lead Agency:	Not reported
Case worker:	Not reported
Local Agency:	Not reported
Location Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported

ELK GROVE CLASS III LANDFILL (Continued) **S127521946**

Site History:	Not reported
Begin Date:	Not reported
RB Case Number:	Not reported
source_type:	All PFAS Chemicals
Location ID:	MW-13
Matrix:	Liquid
Chemical:	PFTEDA
Qualifier:	ND
Value:	0
Reporting Limit:	1.6
Detection Limit:	0.41
Lab Notes:	Not reported
Quarterly Running Annual Average:	0
Units:	NG/L
Date:	12/5/2019
Field Pt Class:	MW
Site Use:	MSW Landfill
Site Type:	Land Disposal Site
Latitude:	38.4159214
Longitude:	-121.3540665
Geo Tracker URL:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=L10008601447
Name:	ELK GROVE CLASS III LANDFILL
Address:	WATERMAN & BOND
City,State,Zip:	ELK GROVE, CA
Envirostor ID:	Not reported
Program Type:	Not reported
Status:	Not reported
Status Date:	Not reported
Enviroscreen Score:	Not reported
Site Code:	Not reported
Global ID:	L10008601447
Facility Region:	CENTRAL VALLEY RWQCB (REGION 5S)
Lead Agency:	Not reported
Case worker:	Not reported
Local Agency:	Not reported
Location Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported
Site History:	Not reported
Begin Date:	Not reported
RB Case Number:	Not reported
source_type:	All PFAS Chemicals
Location ID:	MW-13
Matrix:	Liquid
Chemical:	PFOA
Qualifier:	=
Value:	2.4
Reporting Limit:	1.6
Detection Limit:	0.41
Lab Notes:	Not reported
Quarterly Running Annual Average:	0
Units:	NG/L
Date:	12/5/2019

ELK GROVE CLASS III LANDFILL (Continued) **S127521946**

Field Pt Class:	MW
Site Use:	MSW Landfill
Site Type:	Land Disposal Site
Latitude:	38.4159214
Longitude:	-121.3540665
Geo Tracker URL:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=L10008601447

Name:	ELK GROVE CLASS III LANDFILL
Address:	WATERMAN & BOND
City,State,Zip:	ELK GROVE, CA
Envirostor ID:	Not reported
Program Type:	Not reported
Status:	Not reported
Status Date:	Not reported
Enviroscreen Score:	Not reported
Site Code:	Not reported
Global ID:	L10008601447
Facility Region:	CENTRAL VALLEY RWQCB (REGION 5S)
Lead Agency:	Not reported
Case worker:	Not reported
Local Agency:	Not reported
Location Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported
Site History:	Not reported

Begin Date:	Not reported
RB Case Number:	Not reported
source_type:	All PFAS Chemicals
Location ID:	MW-13
Matrix:	Liquid
Chemical:	PFHA
Qualifier:	=
Value:	2.8
Reporting Limit:	1.6
Detection Limit:	0.41
Lab Notes:	Not reported
Quarterly Running Annual Average:	0
Units:	NG/L
Date:	12/5/2019
Field Pt Class:	MW
Site Use:	MSW Landfill
Site Type:	Land Disposal Site
Latitude:	38.4159214
Longitude:	-121.3540665
Geo Tracker URL:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=L10008601447

Name:	ELK GROVE CLASS III LANDFILL
Address:	WATERMAN & BOND
City,State,Zip:	ELK GROVE, CA
Envirostor ID:	Not reported
Program Type:	Not reported
Status:	Not reported
Status Date:	Not reported
Enviroscreen Score:	Not reported
Site Code:	Not reported

ELK GROVE CLASS III LANDFILL (Continued) **S127521946**

Global ID:	L10008601447
Facility Region:	CENTRAL VALLEY RWQCB (REGION 5S)
Lead Agency:	Not reported
Case worker:	Not reported
Local Agency:	Not reported
Location Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported
Site History:	Not reported
Begin Date:	Not reported
RB Case Number:	Not reported
source_type:	All PFAS Chemicals
Location ID:	MW-13
Matrix:	Liquid
Chemical:	PFHXSA
Qualifier:	ND
Value:	0
Reporting Limit:	1.6
Detection Limit:	0.41
Lab Notes:	Not reported
Quarterly Running Annual Average:	0
Units:	NG/L
Date:	12/5/2019
Field Pt Class:	MW
Site Use:	MSW Landfill
Site Type:	Land Disposal Site
Latitude:	38.4159214
Longitude:	-121.3540665
Geo Tracker URL:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=L10008601447
Name:	ELK GROVE CLASS III LANDFILL
Address:	WATERMAN & BOND
City,State,Zip:	ELK GROVE, CA
Envirostor ID:	Not reported
Program Type:	Not reported
Status:	Not reported
Status Date:	Not reported
Enviroscreen Score:	Not reported
Site Code:	Not reported
Global ID:	L10008601447
Facility Region:	CENTRAL VALLEY RWQCB (REGION 5S)
Lead Agency:	Not reported
Case worker:	Not reported
Local Agency:	Not reported
Location Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported
Site History:	Not reported
Begin Date:	Not reported
RB Case Number:	Not reported
source_type:	All PFAS Chemicals
Location ID:	MW-13
Matrix:	Liquid

ELK GROVE CLASS III LANDFILL (Continued) **S127521946**

Chemical:	PFPES
Qualifier:	ND
Value:	0
Reporting Limit:	1.6
Detection Limit:	0.41
Lab Notes:	Not reported
Quarterly Running Annual Average:	0
Units:	NG/L
Date:	12/5/2019
Field Pt Class:	MW
Site Use:	MSW Landfill
Site Type:	Land Disposal Site
Latitude:	38.4159214
Longitude:	-121.3540665
Geo Tracker URL:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=L10008601447

Name:	ELK GROVE CLASS III LANDFILL
Address:	WATERMAN & BOND
City,State,Zip:	ELK GROVE, CA
Envirostor ID:	Not reported
Program Type:	Not reported
Status:	Not reported
Status Date:	Not reported
Enviroscreen Score:	Not reported
Site Code:	Not reported
Global ID:	L10008601447
Facility Region:	CENTRAL VALLEY RWQCB (REGION 5S)
Lead Agency:	Not reported
Case worker:	Not reported
Local Agency:	Not reported
Location Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported
Site History:	Not reported

Begin Date:	Not reported
RB Case Number:	Not reported
source_type:	All PFAS Chemicals
Location ID:	MW-13
Matrix:	Liquid
Chemical:	PFHPSA
Qualifier:	ND
Value:	0
Reporting Limit:	1.6
Detection Limit:	0.41
Lab Notes:	Not reported
Quarterly Running Annual Average:	0
Units:	NG/L
Date:	12/5/2019
Field Pt Class:	MW
Site Use:	MSW Landfill
Site Type:	Land Disposal Site
Latitude:	38.4159214
Longitude:	-121.3540665
Geo Tracker URL:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=L10008601447

ELK GROVE CLASS III LANDFILL (Continued) **S127521946**

Click this hyperlink while viewing on your computer to access
13 additional CA PFAS: record(s) in the EDR Site Report.

2
SSE
1/8-1/4
0.198 mi.
1043 ft.

MSA: EAST PARK WTP (WF03)
9560 BAYPOINT WAY
ELK GROVE, CA 95624

Sacramento Co. ML **S107769905**
N/A

Relative:
Lower

Actual:
52 ft.

Sacramento Co. ML:

Name:	MSA: EAST PARK WTP (WF03)
Address:	9560 BAYPOINT WAY
City,State,Zip:	ELK GROVE, CA 95624
Facility Id:	Not reported
Facility Status:	Not reported
FD:	Not reported
Billing Codes BP:	A
Billing Codes UST:	Not reported
WG Bill Code:	Not reported
Target Property Bill Cod:	Not reported
Food Bill Code:	Not reported
CUPA Permit Date:	Not reported
HAZMAT Permit Date:	Not reported
HAZMAT Inspection Date:	Not reported
Hazmat Date BP Received:	Not reported
UST Permit Dt:	Not reported
UST Inspection Date:	Not reported
UST Tank Test Date:	Not reported
Number of Tanks:	Not reported
UST Tank Test Date:	Not reported
SIC Code:	Not reported
Tier Permitting:	Not reported
AST Bill Code:	Not reported
CALARP Bill Code:	Not reported

A3
South
1/8-1/4
0.202 mi.
1064 ft.

BEL AIR MARKET #525
9435 ELK GROVE BLVD
ELK GROVE, CA 95624

Site 1 of 2 in cluster A

CERS HAZ WASTE **S106967380**
Sacramento Co. ML **N/A**
CERS

Relative:
Lower

Actual:
52 ft.

CERS HAZ WASTE:

Name:	BEL AIR MARKET #525
Address:	9435 ELK GROVE BLVD
City,State,Zip:	ELK GROVE, CA 95624
Site ID:	440238
CERS ID:	10496761
CERS Description:	RCRA LQ HW Generator

Name:	BEL AIR MARKET #525
Address:	9435 ELK GROVE BLVD
City,State,Zip:	ELK GROVE, CA 95624
Site ID:	440238
CERS ID:	10496761
CERS Description:	Hazardous Waste Generator

BEL AIR MARKET #525 (Continued) **S106967380**

Sacramento Co. ML:

Name:	BEL AIR MARKET #525
Address:	9435 ELK GROVE BLVD
City,State,Zip:	ELK GROVE, CA 95624
Facility Id:	Not reported
Facility Status:	Not reported
FD:	Not reported
Billing Codes BP:	A
Billing Codes UST:	Not reported
WG Bill Code:	A
Target Property Bill Cod:	Not reported
Food Bill Code:	Not reported
CUPA Permit Date:	Not reported
HAZMAT Permit Date:	Not reported
HAZMAT Inspection Date:	Not reported
Hazmat Date BP Received:	Not reported
UST Permit Dt:	Not reported
UST Inspection Date:	Not reported
UST Tank Test Date:	Not reported
Number of Tanks:	Not reported
UST Tank Test Date:	Not reported
SIC Code:	Not reported
Tier Permitting:	Not reported
AST Bill Code:	Not reported
CALARP Bill Code:	Not reported

CERS:

Name:	BEL AIR MARKET #525
Address:	9435 ELK GROVE BLVD
City,State,Zip:	ELK GROVE, CA 95624
Site ID:	440238
CERS ID:	10496761
CERS Description:	Chemical Storage Facilities

Violations:

Site ID:	440238
Site Name:	BEL AIR MARKET #525
Violation Date:	10-19-2016
Citation:	40 CFR 1 262.34(d)(5)(iii) - U.S. Code of Federal Regulations, Title 40, Chapter 1, Section(s) 262.34(d)(5)(iii)
Violation Description:	Failure to ensure that all employees are thoroughly familiar with proper waste handling and emergency procedures, relevant to their responsibilities during normal facility operations and emergencies.
Violation Notes:	Returned to compliance on 10/21/2016. OBSERVATION: Employees are not thoroughly familiar with proper waste handling and emergency procedures as demonstrated by the number and type of hazardous waste violations observed at the time of inspection. CORRECTIVE ACTION: Submit documentation to this department demonstrating that employees have been properly trained.
Violation Division:	Sacramento County Env Management Department
Violation Program:	HW
Violation Source:	CERS,

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	03-14-2019

BEL AIR MARKET #525 (Continued) **S106967380**

Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Sacramento County Env Management Department
Eval Program: HW
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-14-2022
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Inspection report emailed to Chelsea Pegan (525dir@raleys.com)
Eval Division: Sacramento County Env Management Department
Eval Program: HMRRP
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-14-2022
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: NOTE: The waste description on several manifests states "non-hazardous, non-regulated liquids" with a California hazardous waste code of 331 (Off-specification, aged, or surplus organics). The special handling notes for those line items states "non-rcra/DOT regulated waste products." Contact your waste hauler Clean Earth to discuss the discrepancy between the two waste descriptions. Inspection report emailed to Chelsea Pegan (525dir@raleys.com)
Eval Division: Sacramento County Env Management Department
Eval Program: HW
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-19-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Sacramento County Env Management Department
Eval Program: HW
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-03-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: No violations observed today.
Eval Division: Sacramento County Env Management Department
Eval Program: HW
Eval Source: CERS,

Coordinates:
Site ID: 440238
Facility Name: BEL AIR MARKET #525
Env Int Type Code: HWG
Program ID: 10496761
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.,
Latitude: 38.409780

BEL AIR MARKET #525 (Continued) **S106967380**

Longitude: -121.351740

Affiliation:

Affiliation Type Desc: Parent Corporation
Entity Name: BEL AIR MARKET #525
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

Affiliation Type Desc: Property Owner
Entity Name: Thomas L. Frankel
Entity Title: Not reported
Affiliation Address: 695 Fifth Street, Suite 13
Affiliation City: San Francisco
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 94107-1515
Affiliation Phone: (415) 777-3000,

Affiliation Type Desc: CUPA District
Entity Name: Sacramento County Environmental Management Departm
Entity Title: Not reported
Affiliation Address: 11080 WHITE ROCK ROAD, STE. 200
Affiliation City: RANCHO CORDOVA
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 95670
Affiliation Phone: (916) 875-8550,

Affiliation Type Desc: Document Preparer
Entity Name: Sergio Escalera
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

Affiliation Type Desc: Environmental Contact
Entity Name: Sergio Escalera
Entity Title: Not reported
Affiliation Address: 500 West Capitol Ave
Affiliation City: West Sacramento
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 95605
Affiliation Phone: ,

Affiliation Type Desc: Identification Signer
Entity Name: Sergio Escalera
Entity Title: Environmental Health and Safety Manager
Affiliation Address: Not reported

BEL AIR MARKET #525 (Continued) **S106967380**

Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,
Affiliation Type Desc:	Legal Owner
Entity Name:	Raley's Supermarket
Entity Title:	Not reported
Affiliation Address:	500 West Capitol Ave
Affiliation City:	West Sacramento
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	95605
Affiliation Phone:	(916) 373-3333,
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	9435 Elk Grove Blvd
Affiliation City:	Elk Grove
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	95624
Affiliation Phone:	,
Affiliation Type Desc:	Operator
Entity Name:	Bel Air #525
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(916) 714-6996,

A4 **BEL AIR #525** **RCRA NonGen / NLR** **1024808937**
South **9435 ELK GROVE BLVD** **CAL000282378**
1/8-1/4 **ELK GROVE, CA 95624**
0.202 mi.
1064 ft. **Site 2 of 2 in cluster A**

Relative: **Lower**

Actual: **52 ft.**

RCRA Listings:

Date Form Received by Agency:	20220701
Handler Name:	Bel Air #525
Handler Address:	9435 ELK GROVE BLVD
Handler City,State,Zip:	ELK GROVE, CA 95624-0000
EPA ID:	CAL000282378
Contact Name:	JANA GOIN
Contact Address:	PO BOX 15618
Contact City,State,Zip:	SACRAMENTO, CA 95852-1618
Contact Telephone:	916-373-6318
Contact Fax:	916-376-6899
Contact Email:	PROPERTYACCOUNTING@RALEYS.COM
Contact Title:	Not reported
EPA Region:	09
Land Type:	Private

BEL AIR #525 (Continued) **1024808937**

Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	2021
Accessibility:	Not reported
Active Site Indicator:	Handler Activities
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	PO BOX 15618
Mailing City,State,Zip:	SACRAMENTO, CA 95852-1618
Owner Name:	Raley'S
Owner Type:	Private
Operator Name:	Raleys
Operator Type:	Private
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	Yes
Universal Waste Destination Facility:	Yes
Federal Universal Waste:	No
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
202 GPRA Corrective Action Baseline:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	20220707
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Biennial: List of Years

Year:	2021

BEL AIR #525 (Continued) **1024808937**

Click Here for Biennial Reporting System Data:

Hazardous Waste Summary:

Waste Code:	D001
Waste Description:	Ignitable Waste
Waste Code:	D005
Waste Description:	Barium
Waste Code:	D006
Waste Description:	Cadmium
Waste Code:	D007
Waste Description:	Chromium
Waste Code:	D018
Waste Description:	Benzene
Waste Code:	D022
Waste Description:	Chloroform
Waste Code:	D035
Waste Description:	Methyl Ethyl Ketone
Waste Code:	P001
Waste Description:	2h-1-Benzopyran-2-One, 4-Hydroxy-3-(3-Oxo-1-Phenylbutyl)-, & Salts, When Present At Concentrations Greater Than 0.3% (Or) Warfarin, & Salts, When Present At Concentrations Greater Than 0.3%
Waste Code:	U002
Waste Description:	2-Propanone (I) (Or) Acetone (I)
Waste Code:	U159
Waste Description:	2-Butanone (I,T) (Or) Methyl Ethyl Ketone (Mek) (I,T)

Handler - Owner Operator:

Owner/Operator Indicator:	Operator
Owner/Operator Name: RALEYS	
Legal Status:	Private
Date Became Current:	20220311
Date Ended Current:	Not reported
Owner/Operator Address:	PO BOX 15618
Owner/Operator City,State,Zip:	SACRAMENTO, CA 95852-1618
Owner/Operator Telephone:	916-373-6318
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	PROPERTYACCOUNTING@RALEYS.COM
Owner/Operator Indicator:	Operator
Owner/Operator Name: GLENN BAKER	
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	PO BOX 15618
Owner/Operator City,State,Zip:	SACRAMENTO, CA 95852-1618

BEL AIR #525 (Continued) **1024808937**

Owner/Operator Telephone: 916-373-6318
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Owner
Owner/Operator Name: RALEY'S
Legal Status: Private
Date Became Current: 20220311
Date Ended Current: Not reported
Owner/Operator Address: 500 W CAPITOL AVE
Owner/Operator City,State,Zip: WEST SACRAMENTO, CA 95605-2624
Owner/Operator Telephone: 916-373-6318
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: PROPERTYACCOUNTING@RALEYS.COM

Owner/Operator Indicator: Owner
Owner/Operator Name: RALEY'S GEORGIA CLAESSENS TRUST
Legal Status: Other
Date Became Current: Not reported
Date Ended Current: Not reported
Owner/Operator Address: 500 W CAPITOL AVE
Owner/Operator City,State,Zip: WEST SACRAMENTO, CA 95605-2624
Owner/Operator Telephone: 916-373-6318
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Historic Generators:
Receive Date: 20220701
Handler Name: BEL AIR #525
Federal Waste Generator Description: Not a generator, verified
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: Yes
Non Storage Recycler Activity: No
Electronic Manifest Broker: No

Receive Date: 20040521
Handler Name: BEL AIR #525
Federal Waste Generator Description: Not a generator, verified
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

BEL AIR #525 (Continued) **1024808937**

List of NAICS Codes and Descriptions:
NAICS Code: 445110
NAICS Description: SUPERMARKETS AND OTHER GROCERY RETAILERS (EXCEPT CONVENIENCE RETAILERS)

NAICS Code: 45291
NAICS Description: WAREHOUSE CLUBS AND SUPERCENTERS

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

---

5 **WELL 73 - EAST PARK** **PFAS** **S127521943**
SE **N/A**
1/8-1/4 **SACRAMENTO, CA**
0.225 mi.
1190 ft.

Relative: **Lower**

Actual: **53 ft.**

PFAS:
Name: WELL 73 - EAST PARK
Address: Not reported
City,State,Zip: SACRAMENTO, CA
Envirostor ID: Not reported
Program Type: Not reported
Status: Not reported
Status Date: Not reported
Enviroscreen Score: Not reported
Site Code: Not reported
Global ID: W0603410029
Facility Region: Not reported
Lead Agency: Not reported
Case worker: Not reported
Local Agency: Not reported
Location Case Number: Not reported
File Location: Not reported
Potential Contaminants of Concern: Not reported
Potential Media Affected: Not reported
Site History: Not reported

Begin Date: Not reported
RB Case Number: Not reported
source_type: All PFAS Chemicals
Location ID: CA3410029_026_026
Matrix: Liquid
Chemical: 11ClPF3OUDS
Qualifier: <
Value: 3
Reporting Limit: Not reported
Detection Limit: Not reported
Lab Notes: Not reported
Quarterly Running Annual Average: Not reported
Units: NG/L
Date: 11/7/2019

WELL 73 - EAST PARK (Continued) **S127521943**

Field Pt Class: PUBW
Site Use: Drinking Water Wells
Site Type: DDW Well
Latitude: 38.410833
Longitude: -121.346667
Geo Tracker URL: Not reported

Name: WELL 73 - EAST PARK
Address: Not reported
City,State,Zip: SACRAMENTO, CA
Envirostor ID: Not reported
Program Type: Not reported
Status: Not reported
Status Date: Not reported
Enviroscreen Score: Not reported
Site Code: Not reported
Global ID: W0603410029
Facility Region: Not reported
Lead Agency: Not reported
Case worker: Not reported
Local Agency: Not reported
Location Case Number: Not reported
File Location: Not reported
Potential Contaminants of Concern: Not reported
Potential Media Affected: Not reported
Site History: Not reported

Begin Date: Not reported
RB Case Number: Not reported
source_type: All PFAS Chemicals
Location ID: CA3410029_026_026
Matrix: Liquid
Chemical: PFTEDA
Qualifier: <
Value: 0.9
Reporting Limit: Not reported
Detection Limit: Not reported
Lab Notes: Not reported
Quarterly Running Annual Average: Not reported
Units: NG/L
Date: 5/21/2019
Field Pt Class: PUBW
Site Use: Drinking Water Wells
Site Type: DDW Well
Latitude: 38.410833
Longitude: -121.346667
Geo Tracker URL: Not reported

Name: WELL 73 - EAST PARK
Address: Not reported
City,State,Zip: SACRAMENTO, CA
Envirostor ID: Not reported
Program Type: Not reported
Status: Not reported
Status Date: Not reported
Enviroscreen Score: Not reported
Site Code: Not reported

WELL 73 - EAST PARK (Continued) **S127521943**

Global ID:	W0603410029
Facility Region:	Not reported
Lead Agency:	Not reported
Case worker:	Not reported
Local Agency:	Not reported
Location Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported
Site History:	Not reported
Begin Date:	Not reported
RB Case Number:	Not reported
source_type:	All PFAS Chemicals
Location ID:	CA3410029_026_026
Matrix:	Liquid
Chemical:	PFOS
Qualifier:	<
Value:	3
Reporting Limit:	Not reported
Detection Limit:	Not reported
Lab Notes:	Not reported
Quarterly Running Annual Average:	Not reported
Units:	NG/L
Date:	2/13/2020
Field Pt Class:	PUBW
Site Use:	Drinking Water Wells
Site Type:	DDW Well
Latitude:	38.410833
Longitude:	-121.346667
Geo Tracker URL: Not reported	
Name:	WELL 73 - EAST PARK
Address:	Not reported
City,State,Zip:	SACRAMENTO, CA
Envirostor ID:	Not reported
Program Type:	Not reported
Status:	Not reported
Status Date:	Not reported
Enviroscreen Score:	Not reported
Site Code:	Not reported
Global ID:	W0603410029
Facility Region:	Not reported
Lead Agency:	Not reported
Case worker:	Not reported
Local Agency:	Not reported
Location Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported
Site History:	Not reported
Begin Date:	Not reported
RB Case Number:	Not reported
source_type:	All PFAS Chemicals
Location ID:	CA3410029_026_026
Matrix:	Liquid

WELL 73 - EAST PARK (Continued) **S127521943**

Chemical:	PFOS
Qualifier:	<
Value:	0.9
Reporting Limit:	Not reported
Detection Limit:	Not reported
Lab Notes:	Not reported
Quarterly Running Annual Average:	Not reported
Units:	NG/L
Date:	5/21/2019
Field Pt Class:	PUBW
Site Use:	Drinking Water Wells
Site Type:	DDW Well
Latitude:	38.410833
Longitude:	-121.346667
Geo Tracker URL:	Not reported

Name:	WELL 73 - EAST PARK
Address:	Not reported
City,State,Zip:	SACRAMENTO, CA
Envirostor ID:	Not reported
Program Type:	Not reported
Status:	Not reported
Status Date:	Not reported
Enviroscreen Score:	Not reported
Site Code:	Not reported
Global ID:	W0603410029
Facility Region:	Not reported
Lead Agency:	Not reported
Case worker:	Not reported
Local Agency:	Not reported
Location Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported
Site History:	Not reported

Begin Date:	Not reported
RB Case Number:	Not reported
source_type:	All PFAS Chemicals
Location ID:	CA3410029_026_026
Matrix:	Liquid
Chemical:	HFPA-DA
Qualifier:	<
Value:	3
Reporting Limit:	Not reported
Detection Limit:	Not reported
Lab Notes:	Not reported
Quarterly Running Annual Average:	Not reported
Units:	NG/L
Date:	2/13/2020
Field Pt Class:	PUBW
Site Use:	Drinking Water Wells
Site Type:	DDW Well
Latitude:	38.410833
Longitude:	-121.346667
Geo Tracker URL:	Not reported

WELL 73 - EAST PARK (Continued) **S127521943**

Name:	WELL 73 - EAST PARK
Address:	Not reported
City,State,Zip:	SACRAMENTO, CA
Envirostor ID:	Not reported
Program Type:	Not reported
Status:	Not reported
Status Date:	Not reported
Enviroscreen Score:	Not reported
Site Code:	Not reported
Global ID:	W0603410029
Facility Region:	Not reported
Lead Agency:	Not reported
Case worker:	Not reported
Local Agency:	Not reported
Location Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported
Site History:	Not reported

Begin Date:	Not reported
RB Case Number:	Not reported
source_type:	All PFAS Chemicals
Location ID:	CA3410029_026_026
Matrix:	Liquid
Chemical:	PFHA
Qualifier:	<
Value:	3
Reporting Limit:	Not reported
Detection Limit:	Not reported
Lab Notes:	Not reported
Quarterly Running Annual Average:	Not reported
Units:	NG/L
Date:	2/13/2020
Field Pt Class:	PUBW
Site Use:	Drinking Water Wells
Site Type:	DDW Well
Latitude:	38.410833
Longitude:	-121.346667
Geo Tracker URL:	Not reported

Name:	WELL 73 - EAST PARK
Address:	Not reported
City,State,Zip:	SACRAMENTO, CA
Envirostor ID:	Not reported
Program Type:	Not reported
Status:	Not reported
Status Date:	Not reported
Enviroscreen Score:	Not reported
Site Code:	Not reported
Global ID:	W0603410029
Facility Region:	Not reported
Lead Agency:	Not reported
Case worker:	Not reported
Local Agency:	Not reported
Location Case Number:	Not reported
File Location:	Not reported

WELL 73 - EAST PARK (Continued) **S127521943**

Potential Contaminants of Concern: Not reported
Potential Media Affected: Not reported
Site History: Not reported

Begin Date: Not reported
RB Case Number: Not reported
source_type: All PFAS Chemicals
Location ID: CA3410029_026_026
Matrix: Liquid
Chemical: PFNA
Qualifier: <
Value: 0.9
Reporting Limit: Not reported
Detection Limit: Not reported
Lab Notes: Not reported
Quarterly Running Annual Average: Not reported
Units: NG/L
Date: 8/15/2019
Field Pt Class: PUBW
Site Use: Drinking Water Wells
Site Type: DDW Well
Latitude: 38.410833
Longitude: -121.346667
Geo Tracker URL: Not reported

Name: WELL 73 - EAST PARK
Address: Not reported
City,State,Zip: SACRAMENTO, CA
Envirostor ID: Not reported
Program Type: Not reported
Status: Not reported
Status Date: Not reported
Enviroscreen Score: Not reported
Site Code: Not reported
Global ID: W0603410029
Facility Region: Not reported
Lead Agency: Not reported
Case worker: Not reported
Local Agency: Not reported
Location Case Number: Not reported
File Location: Not reported
Potential Contaminants of Concern: Not reported
Potential Media Affected: Not reported
Site History: Not reported

Begin Date: Not reported
RB Case Number: Not reported
source_type: All PFAS Chemicals
Location ID: CA3410029_026_026
Matrix: Liquid
Chemical: PFHXSA
Qualifier: <
Value: 3
Reporting Limit: Not reported
Detection Limit: Not reported
Lab Notes: Not reported
Quarterly Running Annual Average: Not reported

WELL 73 - EAST PARK (Continued) **S127521943**

Units:	NG/L
Date:	2/13/2020
Field Pt Class:	PUBW
Site Use:	Drinking Water Wells
Site Type:	DDW Well
Latitude:	38.410833
Longitude:	-121.346667
Geo Tracker URL:	Not reported

Name:	WELL 73 - EAST PARK
Address:	Not reported
City,State,Zip:	SACRAMENTO, CA
Envirostor ID:	Not reported
Program Type:	Not reported
Status:	Not reported
Status Date:	Not reported
Enviroscreen Score:	Not reported
Site Code:	Not reported
Global ID:	W0603410029
Facility Region:	Not reported
Lead Agency:	Not reported
Case worker:	Not reported
Local Agency:	Not reported
Location Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported
Site History:	Not reported

Begin Date:	Not reported
RB Case Number:	Not reported
source_type:	All PFAS Chemicals
Location ID:	CA3410029_026_026
Matrix:	Liquid
Chemical:	PFHA
Qualifier:	<
Value:	0.9
Reporting Limit:	Not reported
Detection Limit:	Not reported
Lab Notes:	Not reported
Quarterly Running Annual Average:	Not reported
Units:	NG/L
Date:	5/21/2019
Field Pt Class:	PUBW
Site Use:	Drinking Water Wells
Site Type:	DDW Well
Latitude:	38.410833
Longitude:	-121.346667
Geo Tracker URL:	Not reported

Name:	WELL 73 - EAST PARK
Address:	Not reported
City,State,Zip:	SACRAMENTO, CA
Envirostor ID:	Not reported
Program Type:	Not reported
Status:	Not reported
Status Date:	Not reported

WELL 73 - EAST PARK (Continued) **S127521943**

Enviroscreen Score:	Not reported
Site Code:	Not reported
Global ID:	W0603410029
Facility Region:	Not reported
Lead Agency:	Not reported
Case worker:	Not reported
Local Agency:	Not reported
Location Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported
Site History:	Not reported
Begin Date:	Not reported
RB Case Number:	Not reported
source_type:	All PFAS Chemicals
Location ID:	CA3410029_026_026
Matrix:	Liquid
Chemical:	PFHXSA
Qualifier:	<
Value:	0.9
Reporting Limit:	Not reported
Detection Limit:	Not reported
Lab Notes:	Not reported
Quarterly Running Annual Average:	Not reported
Units:	NG/L
Date:	8/15/2019
Field Pt Class:	PUBW
Site Use:	Drinking Water Wells
Site Type:	DDW Well
Latitude:	38.410833
Longitude:	-121.346667
Geo Tracker URL: Not reported	
Name:	WELL 73 - EAST PARK
Address:	Not reported
City,State,Zip:	SACRAMENTO, CA
Envirostor ID:	Not reported
Program Type:	Not reported
Status:	Not reported
Status Date:	Not reported
Enviroscreen Score:	Not reported
Site Code:	Not reported
Global ID:	W0603410029
Facility Region:	Not reported
Lead Agency:	Not reported
Case worker:	Not reported
Local Agency:	Not reported
Location Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported
Site History:	Not reported
Begin Date:	Not reported
RB Case Number:	Not reported
source_type:	All PFAS Chemicals

WELL 73 - EAST PARK (Continued) **S127521943**

Location ID:	CA3410029_026_026
Matrix:	Liquid
Chemical:	PFNDCA
Qualifier:	<
Value:	0.9
Reporting Limit:	Not reported
Detection Limit:	Not reported
Lab Notes:	Not reported
Quarterly Running Annual Average:	Not reported
Units:	NG/L
Date:	8/15/2019
Field Pt Class:	PUBW
Site Use:	Drinking Water Wells
Site Type:	DDW Well
Latitude:	38.410833
Longitude:	-121.346667
Geo Tracker URL:	Not reported

Click this hyperlink while viewing on your computer to access
62 additional CA PFAS: record(s) in the EDR Site Report.

B6 **CVS PHARMACY #9132** **RCRA-LQG 1015740273**
SSW **9285 ELK GROVE BLVD** **ECHO CAR000229575**
1/8-1/4 **ELK GROVE, CA 95624**
0.242 mi.
1280 ft. **Site 1 of 2 in cluster B**

Relative: **Lower**
Actual: **52 ft.**

RCRA Listings:

Date Form Received by Agency:	20220211
Handler Name:	Cvs Pharmacy #9132
Handler Address:	9285 ELK GROVE BLVD
Handler City,State,Zip:	ELK GROVE, CA 95624
EPA ID:	CAR000229575
Contact Name:	NICOLE NICOLE
Contact Address:	CVS DR MC2340
Contact City,State,Zip:	WOONSOCKET, RI 02895
Contact Telephone:	401-770-7132
Contact Fax:	Not reported
Contact Email:	NICOLE.WILKINSON@CVSHEALTH.COM
Contact Title:	SENIOR DIRECTOR, CORPORATE ENVIRONMENTAL HEAL
EPA Region:	09
Land Type:	Private
Federal Waste Generator Description:	Large Quantity Generator
Non-Notifier:	Not reported
Biennial Report Cycle:	2021
Accessibility:	Not reported
Active Site Indicator:	Handler Activities
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	CVS DR MC2340
Mailing City,State,Zip:	WOONSOCKET, RI 02895
Owner Name:	Le-Jo Inc
Owner Type:	Private
Operator Name:	Longs Drug Stores Ca Llc
Operator Type:	Private
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No

CVS PHARMACY #9132 (Continued) **1015740273**

Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	No
Universal Waste Destination Facility:	No
Federal Universal Waste:	No
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
202 GPRA Corrective Action Baseline:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	20220610
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Biennial: List of Years
Year: 2021

Click Here for Biennial Reporting System Data:
Year: 2013

Click Here for Biennial Reporting System Data:

Hazardous Waste Summary:
Waste Code: D001
Waste Description: Ignitable Waste

Waste Code: D002
Waste Description: Corrosive Waste

Waste Code: D003
Waste Description: Reactive Waste

CVS PHARMACY #9132 (Continued) **1015740273**

Waste Code: D004
Waste Description: Arsenic

Waste Code: D005
Waste Description: Barium

Waste Code: D006
Waste Description: Cadmium

Waste Code: D007
Waste Description: Chromium

Waste Code: D008
Waste Description: Lead

Waste Code: D009
Waste Description: Mercury

Waste Code: D010
Waste Description: Selenium

Waste Code: D011
Waste Description: Silver

Waste Code: D016
Waste Description: 2,4-D (2,4-Dichlorophenoxyacetic Acid)

Waste Code: D018
Waste Description: Benzene

Waste Code: D024
Waste Description: M-Cresol

Waste Code: D027
Waste Description: 1,4-Dichlorobenzene

Waste Code: D035
Waste Description: Methyl Ethyl Ketone

Waste Code: D039
Waste Description: Tetrachloroethylene

Waste Code: P001
Waste Description: 2h-1-Benzopyran-2-One, 4-Hydroxy-3-(3-Oxo-1-Phenylbutyl)-, & Salts, When Present At Concentrations Greater Than 0.3% (Or) Warfarin, & Salts, When Present At Concentrations Greater Than 0.3%

Waste Code: P012
Waste Description: Arsenic Oxide As2o3 (Or) Arsenic Trioxide

Waste Code: P042
Waste Description: 1,2-Benzenediol, 4-[1-Hydroxy-2-(Methylamino)Ethyl]-, (R)- (Or) Epinephrine

Waste Code: P075
Waste Description: Nicotine, & Salts (Or) Pyridine, 3-(1-Methyl-2-Pyrrolidinyl)-,(S)-, & Salts

CVS PHARMACY #9132 (Continued) **1015740273**

Waste Code: P081
Waste Description: 1,2,3-Propanetriol, Trinitrate (R) (Or) Nitroglycerine (R)

Waste Code: P188
Waste Description: Benzoic Acid, 2-Hydroxy-, Compd. With (3as-Cis)-1,2,3,3a,8,8a-Hexahydro-1,3a,8-Trimethylpyrrolo[2,3-B]Indol-5-Yl Methylcarbamate Ester (1:1) (Or) Physostigmine Salicylate

Waste Code: U002
Waste Description: 2-Propanone (I) (Or) Acetone (I)

Waste Code: U010
Waste Description: Azirino [2',3':3,4]Pyrrolo[1,2-A]Indole-4,7-Dione, 6-Amino-8-[[(Aminocarbonyl)Oxy]Methyl]-1,1a,2,8,8a,8b-Hexahydro-8a-Methoxy-5-Methyl-, [1as-(1aalpha, 8beta, 8aalpha, 8balpha)]- (Or) Mitomycin C

Waste Code: U031
Waste Description: 1-Butanol (I) (Or) N-Butyl Alcohol (I)

Waste Code: U034
Waste Description: Acetaldehyde, Trichloro- (Or) Chloral

Waste Code: U035
Waste Description: Benzenebutanoic Acid, 4-[Bis(2-Chloroethyl)Amino]- (Or) Chlorambucil

Waste Code: U044
Waste Description: Chloroform (Or) Methane, Trichloro-

Waste Code: U058
Waste Description: 2h-1,3,2-Oxazaphosphorin-2-Amine, N,N-Bis(2-Chloroethyl)Tetrahydro-, 2-Oxide (Or) Cyclophosphamide

Waste Code: U059
Waste Description: 5,12-Naphthacenedione, 8-Acetyl-10-[(3-Amino-2,3,6-Trideoxy)-Alpha-L-Lyxo-Hexopyranosyl)Oxy]-7,8,9,10-Tetrahydro-6,8,11-Trihydroxy-1-Methoxy-, (8s-Cis)- (Or) Daunomycin

Waste Code: U070
Waste Description: Benzene, 1,2-Dichloro- (Or) O-Dichlorobenzene

Waste Code: U072
Waste Description: Benzene, 1,4-Dichloro- (Or) P-Dichlorobenzene

Waste Code: U089
Waste Description: Diethylstilbesterol (Or) Phenol, 4,4'-(1,2-Diethyl-1,2-Ethenediyl)Bis, (E)-

Waste Code: U122
Waste Description: Formaldehyde

Waste Code: U129
Waste Description: Cyclohexane, 1,2,3,4,5,6-Hexachloro-, (1alpha, 2alpha, 3beta, 4alpha, 5alpha, 6beta)- (Or) Lindane

Waste Code: U132

CVS PHARMACY #9132 (Continued) **1015740273**

Waste Description: Hexachlorophene (Or) Phenol, 2,2'-Methylenebis[3,4,6-Trichloro-

Waste Code: U150
Waste Description: L-Phenylalanine, 4-[Bis(2-Chloroethyl)Amino]- (Or) Melphalan

Waste Code: U151
Waste Description: Mercury

Waste Code: U154
Waste Description: Methanol (I) (Or) Methyl Alcohol (I)

Waste Code: U165
Waste Description: Naphthalene

Waste Code: U188
Waste Description: Phenol

Waste Code: U200
Waste Description: Reserpine (Or) Yohimban-16-Carboxylic Acid, 11,17-Dimethoxy-18-[(3,4,5-Trimethoxybenzoyl)Oxy]-, Methyl Ester, (3beta, 16beta, 17alpha, 18beta, 20alpha)-

Waste Code: U201
Waste Description: 1,3-Benzenediol (Or) Resorcinol

Waste Code: U204
Waste Description: Selenious Acid (Or) Selenium Dioxide

Waste Code: U205
Waste Description: Selenium Sulfide (Or) Selenium Sulfide Ses2 (R,T)

Waste Code: U206
Waste Description: D-Glucose, 2-Deoxy-2-[[(Methylnitrosoamino)-Carbonyl]Amino]- (Or) Glucopyranose, 2-Deoxy-2-(3-Methyl-3-Nitrosoureido)-,D- (Or) Streptozotocin

Waste Code: U210
Waste Description: Ethene, Tetrachloro- (Or) Tetrachloroethylene

Waste Code: U279
Waste Description: U279

Waste Code: U411
Waste Description: U411

Handler - Owner Operator:
Owner/Operator Indicator: Operator
Owner/Operator Name: LONGS DRUG STORES CA LLC
Legal Status: Private
Date Became Current: 20081022
Date Ended Current: Not reported
Owner/Operator Address: Not reported
Owner/Operator City,State,Zip: Not reported
Owner/Operator Telephone: Not reported
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

CVS PHARMACY #9132 (Continued) **1015740273**

Owner/Operator Indicator:	Owner
Owner/Operator Name: LE-JO INC	
Legal Status:	Private
Date Became Current:	20020422
Date Ended Current:	Not reported
Owner/Operator Address:	425 HARBOR BLVD STE D
Owner/Operator City,State,Zip:	BELMONT, CA 94002
Owner/Operator Telephone:	510-610-2862
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name: LONGS DRUG STORES CA LLC	
Legal Status:	Private
Date Became Current:	20081022
Date Ended Current:	Not reported
Owner/Operator Address:	1 CVS DR MC2340
Owner/Operator City,State,Zip:	WOONSOCKET, RI 02895
Owner/Operator Telephone:	401-765-1500
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	CORPORATEENVIRONMENTALTEAM@CVSHEALTH.COM

Owner/Operator Indicator:	Owner
Owner/Operator Name: LE JO INC	
Legal Status:	Private
Date Became Current:	20020422
Date Ended Current:	Not reported
Owner/Operator Address:	425 HARBOR BLVD
Owner/Operator City,State,Zip:	BELMONT, CA 94002
Owner/Operator Telephone:	510-610-2862
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name: LONGS DRUG STORES CALIFORNIA LLC	
Legal Status:	Private
Date Became Current:	20081022
Date Ended Current:	Not reported
Owner/Operator Address:	Not reported
Owner/Operator City,State,Zip:	Not reported
Owner/Operator Telephone:	Not reported
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Owner
Owner/Operator Name: LE-JO INC	
Legal Status:	Private
Date Became Current:	20020422
Date Ended Current:	Not reported
Owner/Operator Address:	425 HARBOR BLVD STE D
Owner/Operator City,State,Zip:	BELMONT, CA 94002
Owner/Operator Telephone:	401-765-1500
Owner/Operator Telephone Ext:	Not reported

CVS PHARMACY #9132 (Continued) **1015740273**

Owner/Operator Fax: Not reported
Owner/Operator Email: CORPORATEENVIRONMENTALTEAM@CVSHEALTH.COM

Historic Generators:
Receive Date: 20140325
Handler Name: CVS PHARMACY #9132
Federal Waste Generator Description: Large Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 20220211
Handler Name: CVS PHARMACY #9132
Federal Waste Generator Description: Large Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: Yes
Non Storage Recycler Activity: No
Electronic Manifest Broker: No

Receive Date: 20120904
Handler Name: CVS PHARMACY NO 9132
Federal Waste Generator Description: Large Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

List of NAICS Codes and Descriptions:
NAICS Code: 44611
NAICS Description: PHARMACIES AND DRUG STORES

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

CVS PHARMACY #9132 (Continued) **1015740273**

ECHO:
- Envid: 1015740273
- Registry ID: 110046525809
- DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110046525809
- Name: CVS PHARMACY #9132
- Address: 9285 ELK GROVE BLVD
- City,State,Zip: ELK GROVE, CA 95624

B7 **CVS PHARMACY #9132** **CERS HAZ WASTE** **S113160084**
SSW **9285 ELK GROVE BLVD** **HAZNET** **N/A**
1/8-1/4 **ELK GROVE, CA 95624** **Sacramento Co. ML**
0.242 mi. **HWTS**
1280 ft. **Site 2 of 2 in cluster B**

Relative:
Lower

Actual:
52 ft.

CERS HAZ WASTE:
- Name: CVS PHARMACY #9132
- Address: 9285 ELK GROVE BLVD
- City,State,Zip: ELK GROVE, CA 95624
- Site ID: 109493
- CERS ID: 10228048
- CERS Description: Hazardous Waste Generator

Evaluation:
- Eval General Type: Compliance Evaluation Inspection
- Eval Date: 03-30-2021
- Violations Found: No
- Eval Type: Routine done by local agency
- Eval Notes: No violations observed today. Inspection report emailed to Sopat Sam (bebesam@sbcglobal.net) due to Covid-19.
- Eval Division: Sacramento County Env Management Department
- Eval Program: HW
- Eval Source: CERS,

- Eval General Type: Compliance Evaluation Inspection
- Eval Date: 12-19-2014
- Violations Found: No
- Eval Type: Routine done by local agency
- Eval Notes: No violations observed at time of inspection.
- Eval Division: Sacramento County Env Management Department
- Eval Program: HW
- Eval Source: CERS,

- Eval General Type: Compliance Evaluation Inspection
- Eval Date: 08-25-2017
- Violations Found: No
- Eval Type: Routine done by local agency
- Eval Notes: No violations observed today.
- Eval Division: Sacramento County Env Management Department
- Eval Program: HW
- Eval Source: CERS,

Coordinates:
- Site ID: 109493
- Facility Name: CVS Pharmacy #9132
- Env Int Type Code: HWG
- Program ID: 10228048
- Coord Name: Not reported

CVS PHARMACY #9132 (Continued) **S113160084**

Ref Point Type Desc: Center of a facility or station.,
Latitude: 38.409510
Longitude: -121.353890

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Sacramento County Environmental Management Departm
Entity Title: Not reported
Affiliation Address: 11080 WHITE ROCK ROAD, STE. 200
Affiliation City: RANCHO CORDOVA
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 95670
Affiliation Phone: (916) 875-8550,

Affiliation Type Desc: Operator
Entity Name: Longs Drug Stores California, L.L.C.
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (401) 765-1500,

Affiliation Type Desc: Environmental Contact
Entity Name: Verisk 3E Regulatory Services/CVS
Entity Title: Not reported
Affiliation Address: 3207 Grey Hawk Court, Suite 200
Affiliation City: Carlsbad
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92010
Affiliation Phone: ,

Affiliation Type Desc: Parent Corporation
Entity Name: CVS Health
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

Affiliation Type Desc: Document Preparer
Entity Name: Karina Romero, Agent for Garfield Beach CVS, L.L.C.
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address

CVS PHARMACY #9132 (Continued) **S113160084**

Entity Title: Not reported
Affiliation Address: CVS Health, Attn: Erin Chilinski, One CVS Drive MC 1160
Affiliation City: Woonsocket
Affiliation State: RI
Affiliation Country: Not reported
Affiliation Zip: 02895
Affiliation Phone: ,

Affiliation Type Desc: Identification Signer
Entity Name: Karina Romero, Agent for Garfield Beach CVS, L.L.C.
Entity Title: Regulatory Compliance Specialist, Verisk 3E
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

Affiliation Type Desc: Legal Owner
Entity Name: Longs Drug Stores California, L.L.C.
Entity Title: Not reported
Affiliation Address: One CVS Drive
Affiliation City: Woonsocket
Affiliation State: RI
Affiliation Country: United States
Affiliation Zip: 02895
Affiliation Phone: (401) 765-1500,

Name: CVS PHARMACY #9132
Address: 9285 ELK GROVE BLVD
City,State,Zip: ELK GROVE, CA 95624
Site ID: 109493
CERS ID: 10228048
CERS Description: RCRA LQ HW Generator

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-30-2021
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: No violations observed today. Inspection report emailed to Sopat Sam (bebesam@sbcglobal.net) due to Covid-19.
Eval Division: Sacramento County Env Management Department
Eval Program: HW
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 12-19-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: No violations observed at time of inspection.
Eval Division: Sacramento County Env Management Department
Eval Program: HW
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 08-25-2017

CVS PHARMACY #9132 (Continued) **S113160084**

Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: No violations observed today.
Eval Division: Sacramento County Env Management Department
Eval Program: HW
Eval Source: CERS,

Coordinates:
Site ID: 109493
Facility Name: CVS Pharmacy #9132
Env Int Type Code: HWG
Program ID: 10228048
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.,
Latitude: 38.409510
Longitude: -121.353890

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Sacramento County Environmental Management Departm
Entity Title: Not reported
Affiliation Address: 11080 WHITE ROCK ROAD, STE. 200
Affiliation City: RANCHO CORDOVA
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 95670
Affiliation Phone: (916) 875-8550,

Affiliation Type Desc: Operator
Entity Name: Longs Drug Stores California, L.L.C.
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (401) 765-1500,

Affiliation Type Desc: Environmental Contact
Entity Name: Verisk 3E Regulatory Services/CVS
Entity Title: Not reported
Affiliation Address: 3207 Grey Hawk Court, Suite 200
Affiliation City: Carlsbad
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92010
Affiliation Phone: ,

Affiliation Type Desc: Parent Corporation
Entity Name: CVS Health
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported

CVS PHARMACY #9132 (Continued) **S113160084**

Affiliation Phone: ,

Affiliation Type Desc: Document Preparer
Entity Name: Karina Romero, Agent for Garfield Beach CVS, L.L.C.
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: CVS Health, Attn: Erin Chilinski, One CVS Drive MC 1160
Affiliation City: Woonsocket
Affiliation State: RI
Affiliation Country: Not reported
Affiliation Zip: 02895
Affiliation Phone: ,

Affiliation Type Desc: Identification Signer
Entity Name: Karina Romero, Agent for Garfield Beach CVS, L.L.C.
Entity Title: Regulatory Compliance Specialist, Verisk 3E
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

Affiliation Type Desc: Legal Owner
Entity Name: Longs Drug Stores California, L.L.C.
Entity Title: Not reported
Affiliation Address: One CVS Drive
Affiliation City: Woonsocket
Affiliation State: RI
Affiliation Country: United States
Affiliation Zip: 02895
Affiliation Phone: (401) 765-1500,

HAZNET:
Name: CVS PHARMACY # 9132
Address: 9285 ELK GROVE BLVD
Address 2: Not reported
City,State,Zip: ELK GROVE, CA 95624
Contact: Wendy Brant
Telephone: 4017651500
Mailing Name: Not reported
Mailing Address: 1 CVS DR

Year: 2012
Gepaid: CAL000357544
TSD EPA ID: CAD980884183
CA Waste Code: 541 - Photochemicals/photoprocessing waste

CVS PHARMACY #9132 (Continued) **S113160084**

Disposal Method:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	1.50537
Year:	2012
Gepaid:	CAL000357544
TSD EPA ID:	INR000110197
CA Waste Code:	214 - Unspecified solvent mixture
Disposal Method:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.07
Year:	2012
Gepaid:	CAL000357544
TSD EPA ID:	INR000110197
CA Waste Code:	131 - Aqueous solution (2 < pH < 12.5) containing reactive anions ...
Disposal Method:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.0005
Year:	2012
Gepaid:	CAL000357544
TSD EPA ID:	INR000110197
CA Waste Code:	232 - Pesticides and other waste associated with pesticide production
Disposal Method:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.0125
Year:	2012
Gepaid:	CAL000357544
TSD EPA ID:	INR000110197
CA Waste Code:	311 - Pharmaceutical waste
Disposal Method:	-
Tons:	0.0125
Year:	2012
Gepaid:	CAL000357544
TSD EPA ID:	INR000110197
CA Waste Code:	561 - Detergent waste chemicals
Disposal Method:	-
Tons:	0.018
Year:	2012
Gepaid:	CAL000357544
TSD EPA ID:	INR000110197
CA Waste Code:	311 - Pharmaceutical waste
Disposal Method:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.0035
Year:	2011
Gepaid:	CAL000357544
TSD EPA ID:	INR000110197
CA Waste Code:	214 - Unspecified solvent mixture
Disposal Method:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.0015

CVS PHARMACY #9132 (Continued) **S113160084**

Year: 2011
Gepaid: CAL000357544
TSD EPA ID: INR000110197
CA Waste Code: 311 - Pharmaceutical waste
Disposal Method: H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.0035

Year: 2011
Gepaid: CAL000357544
TSD EPA ID: INR000110197
CA Waste Code: 541 - Photochemicals/photoprocessing waste
Disposal Method: H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.008

Click this hyperlink while viewing on your computer to access
6 additional CA HAZNET: record(s) in the EDR Site Report.

Additional Info:
Year: 2012
Gen EPA ID: CAL000357544

Shipment Date: 20120904
Creation Date: 3/9/2013 22:15:19
Receipt Date: 20120918
Manifest ID: 005500607FLE
Trans EPA ID: MNS000110924
Trans Name: STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID: NED986382133
Trans 2 Name: SMITH SYSTEMS TRANSPORTATION INC
TSDF EPA ID: INR000110197
Trans Name: STERICYCLE INC
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code Description: 232 - Pesticides and other waste associated with pesticide production
RCRA Code: Not reported
Meth Code: H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons: 0.0125
Waste Quantity: 25
Quantity Unit: P
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Shipment Date: 20120904
Creation Date: 3/9/2013 22:15:19
Receipt Date: 20120918
Manifest ID: 005500607FLE
Trans EPA ID: MNS000110924
Trans Name: STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID: NED986382133
Trans 2 Name: SMITH SYSTEMS TRANSPORTATION INC

CVS PHARMACY #9132 (Continued) **S113160084**

TSDF EPA ID:	INR000110197
Trans Name:	STERICYCLE INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	214 - Unspecified solvent mixture
RCRA Code:	D001
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0045
Waste Quantity:	9
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20120904
Creation Date:	3/9/2013 22:15:19
Receipt Date:	20120918
Manifest ID:	005500607FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	NED986382133
Trans 2 Name:	SMITH SYSTEMS TRANSPORTATION INC
TSDF EPA ID:	INR000110197
Trans Name:	STERICYCLE INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	214 - Unspecified solvent mixture
RCRA Code:	D001
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0455
Waste Quantity:	91
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20120904
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	005500607FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	NED986382133
Trans 2 Name:	SMITH SYSTEMS TRANSPORTATION INC
TSDF EPA ID:	INR000110197
Trans Name:	STERICYCLE INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	311 - Pharmaceutical waste
RCRA Code:	Not reported
Meth Code:	- Not reported

CVS PHARMACY #9132 (Continued) **S113160084**

Quantity Tons:	0.001
Waste Quantity:	2
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20120904
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	005500607FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	NED986382133
Trans 2 Name:	SMITH SYSTEMS TRANSPORTATION INC
TSDF EPA ID:	INR000110197
Trans Name:	STERICYCLE INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	561 - Not reported
RCRA Code:	Not reported
Meth Code:	- Not reported
Quantity Tons:	0.0265
Waste Quantity:	53
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20120904
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	005500607FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	NED986382133
Trans 2 Name:	SMITH SYSTEMS TRANSPORTATION INC
TSDF EPA ID:	INR000110197
Trans Name:	STERICYCLE INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	- Not reported
RCRA Code:	Not reported
Meth Code:	- Not reported
Quantity Tons:	0.004
Waste Quantity:	8
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

CVS PHARMACY #9132 (Continued) **S113160084**

Shipment Date:	20120904
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	005500607FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	NED986382133
Trans 2 Name:	SMITH SYSTEMS TRANSPORTATION INC
TSDF EPA ID:	INR000110197
Trans Name:	STERICYCLE INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	311 - Pharmaceutical waste
RCRA Code:	Not reported
Meth Code:	- Not reported
Quantity Tons:	0.007
Waste Quantity:	14
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20120904
Creation Date:	3/9/2013 22:15:19
Receipt Date:	20120918
Manifest ID:	005500607FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	NED986382133
Trans 2 Name:	SMITH SYSTEMS TRANSPORTATION INC
TSDF EPA ID:	INR000110197
Trans Name:	STERICYCLE INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	311 - Pharmaceutical waste
RCRA Code:	P001
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0005
Waste Quantity:	1
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20120618
Creation Date:	1/19/2013 22:15:23
Receipt Date:	20120710
Manifest ID:	005500446FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	NED986382133
Trans 2 Name:	SMITH SYSTEMS TRANS

CVS PHARMACY #9132 (Continued) **S113160084**

TSDF EPA ID:	INR000110197
Trans Name:	STERICYCLE INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	311 - Pharmaceutical waste
RCRA Code:	Not reported
Meth Code:	- Not reported
Quantity Tons:	0.0125
Waste Quantity:	25
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20120618
Creation Date:	1/19/2013 22:15:23
Receipt Date:	20120710
Manifest ID:	005500446FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	NED986382133
Trans 2 Name:	SMITH SYSTEMS TRANS
TSDF EPA ID:	INR000110197
Trans Name:	STERICYCLE INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	561 - Not reported
RCRA Code:	Not reported
Meth Code:	- Not reported
Quantity Tons:	0.018
Waste Quantity:	36
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Additional Info:

Year:	2011
Gen EPA ID:	CAL000357544

Shipment Date:	20111108
Creation Date:	11/28/2012 22:15:25
Receipt Date:	20111122
Manifest ID:	004700191FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	CAD982492399
Trans 2 Name:	ALL CHEMICAL DISPOSAL INC
TSDF EPA ID:	INR000110197
Trans Name:	STERICYCLE INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	311 - Pharmaceutical waste

CVS PHARMACY #9132 (Continued) **S113160084**

RCRA Code:	P001
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0005
Waste Quantity:	1
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20111108
Creation Date:	11/28/2012 22:15:25
Receipt Date:	20111122
Manifest ID:	004700191FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	CAD982492399
Trans 2 Name:	ALL CHEMICAL DISPOSAL INC
TSDF EPA ID:	INR000110197
Trans Name:	STERICYCLE INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	214 - Unspecified solvent mixture
RCRA Code:	D001
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0015
Waste Quantity:	3
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20111108
Creation Date:	11/28/2012 22:15:25
Receipt Date:	20111122
Manifest ID:	004700191FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	CAD982492399
Trans 2 Name:	ALL CHEMICAL DISPOSAL INC
TSDF EPA ID:	INR000110197
Trans Name:	STERICYCLE INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0015
Waste Quantity:	3
Quantity Unit:	P
Additional Code 1:	Not reported

CVS PHARMACY #9132 (Continued) **S113160084**

Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20111108
Creation Date:	11/28/2012 22:15:25
Receipt Date:	20111122
Manifest ID:	004700191FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	CAD982492399
Trans 2 Name:	ALL CHEMICAL DISPOSAL INC
TSDF EPA ID:	INR000110197
Trans Name:	STERICYCLE INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	311 - Pharmaceutical waste
RCRA Code:	D011
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.001
Waste Quantity:	2
Quantity Unit:	P
Additional Code 1:	D010
Additional Code 2:	D009
Additional Code 3:	D007
Additional Code 4:	D006
Additional Code 5:	Not reported
Shipment Date:	20110825
Creation Date:	11/20/2012 22:15:16
Receipt Date:	20110913
Manifest ID:	004970414FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	CAD982492399
Trans 2 Name:	ALL CHEMICAL DISPOSAL INC
TSDF EPA ID:	INR000110197
Trans Name:	STERICYCLE INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	311 - Pharmaceutical waste
RCRA Code:	P075
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0005
Waste Quantity:	1
Quantity Unit:	P
Additional Code 1:	P001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20110825
Creation Date:	11/20/2012 22:15:16

CVS PHARMACY #9132 (Continued) **S113160084**

Receipt Date:	20110913
Manifest ID:	004970414FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	CAD982492399
Trans 2 Name:	ALL CHEMICAL DISPOSAL INC
TSDF EPA ID:	INR000110197
Trans Name:	STERICYCLE INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	311 - Pharmaceutical waste
RCRA Code:	D011
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0015
Waste Quantity:	3
Quantity Unit:	P
Additional Code 1:	D010
Additional Code 2:	D009
Additional Code 3:	D007
Additional Code 4:	D006
Additional Code 5:	Not reported

Shipment Date:	20110825
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	004970414FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	CAD982492399
Trans 2 Name:	ALL CHEMICAL DISPOSAL INC
TSDF EPA ID:	INR000110197
Trans Name:	STERICYCLE INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	311 - Pharmaceutical waste
RCRA Code:	Not reported
Meth Code:	- Not reported
Quantity Tons:	0.0005
Waste Quantity:	1
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Shipment Date:	20110825
Creation Date:	11/20/2012 22:15:16
Receipt Date:	20110913
Manifest ID:	004970414FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	CAD982492399
Trans 2 Name:	ALL CHEMICAL DISPOSAL INC
TSDF EPA ID:	INR000110197
Trans Name:	STERICYCLE INC

CVS PHARMACY #9132 (Continued) **S113160084**

TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D002
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.004
Waste Quantity:	8
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20110825
Creation Date:	11/20/2012 22:15:16
Receipt Date:	20110913
Manifest ID:	004970414FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	CAD982492399
Trans 2 Name:	ALL CHEMICAL DISPOSAL INC
TSDF EPA ID:	INR000110197
Trans Name:	STERICYCLE INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	541 - Photochemicals / photo processing waste
RCRA Code:	D011
Meth Code:	H141 - Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Shipment Date:	20110825
Creation Date:	Not reported
Receipt Date:	Not reported
Manifest ID:	004970414FLE
Trans EPA ID:	MNS000110924
Trans Name:	STERICYCLE SPECIALTY WASTE SOLUTIONS INC
Trans 2 EPA ID:	CAD982492399
Trans 2 Name:	ALL CHEMICAL DISPOSAL INC
TSDF EPA ID:	INR000110197
Trans Name:	STERICYCLE INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code Description:	561 - Not reported
RCRA Code:	Not reported
Meth Code:	- Not reported
Quantity Tons:	0.012
Waste Quantity:	24

CVS PHARMACY #9132 (Continued) **S113160084**

Quantity Unit: P
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Sacramento Co. ML:
Name: CVS PHARMACY #9132
Address: 9285 ELK GROVE BLVD
City,State,Zip: ELK GROVE, CA 95624
Facility Id: Not reported
Facility Status: Not reported
FD: Not reported
Billing Codes BP: I
Billing Codes UST: Not reported
WG Bill Code: A
Target Property Bill Cod: Not reported
Food Bill Code: Not reported
CUPA Permit Date: Not reported
HAZMAT Permit Date: Not reported
HAZMAT Inspection Date: Not reported
Hazmat Date BP Received: Not reported
UST Permit Dt: Not reported
UST Inspection Date: Not reported
UST Tank Test Date: Not reported
Number of Tanks: Not reported
UST Tank Test Date: Not reported
SIC Code: Not reported
Tier Permitting: Not reported
AST Bill Code: Not reported
CALARP Bill Code: Not reported

HWTS:
Name: CVS PHARMACY # 9132
Address: 9285 ELK GROVE BLVD
Address 2: Not reported
City,State,Zip: ELK GROVE, CA 95624
EPA ID: CAL000357544
Inactive Date: 10/10/2012
Create Date: 10/04/2010
Last Act Date: Not reported
Mailing Name: Not reported
Mailing Address: 1 CVS DR
Mailing Address 2: Not reported
Mailing City,State,Zip: WOONSOCKET, RI 2895
Owner Name: LONGS DRUG STORES CALIFORNIA LLC
Owner Address: 1 CVS DR
Owner Address 2: Not reported
Owner City,State,Zip: WOONSOCKET, RI 2895
Contact Name: WENDY BRANT
Contact Address: 1 CVS DRIVE - 02362A
Contact Address 2: Not reported
City,State,Zip: WOONSOCKET, RI 28956146
Facility Status: Inactive
Facility Type: PERMANENT

CVS PHARMACY #9132 (Continued) **S113160084**

Category: STATE
Latitude: 38.409043
Longitude: -121.353896

NAICS:
EPA ID: CAL000357544
Create Date: 2010-10-04 15:01:46.313
NAICS Code: 44611
NAICS Description: Pharmacies and Drug Stores
Issued EPA ID Date: 2010-10-04 15:01:46.31300
Inactive Date: 2012-10-10 00:00:00
Facility Name: CVS PHARMACY # 9132
Facility Address: 9285 ELK GROVE BLVD
Facility Address 2: Not reported
Facility City: ELK GROVE
Facility County: Not reported
Facility State: CA
Facility Zip: 95624

C8 **ELK GROVE WATER WORKS WELL** **Sacramento Co. ML** **S123290920**
SSW **9257 ELK GROVE BL** **N/A**
1/8-1/4 **ELK GROVE, CA 95624**
0.246 mi.
1299 ft. **Site 1 of 5 in cluster C**

Relative:
Lower

Actual:
52 ft.

Sacramento Co. ML:
Name: ELK GROVE WATER WORKS WELL
Address: 9257 ELK GROVE BL
City,State,Zip: ELK GROVE, CA 95624
Facility Id: Not reported
Facility Status: Inactive. Included on a listing no longer updated.
FD: G
Billing Codes BP: Disclaimer
Billing Codes UST: No Tanks
WG Bill Code: Oil Changed by Outside Company-No Fee
Target Property Bill Cod: 50
Food Bill Code: 50
CUPA Permit Date: Not reported
HAZMAT Permit Date: Not reported
HAZMAT Inspection Date: Not reported
Hazmat Date BP Received: Not reported
UST Permit Dt: Not reported
UST Inspection Date: Not reported
UST Tank Test Date: Not reported
Number of Tanks: 0
UST Tank Test Date: Not reported
SIC Code: 9511
Tier Permitting: Not reported
AST Bill Code: Not reported
CALARP Bill Code: Not reported

C9 **ELK GROVE WATER WORKS (DIST** **Sacramento Co. ML** **S123290918**
SSW **9257 ELK GROVE BL** **N/A**
1/8-1/4 **ELK GROVE, CA 95624**
0.246 mi.
1299 ft. **Site 2 of 5 in cluster C**

Relative: **Lower**

Actual: **52 ft.**

Sacramento Co. ML:

Name:	ELK GROVE WATER WORKS (DIST
Address:	9257 ELK GROVE BL
City,State,Zip:	ELK GROVE, CA 95624
Facility Id:	Not reported
Facility Status:	Inactive. Included on a listing no longer updated.
FD:	G
Billing Codes BP:	Disclaimer
Billing Codes UST:	No Tanks
WG Bill Code:	Oil Changed by Outside Company-No Fee
Target Property Bill Cod:	50
Food Bill Code:	50
CUPA Permit Date:	Not reported
HAZMAT Permit Date:	Not reported
HAZMAT Inspection Date:	Not reported
Hazmat Date BP Received:	Not reported
UST Permit Dt:	Not reported
UST Inspection Date:	Not reported
UST Tank Test Date:	Not reported
Number of Tanks:	0
UST Tank Test Date:	Not reported
SIC Code:	Not reported
Tier Permitting:	Not reported
AST Bill Code:	Not reported
CALARP Bill Code:	Not reported

C10 **ELK GROVE AUTO CARE** **Sacramento Co. ML** **S123290890**
SSW **9257 ELK GROVE BL** **N/A**
1/8-1/4 **ELK GROVE, CA 95624**
0.246 mi.
1299 ft. **Site 3 of 5 in cluster C**

Relative: **Lower**

Actual: **52 ft.**

Sacramento Co. ML:

Name:	ELK GROVE AUTO CARE
Address:	9257 ELK GROVE BL
City,State,Zip:	ELK GROVE, CA 95624
Facility Id:	Not reported
Facility Status:	Inactive. Included on a listing no longer updated.
FD:	G
Billing Codes BP:	Out of Business
Billing Codes UST:	No Tanks
WG Bill Code:	Oil Changed by Outside Company-No Fee
Target Property Bill Cod:	51
Food Bill Code:	51
CUPA Permit Date:	Not reported
HAZMAT Permit Date:	Not reported
HAZMAT Inspection Date:	Not reported
Hazmat Date BP Received:	Not reported
UST Permit Dt:	Not reported
UST Inspection Date:	Not reported
UST Tank Test Date:	Not reported
Number of Tanks:	0
UST Tank Test Date:	01/14/1991
SIC Code:	7538

ELK GROVE AUTO CARE (Continued) **S123290890**

Tier Permitting:	Not reported
AST Bill Code:	Not reported
CALARP Bill Code:	Not reported

C11
SSW
1/8-1/4
0.246 mi.
1299 ft.

ELK GROVE WATER WORKS WELL #03 **Sacramento Co. ML** **S123290919**
9257 ELK GROVE BLVD **N/A**
ELK GROVE, CA 95624

Site 4 of 5 in cluster C

Relative:
Lower

Actual:
52 ft.

Sacramento Co. ML:

Name:	ELK GROVE WATER WORKS WELL #03
Address:	9257 ELK GROVE BLVD
City,State,Zip:	ELK GROVE, CA 95624
Facility Id:	Not reported
Facility Status:	Not reported
FD:	Not reported
Billing Codes BP:	I
Billing Codes UST:	Not reported
WG Bill Code:	Not reported
Target Property Bill Cod:	Not reported
Food Bill Code:	Not reported
CUPA Permit Date:	Not reported
HAZMAT Permit Date:	Not reported
HAZMAT Inspection Date:	Not reported
Hazmat Date BP Received:	Not reported
UST Permit Dt:	Not reported
UST Inspection Date:	Not reported
UST Tank Test Date:	Not reported
Number of Tanks:	Not reported
UST Tank Test Date:	Not reported
SIC Code:	Not reported
Tier Permitting:	Not reported
AST Bill Code:	Not reported
CALARP Bill Code:	Not reported

12
NNW
1/4-1/2
0.265 mi.
1398 ft.

ELK GROVE DISPOSAL SITE **SWF/LF** **S102361816**
CORNER OF WATERMAN & BOND ROADS **N/A**
ELK GROVE, CA 95624

Relative:
Lower

Actual:
47 ft.

SWF/LF (SWIS):

Name:	ELK GROVE DISPOSAL SITE
Address:	CORNER OF WATERMAN & BOND ROADS
City,State,Zip:	ELK GROVE, CA 95624
Region:	STATE
Facility ID:	34-AA-0004
SWIS Number:	34-AA-0004
Point of Contact:	Dawn Liang
Is Archived:	No
Is Closed Illegal Abandoned:	Yes
Is Site Inert Debris Engineered Fill:	No
Is Financial Assurances Responsible:	No
Absorbed On:	Not reported
Operational Status:	Closed

ELK GROVE DISPOSAL SITE (Continued) **S102361816**

Absorbed By:	Not reported
Closed Illegal Abandoned Category:	C1
EPA Federal Registry ID:	Not reported
ARB District:	Sacramento Metro
SWRCB Region:	Central Valley
Local Government:	Elk Grove
Reporting Agency Legal Name:	County of Sacramento
Reporting Agency Department:	Environmental Management Department, Environmental Compliance Division
Enforcing Agency Legal Name:	County of Sacramento
Enforcing Agency Department:	Environmental Management Department, Environmental Compliance Division
Regulation Status:	Permitted

Activity:

SWIS Number:	34-AA-0004
Site Name:	Elk Grove Disposal Site
Activity:	Solid Waste Disposal Site
Activity Is Archived:	No
Category:	Disposal
Activity Classification:	Solid Waste Disposal Site
WDR Number:	Not reported
WDR Landfill Class:	Not reported
Cease Operation:	1/1/1980
Cease Operation Type:	Actual
Inspection Frequency:	Quarterly
Throughput:	0
Throughput Units:	Not reported
Remaining Capacity:	0
Remaining Capacity Date:	Not reported
Capacity:	0
Capacity Units:	Not reported
Total Acreage:	0
Disposal Acreage:	0
Permitted Elevation:	0
Permitted Elevation Type:	Not reported
Permitted Depth:	0
Permitted Depth Type:	Not reported
Point of Contact:	Dawn Liang
Site Operational Status:	Closed
Site Regulatory Status:	Permitted
Site Is Archived:	No
Is Closed Illegal Abandoned:	Yes
Is Site Inert Debris Engineered Fill:	No
Is Financial Assurances Responsible:	No
Absorbed On:	Not reported
Absorbed By:	Not reported
Closed Illegal Abandoned Category:	C1
EPA Federal Registry ID:	Not reported
County:	Sacramento
ARB District:	Sacramento Metro
SWRCB Region:	Central Valley
Local Government:	Elk Grove
Street Address:	Corner Of Waterman & Bond Roads
City:	Elk Grove
State:	CA
ZIP Code:	95624
Reporting Agency Legal Name:	County of Sacramento
Reporting Agency Department:	Environmental Management Department, Environmental Compliance Division
Enforcing Agency Legal Name:	County of Sacramento

ELK GROVE DISPOSAL SITE (Continued) **S102361816**

Enforcing Agency Department: Environmental Management Department, Environmental Compliance Division

Operator:

SWIS Number:	34-AA-0004
Site Name:	Elk Grove Disposal Site
Site Operational Status:	Closed
Site Type:	Disposal Only
Site Regulatory Status:	Permitted
Latitude:	38.41991
Longitude:	-121.35477
Is Archived:	No
Operator:	Sacramento County
Started On:	Not reported
Contact Name:	Not reported
Contact Title:	Not reported
Contact Email:	Not reported
Contact Phone:	(916) 875-4557
Street Address:	Dept. of Waste Management and Recycling 9850 Goethe Rd.
Operator City:	Sacramento
Operator State:	CA
Operator Zip:	95827

Owner:

SWIS Number:	34-AA-0004
Owner:	Sacramento County
Owner Address:	Dept. of Waste Management and Recycling 9850 Goethe Rd.
Owner City:	Sacramento
Owner State:	CA
Owner Zip:	95827
Site Name:	Elk Grove Disposal Site
Site Operational Status:	Closed
Site Type:	Disposal Only
Site Regulatory Status:	Permitted
Latitude:	38.41991
Longitude:	-121.35477
Is Archived:	No
Started On:	Not reported
Contact Name:	Not reported
Contact Title:	Not reported
Contact Email:	Not reported
Contact Phone:	(916) 875-4557

C13 **HARCROW PROPERTY** **LUST** **S104580224**
SSW **9251 ELK GROVE** **Sacramento Co. CS** **N/A**
1/4-1/2 **ELK GROVE, CA 95624** **Cortese**
0.277 mi. **HIST CORTESE**
1461 ft. **Site 5 of 5 in cluster C** **Sacramento Co. ML**
CERS

Relative:
Lower

Actual:
52 ft.

LUST:

Name:	HARCROW PROPERTY
Address:	9251 ELK GROVE BLVD
City,State,Zip:	ELK GROVE, CA 95624
Lead Agency:	SACRAMENTO COUNTY LOP
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0606700774

HARCROW PROPERTY (Continued) **S104580224**

Global Id:	T0606700774
Latitude:	38.4090652
Longitude:	-121.3553136
Status:	Completed - Case Closed
Status Date:	11/28/1994
Case Worker:	Not reported
RB Case Number:	340935
Local Agency:	Not reported
File Location:	Not reported
Local Case Number:	A332
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Diesel
EPA Region:	9
Coordinate Source:	Google Geocode
Cuf Case:	NO
Quantity Released Gallons:	Not reported
Begin Date:	05/03/1994
Leak Reported Date:	05/24/1994
How Discovered:	Not reported
How Discovered Description:	Not reported
Discharge Source:	Not reported
Discharge Cause:	Not reported
Stop Method:	Not reported
Stop Description:	Not reported
No Further Action Date:	11/28/1994
CA Water Watershed Name:	Valley-American - Morrison Creek - Franklin (519.11)
Dwr Groundwater Subbasin Name:	Sacramento Valley - South American (5-021.65)
Disadvantaged Community:	Not reported
CA Enviroscreen 3 Score:	26-30%
CA Enviroscreen 4 Score:	30-35%
Military DOD Site:	No
Facility Project Subtype:	Not reported
RWQCB Region:	CENTRAL VALLEY RWQCB (REGION 5S)
Site History:	Not reported

LUST:

Global Id:	T0606700774
Contact Type:	Regional Board Caseworker
Contact Name:	VERA FISCHER
Organization Name:	CENTRAL VALLEY RWQCB (REGION 5S)
Address:	11020 SUN CENTER DRIVE #200
City:	RANCHO CORDOVA
Email:	vera.fischer@waterboards.ca.gov
Phone Number:	Not reported

LUST:

Global Id:	T0606700774
Action Type:	Other
Date:	05/24/1994
Action:	Leak Reported

Global Id:	T0606700774
Action Type:	Other
Date:	05/03/1994
Action:	Leak Discovery

HARCROW PROPERTY (Continued) **S104580224**

LUST:
Global Id: T0606700774
Status: Open - Case Begin Date
Status Date: 05/03/1994

Global Id: T0606700774
Status: Completed - Case Closed
Status Date: 11/28/1994

LUST REG 5:
Name: HARCROW PROPERTY
Address: 9251 ELK GROVE BLVD
City: ELK GROVE
Region: 5
Status: Case Closed
Case Number: 340935
Case Type: Soil only
Substance: DIESEL
Staff Initials: VJF
Lead Agency: Local
Program: LUST
MTBE Code: N/A

Sacramento Co. CS:
Name: ELK GROVE EQUIPMENT
Address: 9251 ELK GROVE BLVD
City,State,Zip: ELK GROVE, CA
State Site Number: A322
Lead Staff: Booth, D.
Lead Agency: HM
Remedial Action Taken: YE, S
Substance: Diesel
Date Reported: 05/19/1994
Facility Id: RO0000377
Case Type: Soil only
Case Closed: Y
Date Closed: 12/02/1994
Case Type: Soil only affected
Substance: Diesel

CORTESE:
Name: HARCROW PROPERTY
Address: 9251 ELK GROVE BLVD
City,State,Zip: ELK GROVE, CA 95624
Region: CORTESE
Envirostor Id: Not reported
Global ID: T0606700774
Site/Facility Type: LUST CLEANUP SITE
Cleanup Status: COMPLETED - CASE CLOSED
Status Date: Not reported
Site Code: Not reported
Latitude: Not reported
Longitude: Not reported
Owner: Not reported

HARCROW PROPERTY (Continued) **S104580224**

Enf Type:	Not reported
Swat R:	Not reported
Flag:	active
Order No:	Not reported
Waste Discharge System No:	Not reported
Effective Date:	Not reported
Region 2:	Not reported
WID Id:	Not reported
Solid Waste Id No:	Not reported
Waste Management Uit Name:	Not reported
File Name:	Active Open

HIST CORTESE:

edr_fname:	HARCROW PROPERTY
edr_fadd1:	9251 ELK GROVE
City,State,Zip:	ELK GROVE, CA 95624
Region:	CORTESE
Facility County Code:	34
Reg By:	LTNKA
Reg Id:	340935

Sacramento Co. ML:

Name:	ANY-EVENT PARTY RENTALS
Address:	9251 ELK GROVE BLVD
City,State,Zip:	ELK GROVE, CA 95624
Facility Id:	Not reported
Facility Status:	Not reported
FD:	Not reported
Billing Codes BP:	I
Billing Codes UST:	Not reported
WG Bill Code:	I
Target Property Bill Cod:	Not reported
Food Bill Code:	Not reported
CUPA Permit Date:	Not reported
HAZMAT Permit Date:	Not reported
HAZMAT Inspection Date:	Not reported
Hazmat Date BP Received:	Not reported
UST Permit Dt:	Not reported
UST Inspection Date:	Not reported
UST Tank Test Date:	Not reported
Number of Tanks:	Not reported
UST Tank Test Date:	Not reported
SIC Code:	Not reported
Tier Permitting:	Not reported
AST Bill Code:	Not reported
CALARP Bill Code:	Not reported

CERS:

Name:	HARCROW PROPERTY
Address:	9251 ELK GROVE BLVD
City,State,Zip:	ELK GROVE, CA 95624
Site ID:	217222
CERS ID:	T0606700774
CERS Description:	Leaking Underground Storage Tank Cleanup Site

Affiliation:

HARCROW PROPERTY (Continued) **S104580224**

Affiliation Type Desc:	Regional Board Caseworker
Entity Name:	VERA FISCHER - CENTRAL VALLEY RWQCB (REGION 5S)
Entity Title:	Not reported
Affiliation Address:	11020 SUN CENTER DRIVE #200
Affiliation City:	RANCHO CORDOVA
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,

14
WSW
1/4-1/2
0.368 mi.
1942 ft.

CRESLEIGH RANCH NO. 39 **ENVIROSTOR** **S118756774**
ELK GROVE BOULEVARD/FOULKS RANCH DRIVE **SCH** **N/A**
ELK GROVE, CA 95624

Relative:
Lower

Actual:
52 ft.

ENVIROSTOR:

Name:	CRESLEIGH RANCH NO. 39
Address:	ELK GROVE BOULEVARD/FOULKS RANCH DRIVE
City,State,Zip:	ELK GROVE, CA 95624
Facility ID:	34010016
Status:	No Action Required
Status Date:	02/27/2002
Site Code:	104257
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	10
NPL:	NO
Regulatory Agencies:	DTSC
Lead Agency:	DTSC
Program Manager:	Not reported
Supervisor:	Juan Koponen
Division Branch:	Northern California Schools & Santa Susana
Assembly:	09
Senate:	06
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	38.41274
Longitude:	-121.3599
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	NONE SPECIFIED No Contaminants found
Confirmed COC:	NONE SPECIFIED
Potential Description:	NMA
Alias Name:	CRESLEIGH RANCH #39
Alias Type:	Alternate Name
Alias Name:	ELK GROVE USD
Alias Type:	Alternate Name
Alias Name:	ELK GROVE USD-CRESLEIGH RANCH ELEM # 39
Alias Type:	Alternate Name
Alias Name:	104257
Alias Type:	Project Code (Site Code)
Alias Name:	34010016
Alias Type:	Envirostor ID Number

CRESLEIGH RANCH NO. 39 (Continued) **S118756774**

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	02/27/2002
Comments:	Not reported

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	02/26/2002
Comments:	Not reported

Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

SCH:

Name:	CRESLEIGH RANCH NO. 39
Address:	ELK GROVE BOULEVARD/FOULKS RANCH DRIVE
City,State,Zip:	ELK GROVE, CA 95624
Facility ID:	34010016
Site Type:	School Investigation
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	10
National Priorities List:	NO
Cleanup Oversight Agencies:	DTSC
Lead Agency:	DTSC
Lead Agency Description:	* DTSC
Project Manager:	Not reported
Supervisor:	Juan Koponen
Division Branch:	Northern California Schools & Santa Susana
Site Code:	104257
Assembly:	09
Senate:	06
Special Program Status:	Not reported
Status:	No Action Required
Status Date:	02/27/2002
Restricted Use:	NO
Funding:	School District
Latitude:	38.41274
Longitude:	-121.3599
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	NONE SPECIFIED, No Contaminants found
Confirmed COC:	NONE SPECIFIED
Potential Description:	NMA
Alias Name:	CRESLEIGH RANCH #39

CRESLEIGH RANCH NO. 39 (Continued) **S118756774**

Alias Type:	Alternate Name
Alias Name:	ELK GROVE USD
Alias Type:	Alternate Name
Alias Name:	ELK GROVE USD-CRESLEIGH RANCH ELEM # 39
Alias Type:	Alternate Name
Alias Name:	104257
Alias Type:	Project Code (Site Code)
Alias Name:	34010016
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	02/27/2002
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	02/26/2002
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

---

15 **ELK GROVE CLASS III LANDFILL** **WMUDS/SWAT** **S101612318**
North **CORNER OF WATERMAN & BOND RD** **N/A**
1/4-1/2 **ELK GROVE CA, CA**
0.415 mi.
2190 ft.

Relative:
Lower

Actual:
56 ft.

WMUDS/SWAT:

Edit Date:	Not reported
Complexity:	Category B - Any facility having a physical, chemical, or biological waste treatment system (except for septic systems with subsurface disposal), or any Class II or III disposal site, or facilities without treatment systems that are complex, such as marinas with petroleum products, solid wastes, and sewage pump out facilities.
Primary Waste:	SLDWST
Primary Waste Type:	Nonhazardous Solid Wastes/Influent or Solid Wastes that contain nonhazardous putrescible and non putrescible solid, semisolid, and liquid wastes (E.G., garbage, trash, refuse, paper, demolition and construction wastes, manure, vegetable or animal solid and semisolid waste).
Secondary Waste:	Not reported
Secondary Waste Type:	Not reported
Base Meridian:	MD
NPID:	Not reported
Tonnage:	0
Regional Board ID:	Not reported

ELK GROVE CLASS III LANDFILL (Continued) **S101612318**

Municipal Solid Waste:	False
Superorder:	False
Open To Public:	False
Waste List:	False
Agency Type:	County
Agency Name:	SACRAMENTO COUNTY DPW
Agency Department:	Not reported
Agency Address:	9850 GOETHE RD
Agency City,St,Zip:	SACRAMENTO CA 95827
Agency Contact:	PAT MAXFIELD
Agency Telephone:	9168756789
Land Owner Name:	CO. OF SACRAMENTO
Land Owner Address:	ADMIN BLDG, 700 H ST
Land Owner City,St,Zip:	SACRAMENTO, CA 95814
Land Owner Contact:	Not reported
Land Owner Phone:	9163662625
Region:	5S
Facility Type:	Solid Waste Site-Class III - Landfills for non hazardous solid wastes.
Facility Description:	Not reported
Facility Telephone:	Not reported
SWAT Facility Name:	ELK GROVE DISPOSAL SITE
Primary SIC:	4953
Secondary SIC:	Not reported
Comments:	Not reported
Last Facility Editors:	Not reported
Waste Discharge System:	True
Solid Waste Assessment Test Program:	True
Toxic Pits Cleanup Act Program:	False
Resource Conservation Recovery Act:	False
Department of Defence:	False
Solid Waste Assessment Test Program:	SACRAMENTO CO. DEPT. PUBLIC WORKS
Threat to Water Quality:	Moderate Threat to Water Quality. A violation could have a major adverse impact on receiving biota, can cause aesthetic impairment to a significant human population, or render unusable a potential domestic or municipal water supply. Awsthetic impairment would include nuisance from a waste treatment facility.
Sub Chapter 15:	True
Regional Board Project Officer:	JDM
Number of WMUDS at Facility:	1
Section Range:	07N06E31
RCRA Facility:	No
Waste Discharge Requirements:	A
Self-Monitoring Rept. Frequency:	Monthly Submittal
Waste Discharge System ID:	5B340315001
Solid Waste Information ID:	34-AA-0004

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16 **ELK GROVE-MATHER AUXILIARY FIELD NO. 5** **FUDS** **1024903732**
NE **N/A**
1/4-1/2 **ELK GROVE, CA**
0.426 mi.
2247 ft.

Relative: FUDS:
Lower

Actual: EPA Region:	09
52 ft. Installation ID:	CA99799F573700
Congressional District Number:	7
Name:	ELK GROVE-MATHER AUXILIARY FIELD NO. 5
FUDS Number:	J09CA0797

ELK GROVE-MATHER AUXILIARY FIELD NO. 5 (Continued) **1024903732**

City:	ELK GROVE
State:	CA
County:	SACRAMENTO
Object ID:	10051
USACE Division:	SPD
USACE District:	Sacramento District (SPK)
Status:	Properties without projects
Current Owner:	Not reported
EMS Map Link:	https://fudsportal.usace.army.mil/ems/inventory/map?id=57494
Eligibility:	Ineligible
Has Projects:	No
NPL Status:	Not reported
Project Required:	No
Feature Description:	Prior to DoD use, the Site was used for agricultural purposes. On 27 July 1942, the War Department authorized the acquisition of a quarter-section (160 acres) tract in order to establish an auxiliary airfield to Mather Army Airfield. The acquisition of an additional 7.4 acres was authorized on 2 November 1942. Plans to construct an all weather (i.e., paved) 2,200-foot by 2,500-foot auxiliary field were approved on 21 November 1942. However, these plans were cancelled on 9 December 1942 because the Site was not large enough to support double engine flight training, and requests were made for use of an alternate field to take the place of Elk Grove-Mather Auxiliary Field Number 5. The acquisition of the Site became final on 22 December 1942. On 30 April 1943, the Commanding General of the Army Air Forces made the determination that the Site was no longer needed to support operations at Mather Army Airfield. On 28 March 1944, fee title to the property was revested, and the Site was returned to the original owners along with monetary compensation for crop damages incurred during DoD use. No as-built maps, building inventories, or any aerial photographs indicating improvements made by the DoD to the Site were found during records research. It appears the Site was minimally used, if at all, by the DoD. After the DoD vacated the Site in 1944, it was again used for agricultural purposes. During the mid-1990s, the Site underwent extensive development and currently is the location of over 400 privately- owned tract homes. A 5-acre irrigation water holding pond and approximately 14 acres of low-flow drainage ditches have existed on-Site since the 1970s.
Latitude:	38.42027778
Longitude:	-121.34388889

17
NNW
1/2-1
0.534 mi.
2817 ft.

FRANKLIN MEADOWS ELEM SCHOOL NO. 37 **ENVIROSTOR** **S118756760**
FIRE POPPY DRIVE/BLOSSOM RANCH DRIVE **SCH** **N/A**
ELK GROVE, CA 95624

Relative:
Lower

Actual:
55 ft.

ENVIROSTOR:

Name:	FRANKLIN MEADOWS ELEM SCHOOL NO. 37
Address:	FIRE POPPY DRIVE/BLOSSOM RANCH DRIVE
City,State,Zip:	ELK GROVE, CA 95624
Facility ID:	34000002
Status:	No Action Required
Status Date:	03/19/2002
Site Code:	104259
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	11.5

FRANKLIN MEADOWS ELEM SCHOOL NO. 37 (Continued) **S118756760**

NPL: NO
Regulatory Agencies: DTSC
Lead Agency: DTSC
Program Manager: Not reported
Supervisor: Jose Salcedo
Division Branch: Northern California Schools & Santa Susana
Assembly: 09
Senate: 06
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: School District
Latitude: 38.4232
Longitude: -121.3577
APN: NONE SPECIFIED
Past Use: NONE
Potential COC: NONE SPECIFIED No Contaminants found
Confirmed COC: NONE SPECIFIED
Potential Description: NMA
Alias Name: ELK GROVE USD
Alias Type: Alternate Name
Alias Name: ELK GROVE USD-FRANKLIN MEADOWS ELEM # 37
Alias Type: Alternate Name
Alias Name: FRANKLIN MEADOWS ELEMENTARY SCHOOL #37
Alias Type: Alternate Name
Alias Name: 104259
Alias Type: Project Code (Site Code)
Alias Name: 34000002
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Inspections/Visit (Non LUR)
Completed Date: 03/18/2002
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 05/15/2002
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 03/19/2002
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

FRANKLIN MEADOWS ELEM SCHOOL NO. 37 (Continued) **S118756760**

SCH:

Name:	FRANKLIN MEADOWS ELEM SCHOOL NO. 37
Address:	FIRE POPPY DRIVE/BLOSSOM RANCH DRIVE
City,State,Zip:	ELK GROVE, CA 95624
Facility ID:	34000002
Site Type:	School Investigation
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	11.5
National Priorities List:	NO
Cleanup Oversight Agencies:	DTSC
Lead Agency:	DTSC
Lead Agency Description:	* DTSC
Project Manager:	Not reported
Supervisor:	Jose Salcedo
Division Branch:	Northern California Schools & Santa Susana
Site Code:	104259
Assembly:	09
Senate:	06
Special Program Status:	Not reported
Status:	No Action Required
Status Date:	03/19/2002
Restricted Use:	NO
Funding:	School District
Latitude:	38.4232
Longitude:	-121.3577
APN:	NONE SPECIFIED
Past Use:	NONE
Potential COC:	NONE SPECIFIED, No Contaminants found
Confirmed COC:	NONE SPECIFIED
Potential Description:	NMA
Alias Name:	ELK GROVE USD
Alias Type:	Alternate Name
Alias Name:	ELK GROVE USD-FRANKLIN MEADOWS ELEM # 37
Alias Type:	Alternate Name
Alias Name:	FRANKLIN MEADOWS ELEMENTARY SCHOOL #37
Alias Type:	Alternate Name
Alias Name:	104259
Alias Type:	Project Code (Site Code)
Alias Name:	34000002
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Inspections/Visit (Non LUR)
Completed Date:	03/18/2002
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	05/15/2002
Comments:	Not reported
Completed Area Name:	PROJECT WIDE

FRANKLIN MEADOWS ELEM SCHOOL NO. 37 (Continued) **S118756760**

Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	03/19/2002
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

18
South
1/2-1
0.698 mi.
3683 ft.

RESIDENCE
9800 WATERMAN
ELK GROVE, CA 95624

LUST **S105174022**
Sacramento Co. CS **N/A**
Cortese
Notify 65
CERS

Relative:
Lower

Actual:
56 ft.

LUST:

Name:	RESIDENCE
Address:	9800 WATERMAN
City,State,Zip:	ELK GROVE, CA 95624
Lead Agency:	SACRAMENTO COUNTY LOP
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0606791922
Global Id:	T0606791922
Latitude:	38.407002
Longitude:	-121.35323
Status:	Completed - Case Closed
Status Date:	04/29/2003
Case Worker:	Not reported
RB Case Number:	341354
Local Agency:	Not reported
File Location:	Local Agency
Local Case Number:	F589
Potential Media Affect:	Aquifer used for drinking water supply, Soil
Potential Contaminants of Concern:	Gasoline
EPA Region:	9
Coordinate Source:	Manual Entry on Screens
Cuf Case:	YES
Quantity Released Gallons:	Not reported
Begin Date:	06/21/2001
Leak Reported Date:	01/02/1965
How Discovered:	Not reported
How Discovered Description:	Not reported
Discharge Source:	Not reported
Discharge Cause:	Not reported
Stop Method:	Not reported
Stop Description:	Not reported
No Further Action Date:	04/29/2003
CA Water Watershed Name:	Valley-American - Morrison Creek - Franklin (519.11)
Dwr Groundwater Subbasin Name:	Sacramento Valley - South American (5-021.65)
Disadvantaged Community:	Not reported
CA Enviroscreen 3 Score:	46-50%
CA Enviroscreen 4 Score:	45-50%

RESIDENCE (Continued) **S105174022**

Military DOD Site: No
Facility Project Subtype: Not reported
RWQCB Region: CENTRAL VALLEY RWQCB (REGION 5S)
Site History: Not reported

LUST:
Global Id: T0606791922
Contact Type: Regional Board Caseworker
Contact Name: VERA FISCHER
Organization Name: CENTRAL VALLEY RWQCB (REGION 5S)
Address: 11020 SUN CENTER DRIVE #200
City: RANCHO CORDOVA
Email: vera.fischer@waterboards.ca.gov
Phone Number: Not reported

LUST:
Global Id: T0606791922
Action Type: ENFORCEMENT
Date: 06/21/2001
Action: Notification - Proposition 65

Global Id: T0606791922
Action Type: ENFORCEMENT
Date: 07/30/2001
Action: Notice of Responsibility

Global Id: T0606791922
Action Type: Other
Date: 01/02/1965
Action: Leak Reported

Global Id: T0606791922
Action Type: REMEDIATION
Date: 02/28/2003
Action: Excavation

Global Id: T0606791922
Action Type: Other
Date: 06/22/2001
Action: Leak Discovery

LUST:
Global Id: T0606791922
Status: Open - Case Begin Date
Status Date: 06/21/2001

Global Id: T0606791922
Status: Completed - Case Closed
Status Date: 04/29/2003

LUST REG 5:
Name: RESIDENCE
Address: 9800 WATERMAN
City: ELK GROVE
Region: 5

RESIDENCE (Continued) **S105174022**

Status: Case Closed
Case Number: 341354
Case Type: A, S
Substance: GASOLINE
Staff Initials: VJF
Lead Agency: Local
Program: LUST
MTBE Code: N/A

Sacramento Co. CS:
Name: RESIDENCE
Address: 9800 WATERMAN RD
City,State,Zip: ELK GROVE, CA
State Site Number: F589
Lead Staff: Leibold, R.
Lead Agency: Not reported
Remedial Action Taken: NO
Substance: Not reported
Date Reported: Not reported
Facility Id: RO0001466
Case Type: Soil only
Case Closed: Y
Date Closed: 04/04/2004
Case Type: Soil only affected
Substance: Not reported

CORTESE:
Name: RESIDENCE
Address: 9800 WATERMAN
City,State,Zip: ELK GROVE, CA 95624
Region: CORTESE
Envirostor Id: Not reported
Global ID: T0606791922
Site/Facility Type: LUST CLEANUP SITE
Cleanup Status: COMPLETED - CASE CLOSED
Status Date: Not reported
Site Code: Not reported
Latitude: Not reported
Longitude: Not reported
Owner: Not reported
Enf Type: Not reported
Swat R: Not reported
Flag: active
Order No: Not reported
Waste Discharge System No: Not reported
Effective Date: Not reported
Region 2: Not reported
WID Id: Not reported
Solid Waste Id No: Not reported
Waste Management Uit Name: Not reported
File Name: Active Open

NOTIFY 65:
Name: RESIDENCE
Address: 9800 WATERMAN
City,State,Zip: ELK GROVE, CA 95624

RESIDENCE (Continued) **S105174022**

Date Reported: Not reported
Staff Initials: Not reported
Board File Number: Not reported
Facility Type: Not reported
Discharge Date: Not reported
Issue Date: 06/21/2001
Incident Description: Not reported
Global ID: Not reported
Status: Not reported

Name: RESIDENCE
Address: 9800 WATERMAN
City,State,Zip: ELK GROVE, CA 95624
Date Reported: Not reported
Staff Initials: Not reported
Board File Number: Not reported
Facility Type: Not reported
Discharge Date: Not reported
Issue Date: Not reported
Incident Description: Not reported
Global ID: Not reported
Status: Not reported

CERS:
Name: RESIDENCE
Address: 9800 WATERMAN
City,State,Zip: ELK GROVE, CA 95624
Site ID: 216195
CERS ID: T0606791922
CERS Description: Leaking Underground Storage Tank Cleanup Site

Affiliation:
Affiliation Type Desc: Regional Board Caseworker
Entity Name: VERA FISCHER - CENTRAL VALLEY RWQCB (REGION 5S)
Entity Title: Not reported
Affiliation Address: 11020 SUN CENTER DRIVE #200
Affiliation City: RANCHO CORDOVA
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

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19 **ELK GROVE MONTESSORI** **ENVIROSTOR** **S118757197**
ESE **BRADSHAW ROAD AND ELK GROVE BOULEVARD** **SCH** **N/A**
1/2-1 **ELK GROVE, CA 95624**
0.870 mi.
4596 ft.

Relative:
Higher

Actual:
60 ft.

ENVIROSTOR:
Name: ELK GROVE MONTESSORI
Address: BRADSHAW ROAD AND ELK GROVE BOULEVARD
City,State,Zip: ELK GROVE, CA 95624
Facility ID: 60001032
Status: No Action Required
Status Date: 03/09/2009
Site Code: 104660
Site Type: School Investigation

ELK GROVE MONTESSORI (Continued) **S118757197**

Site Type Detailed: School
Acres: 7.5
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: Not reported
Supervisor: Mark Malinowski
Division Branch: Northern California Schools & Santa Susana
Assembly: 09
Senate: 06
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: School District
Latitude: 38.40765
Longitude: -121.3334
APN: NONE SPECIFIED
Past Use: NONE
Potential COC: NONE SPECIFIED No Contaminants found
Confirmed COC: No Contaminants found
Potential Description: NMA
Alias Name: 104660
Alias Type: Project Code (Site Code)
Alias Name: 60001032
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 01/27/2009
Comments: DTSC approved the Phase I with a no action determination on 1/27/09.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 03/05/2009
Comments: CRU checklist complete.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

Name: ELK GROVE MONTESSORI
Address: BRADSHAW ROAD AND ELK GROVE BOULEVARD
City,State,Zip: ELK GROVE, CA 95624
Facility ID: 60001032
Site Type: School Investigation
Site Type Detail: School

ELK GROVE MONTESSORI (Continued) **S118757197**

Site Mgmt. Req.:	NONE SPECIFIED
Acres:	7.5
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Not reported
Supervisor:	Mark Malinowski
Division Branch:	Northern California Schools & Santa Susana
Site Code:	104660
Assembly:	09
Senate:	06
Special Program Status:	Not reported
Status:	No Action Required
Status Date:	03/09/2009
Restricted Use:	NO
Funding:	School District
Latitude:	38.40765
Longitude:	-121.3334
APN:	NONE SPECIFIED
Past Use:	NONE
Potential COC:	NONE SPECIFIED, No Contaminants found
Confirmed COC:	No Contaminants found
Potential Description:	NMA
Alias Name:	104660
Alias Type:	Project Code (Site Code)
Alias Name:	60001032
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	01/27/2009
Comments:	DTSC approved the Phase I with a no action determination on 1/27/09.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	03/05/2009
Comments:	CRU checklist complete.
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

20
ENE
1/2-1
0.969 mi.
5117 ft.

PLEASANT GROVE HI/KATHERINE ALBIANI MID
BOND ROAD/BRADSHAW ROAD
ELK GROVE, CA 95624

ENVIROSTOR
SCH

S105628811
N/A

Relative:
Higher

Actual:
59 ft.

ENVIROSTOR:

Name:	PLEASANT GROVE HI/KATHERINE ALBIANI MID
Address:	BOND ROAD/BRADSHAW ROAD
City,State,Zip:	ELK GROVE, CA 95624
Facility ID:	34020002
Status:	Certified
Status Date:	11/07/2003
Site Code:	104163
Site Type:	School Cleanup
Site Type Detailed:	School
Acres:	107
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Not reported
Supervisor:	Jose Salcedo
Division Branch:	Northern California Schools & Santa Susana
Assembly:	09
Senate:	06
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	38.42582
Longitude:	-121.3392
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - LIVESTOCK
Potential COC:	Lead Polychlorinated biphenyls (PCBs
Confirmed COC:	Polychlorinated biphenyls (PCBs Lead
Potential Description:	SOIL
Alias Name:	ELK GROVE UNIFIED SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	ELK GROVE USD-PLSNT GRV HS/K ALBIANI MS
Alias Type:	Alternate Name
Alias Name:	ELK GROVE USD-PLSNT GRV HS/K. ALBIANI MS
Alias Type:	Alternate Name
Alias Name:	HIGH/MIDDLE SCHOOL #8
Alias Type:	Alternate Name
Alias Name:	PLEASANT GROVE HI/KATHERINE ALBIANI MID
Alias Type:	Alternate Name
Alias Name:	110033611606
Alias Type:	EPA (FRS #)
Alias Name:	104148
Alias Type:	Project Code (Site Code)
Alias Name:	104163
Alias Type:	Project Code (Site Code)
Alias Name:	34020002
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Inspections/Visit (Non LUR)
Completed Date:	03/26/2001

PLEASANT GROVE HI/KATHERINE ALBIANI MID (Continued) **S105628811**

Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Standard Voluntary Agreement
Completed Date: 03/07/2003
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 02/20/2001
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 05/18/2015
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 06/26/2003
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 08/11/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Removal Action Completion Report
Completed Date: 05/21/2004
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Removal Action Workplan
Completed Date: 11/07/2003
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 03/05/2001
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Certification
Completed Date: 05/21/2004
Comments: Issued Certification package and letter.

Completed Area Name: PROJECT WIDE

PLEASANT GROVE HI/KATHERINE ALBIANI MID (Continued) **S105628811**

Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	06/08/2004
Comments:	Not reported

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	04/18/2003
Comments:	Not reported

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	* Public Participation
Completed Date:	10/21/2003
Comments:	Not reported

Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

SCH:

Name:	PLEASANT GROVE HI/KATHERINE ALBIANI MID
Address:	BOND ROAD/BRADSHAW ROAD
City,State,Zip:	ELK GROVE, CA 95624
Facility ID:	34020002
Site Type:	School Cleanup
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	107
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Not reported
Supervisor:	Jose Salcedo
Division Branch:	Northern California Schools & Santa Susana
Site Code:	104163
Assembly:	09
Senate:	06
Special Program Status:	Not reported
Status:	Certified
Status Date:	11/07/2003
Restricted Use:	NO
Funding:	School District
Latitude:	38.42582
Longitude:	-121.3392
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - LIVESTOCK
Potential COC:	Lead, Polychlorinated biphenyls (PCBs

PLEASANT GROVE HI/KATHERINE ALBIANI MID (Continued) **S105628811**

Confirmed COC:	Polychlorinated biphenyls (PCBs, Lead
Potential Description:	SOIL
Alias Name:	ELK GROVE UNIFIED SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	ELK GROVE USD-PLSNT GRV HS/K ALBIANI MS
Alias Type:	Alternate Name
Alias Name:	ELK GROVE USD-PLSNT GRV HS/K. ALBIANI MS
Alias Type:	Alternate Name
Alias Name:	HIGH/MIDDLE SCHOOL #8
Alias Type:	Alternate Name
Alias Name:	PLEASANT GROVE HI/KATHERINE ALBIANI MID
Alias Type:	Alternate Name
Alias Name:	110033611606
Alias Type:	EPA (FRS #)
Alias Name:	104148
Alias Type:	Project Code (Site Code)
Alias Name:	104163
Alias Type:	Project Code (Site Code)
Alias Name:	34020002
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Inspections/Visit (Non LUR)
Completed Date:	03/26/2001
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Standard Voluntary Agreement
Completed Date:	03/07/2003
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	02/20/2001
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	05/18/2015
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Report
Completed Date:	06/26/2003
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	08/11/2000
Comments:	Not reported

PLEASANT GROVE HI/KATHERINE ALBIANI MID (Continued) **S105628811**

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Removal Action Completion Report
Completed Date:	05/21/2004
Comments:	Not reported

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Removal Action Workplan
Completed Date:	11/07/2003
Comments:	Not reported

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Workplan
Completed Date:	03/05/2001
Comments:	Not reported

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Certification
Completed Date:	05/21/2004
Comments:	Issued Certification package and letter.

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	06/08/2004
Comments:	Not reported

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	04/18/2003
Comments:	Not reported

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	* Public Participation
Completed Date:	10/21/2003
Comments:	Not reported

Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

Count: 3 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
ELK GROVE	S126143197	PROPOSED CROOKED CREEK ELEMENTARY	NORTHWEST CORNER OF WAYNE HEIN	95624	ENVIROSTOR, SCH
ELK GROVE	S106782303	KINGSFORD CHARCOAL PLANT	WATERMAN RD		Sacramento Co. CS
ELK GROVE	S106782302	KINGSFORD CHARCOAL COMPANY	WATERMAN RD		Sacramento Co. CS

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 05/02/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 06/02/2023
Next Scheduled EDR Contact: 07/10/2023
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 05/02/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 06/02/2023
Next Scheduled EDR Contact: 07/10/2023
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Lists of Federal Delisted NPL sites

Delisted NPL: National Priority List Deletions

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.

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 05/02/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 06/02/2023
Next Scheduled EDR Contact: 07/10/2023
Data Release Frequency: Quarterly

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 03/26/2023
Date Data Arrived at EDR: 03/28/2023
Date Made Active in Reports: 05/30/2023
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 03/28/2023
Next Scheduled EDR Contact: 07/10/2023
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 05/02/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 15

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/02/2023
Next Scheduled EDR Contact: 07/24/2023
Data Release Frequency: Quarterly

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates 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 the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The 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 potential NPL site.

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 05/02/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 15

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/02/2023
Next Scheduled EDR Contact: 07/24/2023
Data Release Frequency: Quarterly

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 03/20/2023
Number of Days to Update: 11

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/09/2023
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: Quarterly

Lists of Federal RCRA TSD facilities

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo 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. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 03/20/2023
Number of Days to Update: 11

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/09/2023
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: Quarterly

Lists of Federal RCRA generators

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo 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. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 03/20/2023
Number of Days to Update: 11

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/09/2023
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo 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. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 03/20/2023
Number of Days to Update: 11

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/09/2023
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo 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. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 03/20/2023
Number of Days to Update: 11

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/09/2023
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 02/08/2023
Date Data Arrived at EDR: 02/09/2023
Date Made Active in Reports: 05/02/2023
Number of Days to Update: 82

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/23/2023
Next Scheduled EDR Contact: 08/21/2023
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 02/20/2023
Date Data Arrived at EDR: 02/21/2023
Date Made Active in Reports: 05/02/2023
Number of Days to Update: 70

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/23/2023
Next Scheduled EDR Contact: 09/04/2023
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 02/20/2023
Date Data Arrived at EDR: 02/21/2023
Date Made Active in Reports: 05/02/2023
Number of Days to Update: 70

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/23/2023
Next Scheduled EDR Contact: 09/04/2023
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 03/20/2023
Date Data Arrived at EDR: 03/21/2023
Date Made Active in Reports: 05/30/2023
Number of Days to Update: 70

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/21/2023
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: Quarterly

Lists of state- and tribal (Superfund) equivalent sites

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 01/23/2023
Date Data Arrived at EDR: 01/24/2023
Date Made Active in Reports: 04/10/2023
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 08/07/2023
Data Release Frequency: Quarterly

Lists of state- and tribal hazardous waste facilities

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 01/23/2023
Date Data Arrived at EDR: 01/24/2023
Date Made Active in Reports: 04/10/2023
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 08/07/2023
Data Release Frequency: Quarterly

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/06/2023
Date Data Arrived at EDR: 02/07/2023
Date Made Active in Reports: 04/26/2023
Number of Days to Update: 78

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/08/2023
Next Scheduled EDR Contact: 08/21/2023
Data Release Frequency: Quarterly

Lists of state and tribal leaking storage tanks

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)

Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 03/30/2023
Number of Days to Update: 23

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 06/05/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Quarterly

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 11/23/2022
Date Data Arrived at EDR: 12/06/2022
Date Made Active in Reports: 03/03/2023
Number of Days to Update: 87

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/09/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land

A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 10/19/2022
Date Data Arrived at EDR: 12/06/2022
Date Made Active in Reports: 03/03/2023
Number of Days to Update: 87

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/09/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 10/14/2022
Date Data Arrived at EDR: 12/06/2022
Date Made Active in Reports: 03/03/2023
Number of Days to Update: 87

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/09/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 11/23/2022
Date Data Arrived at EDR: 12/06/2022
Date Made Active in Reports: 03/03/2023
Number of Days to Update: 87

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/08/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 11/23/2022
Date Data Arrived at EDR: 12/06/2022
Date Made Active in Reports: 03/03/2023
Number of Days to Update: 87

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/09/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 11/23/2022
Date Data Arrived at EDR: 12/06/2022
Date Made Active in Reports: 04/19/2023
Number of Days to Update: 134

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/09/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/14/2022
Date Data Arrived at EDR: 12/06/2022
Date Made Active in Reports: 03/03/2023
Number of Days to Update: 87

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 05/09/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 11/26/2022
Date Data Arrived at EDR: 12/06/2022
Date Made Active in Reports: 03/03/2023
Number of Days to Update: 87

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/09/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)

Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 03/31/2023
Number of Days to Update: 24

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/05/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: No Update Planned

Lists of state and tribal registered storage tanks

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 03/08/2023
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 05/30/2023
Number of Days to Update: 82

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 03/29/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)
Military ust sites

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 03/31/2023
Number of Days to Update: 24

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/05/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 05/24/2023
Number of Days to Update: 78

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 06/05/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Semi-Annually

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases
UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 02/23/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 05/26/2023
Number of Days to Update: 80

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 06/02/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 06/06/2023
Next Scheduled EDR Contact: 09/25/2023
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 11/23/2022
Date Data Arrived at EDR: 12/06/2022
Date Made Active in Reports: 03/03/2023
Number of Days to Update: 87

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/09/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 10/14/2022
Date Data Arrived at EDR: 12/06/2022
Date Made Active in Reports: 03/03/2023
Number of Days to Update: 87

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 05/09/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 11/23/2022
Date Data Arrived at EDR: 12/06/2022
Date Made Active in Reports: 04/19/2023
Number of Days to Update: 134

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/09/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 11/23/2022
Date Data Arrived at EDR: 12/06/2022
Date Made Active in Reports: 03/03/2023
Number of Days to Update: 87

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 05/09/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 10/19/2022
Date Data Arrived at EDR: 12/06/2022
Date Made Active in Reports: 03/03/2023
Number of Days to Update: 87

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/09/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 11/23/2022
Date Data Arrived at EDR: 12/06/2022
Date Made Active in Reports: 03/03/2023
Number of Days to Update: 87

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/09/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 11/23/2022
Date Data Arrived at EDR: 12/06/2022
Date Made Active in Reports: 03/03/2023
Number of Days to Update: 87

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/09/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 10/14/2022
Date Data Arrived at EDR: 12/06/2022
Date Made Active in Reports: 03/03/2023
Number of Days to Update: 87

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/09/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

Lists of state and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142
Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 03/17/2023
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27
Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 07/08/2021
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 01/23/2023
Date Data Arrived at EDR: 01/24/2023
Date Made Active in Reports: 04/10/2023
Number of Days to Update: 76
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 08/07/2023
Data Release Frequency: Quarterly

Lists of state and tribal brownfield sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 03/20/2023
Date Data Arrived at EDR: 03/21/2023
Date Made Active in Reports: 06/06/2023
Number of Days to Update: 77
Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 03/21/2023
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
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 takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 04/06/2023
Date Data Arrived at EDR: 04/13/2023
Date Made Active in Reports: 04/19/2023
Number of Days to Update: 6
Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 04/06/2023
Next Scheduled EDR Contact: 06/26/2023
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 04/19/2023
Next Scheduled EDR Contact: 08/07/2023
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 05/24/2023
Number of Days to Update: 78

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/02/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 11/16/2022
Date Data Arrived at EDR: 11/22/2022
Date Made Active in Reports: 02/13/2023
Number of Days to Update: 83

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/31/2023
Next Scheduled EDR Contact: 08/21/2023
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 04/19/2023
Next Scheduled EDR Contact: 08/07/2023
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/12/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176
Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 04/27/2023
Next Scheduled EDR Contact: 08/07/2023
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 01/06/2023
Date Data Arrived at EDR: 02/02/2023
Date Made Active in Reports: 02/10/2023
Number of Days to Update: 8
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/23/2023
Next Scheduled EDR Contact: 09/04/2023
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database
The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21
Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program
This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 01/23/2023
Date Data Arrived at EDR: 01/24/2023
Date Made Active in Reports: 04/10/2023
Number of Days to Update: 76
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 08/07/2023
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs
A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2022
Date Made Active in Reports: 02/09/2023
Number of Days to Update: 71
Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 06/06/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Varies

CERS HAZ WASTE: CERS HAZ WASTE
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 01/05/2023
Date Data Arrived at EDR: 01/06/2023
Date Made Active in Reports: 01/11/2023
Number of Days to Update: 5
Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 04/18/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27
Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site 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. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 01/06/2023
Date Data Arrived at EDR: 02/02/2023
Date Made Active in Reports: 02/10/2023
Number of Days to Update: 8
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/23/2023
Next Scheduled EDR Contact: 09/04/2023
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18
Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing

Aboveground storage tank sites

Date of Government Version: 02/03/2023
Date Data Arrived at EDR: 02/07/2023
Date Made Active in Reports: 04/25/2023
Number of Days to Update: 77
Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 04/26/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Varies

CERS TANKS: California Environmental Reporting System (CERS) Tanks

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.

Date of Government Version: 01/06/2023
Date Data Arrived at EDR: 01/06/2023
Date Made Active in Reports: 01/11/2023
Number of Days to Update: 5

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/18/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Quarterly

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 02/23/2023
Date Data Arrived at EDR: 02/24/2023
Date Made Active in Reports: 03/23/2023
Number of Days to Update: 27

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/06/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 05/02/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 06/02/2023
Next Scheduled EDR Contact: 07/10/2023
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The 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 deed restrictions that are active. Some sites have multiple deed restrictions. The 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.

Date of Government Version: 02/27/2023
Date Data Arrived at EDR: 02/28/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 78

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 05/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/19/2023
Date Data Arrived at EDR: 03/21/2023
Date Made Active in Reports: 05/30/2023
Number of Days to Update: 70

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/21/2023
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 08/02/2022
Date Data Arrived at EDR: 10/17/2022
Date Made Active in Reports: 01/04/2023
Number of Days to Update: 79

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 04/20/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 03/30/2023
Number of Days to Update: 23

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/05/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 03/31/2023
Number of Days to Update: 24

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/05/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo 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. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 03/20/2023
Number of Days to Update: 11

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/09/2023
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 02/01/2023
Date Data Arrived at EDR: 02/14/2023
Date Made Active in Reports: 05/02/2023
Number of Days to Update: 77

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 05/16/2023
Next Scheduled EDR Contact: 08/28/2023
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 06/07/2021
Date Data Arrived at EDR: 07/13/2021
Date Made Active in Reports: 03/09/2022
Number of Days to Update: 239

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/11/2023
Next Scheduled EDR Contact: 07/24/2023
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/03/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 07/30/2021
Date Data Arrived at EDR: 02/03/2023
Date Made Active in Reports: 02/10/2023
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/11/2023
Next Scheduled EDR Contact: 08/21/2023
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/13/2023
Date Data Arrived at EDR: 03/21/2023
Date Made Active in Reports: 05/30/2023
Number of Days to Update: 70

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 03/21/2023
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 05/01/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/04/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 06/14/2022
Date Made Active in Reports: 03/24/2023
Number of Days to Update: 283

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/13/2023
Next Scheduled EDR Contact: 06/26/2023
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2021
Date Data Arrived at EDR: 02/16/2023
Date Made Active in Reports: 05/02/2023
Number of Days to Update: 75

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/19/2023
Next Scheduled EDR Contact: 08/28/2023
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 01/17/2023
Date Data Arrived at EDR: 01/18/2023
Date Made Active in Reports: 04/19/2023
Number of Days to Update: 91

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/18/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 05/02/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 15

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 06/02/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 04/27/2022
Date Data Arrived at EDR: 05/04/2022
Date Made Active in Reports: 05/10/2022
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/13/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 05/02/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 15

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 06/02/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/03/2022
Date Data Arrived at EDR: 01/04/2023
Date Made Active in Reports: 04/03/2023
Number of Days to Update: 89

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/04/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 03/29/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/15/2023
Date Data Arrived at EDR: 03/21/2023
Date Made Active in Reports: 05/30/2023
Number of Days to Update: 70

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 04/13/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/22/2022
Number of Days to Update: 84

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 05/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 05/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/04/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 03/23/2023
Next Scheduled EDR Contact: 07/10/2023
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80
Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 08/07/2023
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2022
Date Data Arrived at EDR: 01/12/2023
Date Made Active in Reports: 04/07/2023
Number of Days to Update: 85

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/03/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2021
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 03/20/2023
Number of Days to Update: 11

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 03/09/2023
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/06/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 07/26/2021
Date Data Arrived at EDR: 07/27/2021
Date Made Active in Reports: 10/22/2021
Number of Days to Update: 87

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 04/26/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/24/2023
Next Scheduled EDR Contact: 08/28/2023
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 05/02/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 06/02/2023
Next Scheduled EDR Contact: 07/10/2023
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 02/27/2023
Date Data Arrived at EDR: 03/01/2023
Date Made Active in Reports: 03/24/2023
Number of Days to Update: 23

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 05/24/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Quarterly

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/02/2023
Date Data Arrived at EDR: 02/22/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 84

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 05/24/2023
Next Scheduled EDR Contact: 09/04/2023
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 01/07/2022
Date Data Arrived at EDR: 02/24/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 82

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/25/2023
Next Scheduled EDR Contact: 09/04/2023
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/25/2023
Next Scheduled EDR Contact: 09/04/2023
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 03/17/2023
Date Data Arrived at EDR: 03/17/2023
Date Made Active in Reports: 05/30/2023
Number of Days to Update: 74

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 05/31/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/02/2023
Date Data Arrived at EDR: 02/28/2023
Date Made Active in Reports: 03/24/2023
Number of Days to Update: 24

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 05/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 05/17/2023
Next Scheduled EDR Contact: 09/04/2023
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 11/09/2021
Date Data Arrived at EDR: 10/20/2022
Date Made Active in Reports: 01/10/2023
Number of Days to Update: 82

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 04/27/2023
Next Scheduled EDR Contact: 07/24/2023
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 01/01/2023
Date Data Arrived at EDR: 01/04/2023
Date Made Active in Reports: 04/03/2023
Number of Days to Update: 89

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 03/31/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Quarterly

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/13/2023
Date Data Arrived at EDR: 02/14/2023
Date Made Active in Reports: 04/19/2023
Number of Days to Update: 64

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 05/17/2023
Next Scheduled EDR Contact: 08/28/2023
Data Release Frequency: Quarterly

PFAS NPL: Superfund Sites with PFAS Detections Information

EPA's Office of Land and Emergency Management and EPA Regional Offices maintain data describing what is known about site investigations, contamination, and remedial actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) where PFAS is present in the environment.

Date of Government Version: 02/23/2022
Date Data Arrived at EDR: 07/08/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 123

Source: Environmental Protection Agency
Telephone: 703-603-8895
Last EDR Contact: 04/04/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Varies

PFAS FEDERAL SITES: Federal Sites PFAS Information

Several federal entities, such as the federal Superfund program, Department of Defense, National Aeronautics and Space Administration, Department of Transportation, and Department of Energy provided information for sites with known or suspected detections at federal facilities.

Date of Government Version: 03/30/2023
Date Data Arrived at EDR: 03/30/2023
Date Made Active in Reports: 04/07/2023
Number of Days to Update: 8

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 03/30/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Varies

PFAS TSCA: PFAS Manufacture and Imports Information

EPA issued the Chemical Data Reporting (CDR) Rule under the Toxic Substances Control Act (TSCA) and requires chemical manufacturers and facilities that manufacture or import chemical substances to report data to EPA. EPA publishes non-confidential business information (non-CBI) and includes descriptive information about each site, corporate parent, production volume, other manufacturing information, and processing and use information.

Date of Government Version: 01/03/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 222

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 03/30/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Varies

PFAS RCRA MANIFEST: PFAS Transfers Identified In the RCRA Database Listing

To work around the lack of PFAS waste codes in the RCRA database, EPA developed the PFAS Transfers dataset by mining e-Manifest records containing at least one of these common PFAS keywords: PFAS, PFOA, PFOS, PERFL, AFFF, GENX, GEN-X (plus the VT waste codes). These keywords were searched for in the following text fields: Manifest handling instructions (MANIFEST_HANDLING_INSTR), Non-hazardous waste description (NON_HAZ_WASTE_DESCRIPTION), DOT printed information (DOT_PRINTED_INFORMATION), Waste line handling instructions (WASTE_LINE_HANDLING_INSTR), Waste residue comments (WASTE_RESIDUE_COMMENTS).

Date of Government Version: 03/30/2023
Date Data Arrived at EDR: 03/30/2023
Date Made Active in Reports: 05/02/2023
Number of Days to Update: 33

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 03/30/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Varies

PFAS ATSDR: PFAS Contamination Site Location Listing

PFAS contamination site locations from the Department of Health & Human Services, Center for Disease Control & Prevention. ATSDR is involved at a number of PFAS-related sites, either directly or through assisting state and federal partners. As of now, most sites are related to drinking water contamination connected with PFAS production facilities or fire training areas where aqueous film-forming firefighting foam (AFFF) was regularly used.

Date of Government Version: 06/24/2020
Date Data Arrived at EDR: 03/17/2021
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 601

Source: Department of Health & Human Services
Telephone: 202-741-5770
Last EDR Contact: 04/20/2023
Next Scheduled EDR Contact: 08/07/2023
Data Release Frequency: Varies

PFAS WQP: Ambient Environmental Sampling for PFAS

The Water Quality Portal (WQP) is a part of a modernized repository storing ambient sampling data for all environmental media and tissue samples. A wide range of federal, state, tribal and local governments, academic and non-governmental organizations and individuals submit project details and sampling results to this public repository. The information is commonly used for research and assessments of environmental quality.

Date of Government Version: 03/30/2023
Date Data Arrived at EDR: 03/30/2023
Date Made Active in Reports: 05/02/2023
Number of Days to Update: 33

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 03/30/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Varies

PFAS NPDES: Clean Water Act Discharge Monitoring Information

Any discharger of pollutants to waters of the United States from a point source must have a National Pollutant Discharge Elimination System (NPDES) permit. The process for obtaining limits involves the regulated entity (permittee) disclosing releases in a NPDES permit application and the permitting authority (typically the state but sometimes EPA) deciding whether to require monitoring or monitoring with limits.

Date of Government Version: 03/30/2023
Date Data Arrived at EDR: 03/30/2023
Date Made Active in Reports: 04/07/2023
Number of Days to Update: 8

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 03/30/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Varies

PFAS ECHO: Facilities in Industries that May Be Handling PFAS Listing

Regulators and the public have expressed interest in knowing which regulated entities may be using PFAS. EPA has developed a dataset from various sources that show which industries may be handling PFAS. Approximately 120,000 facilities subject to federal environmental programs have operated or currently operate in industry sectors with processes that may involve handling and/or release of PFAS.

Date of Government Version: 03/30/2023
Date Data Arrived at EDR: 03/30/2023
Date Made Active in Reports: 04/03/2023
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 03/30/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Varies

PFAS ECHO FIRE TRAINING: Facilities in Industries that May Be Handling PFAS Listing

A list of fire training sites was added to the Industry Sectors dataset using a keyword search on the permitted facilitys name to identify sites where fire-fighting foam may have been used in training exercises. Additionally, you may view an example spreadsheet of the subset of fire training facility data, as well as the keywords used in selecting or deselecting a facility for the subset. as well as the keywords used in selecting or deselecting a facility for the subset. These keywords were tested to maximize accuracy in selecting facilities that may use fire-fighting foam in training exercises, however, due to the lack of a required reporting field in the data systems for designating fire training sites, this methodology may not identify all fire training sites or may potentially misidentify them.

Date of Government Version: 03/30/2023
Date Data Arrived at EDR: 03/30/2023
Date Made Active in Reports: 04/03/2023
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 03/30/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Varies

PFAS PART 139 AIRPORT: All Certified Part 139 Airports PFAS Information Listing

Since July 1, 2006, all certified part 139 airports are required to have fire-fighting foam onsite that meet military specifications (MIL-F-24385) (14 CFR 139.317). To date, these military specification fire-fighting foams are fluorinated and have been historically used for training and extinguishing. The 2018 FAA Reauthorization Act has a provision stating that no later than October 2021, FAA shall not require the use of fluorinated AFFF. This provision does not prohibit the use of fluorinated AFFF at Part 139 civilian airports; it only prohibits FAA from mandating its use. The Federal Aviation Administration?s document AC 150/5210-6D - Aircraft Fire Extinguishing Agents provides guidance on Aircraft Fire Extinguishing Agents, which includes Aqueous Film Forming Foam (AFFF).

Date of Government Version: 03/30/2023
Date Data Arrived at EDR: 03/30/2023
Date Made Active in Reports: 04/03/2023
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 03/30/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Varies

AQUEOUS FOAM NRC: Aqueous Foam Related Incidents Listing

The National Response Center (NRC) serves as an emergency call center that fields initial reports for pollution and railroad incidents and forwards that information to appropriate federal/state agencies for response. The spreadsheets posted to the NRC website contain initial incident data that has not been validated or investigated by a federal/state response agency. Response center calls from 1990 to the most recent complete calendar year where there was indication of Aqueous Film Forming Foam (AFFF) usage are included in this dataset. NRC calls may reference AFFF usage in the ?Material Involved? or ?Incident Description? fields.

Date of Government Version: 04/27/2023
Date Data Arrived at EDR: 04/27/2023
Date Made Active in Reports: 05/02/2023
Number of Days to Update: 5

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/27/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Varies

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 05/05/2023
Number of Days to Update: 59

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/02/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Varies

AQUEOUS FOAM: Former Fire Training Facility Assessments Listing

Airports shown on this list are those believed to use Aqueous Film Forming Foam (AFFF), and certified by the Federal Aviation Administration (FAA) under Title 14, Code of Federal Regulations (CFR), Part 139 (14 CFR Part 139). This list was created by SWRCB using information available from the FAA. Location points shown are from the latitude and longitude listed on the FAA airport master record.

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 05/23/2023
Number of Days to Update: 77

Source: State Water Resources Control Board
Telephone: 916-341-5455
Last EDR Contact: 06/02/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Varies

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 03/20/2023
Date Data Arrived at EDR: 03/21/2023
Date Made Active in Reports: 06/06/2023
Number of Days to Update: 77
Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 03/21/2023
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing
list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 12/07/2021
Date Data Arrived at EDR: 05/09/2022
Date Made Active in Reports: 05/17/2022
Number of Days to Update: 8
Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 05/08/2023
Next Scheduled EDR Contact: 08/21/2023
Data Release Frequency: Varies

DRYCLEAN NO SONOMA CO DIST: Norther Sonoma County County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Northern Sonoma County Air Pollution Control District.,

Date of Government Version: 04/17/2019
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1475
Source: Santa Barbara County Air Pollution Control District
Telephone: 707-433-5911
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN PLACER CO DIST: Placer County Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Placer County Air Quality Management District.

Date of Government Version: 01/16/2018
Date Data Arrived at EDR: 04/19/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1473
Source: Placer County Air Quality Management District
Telephone: 530-745-2335
Last EDR Contact: 05/11/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN BAY AREA DIST: Bay Area Air Quality Management District Drycleaner Facility Listing
Bay Area Air Quality Management District Drycleaner Facility Listing.

Date of Government Version: 02/20/2019
Date Data Arrived at EDR: 05/30/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1432
Source: Bay Area Air Quality Management District
Telephone: 415-516-1916
Last EDR Contact: 04/24/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN BUTTE CO DIST: Butte County Air Quality Management DistrictDrycleaner Facility Listing
Butte County Air Quality Management DistrictDrycleaner Facility Listing.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1469
Source: Butte County Air Quality Management District
Telephone: 530-332-9400
Last EDR Contact: 04/24/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN CALAVERAS CO DIST: Calaveras County Environmental Management Agency Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Calaveras County Environmental Management Agency.

Date of Government Version: 06/17/2019
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1412
Source: Calaveras County Environmental Management Agency
Telephone: 209-754-6399
Last EDR Contact: 04/24/2023
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

DRYCLEAN EAST KERN DIST: Eastern Kern Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Eastern Kern Air Pollution Control District.

Date of Government Version: 04/17/2019
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1475
Source: Eastern Kern Air Pollution Control District
Telephone: 661-862-9684
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN GLENN CO DIST: Glenn County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Glenn County Air Pollution Control District.

Date of Government Version: 04/17/2019
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1475
Source: Glenn County Air Pollution Control District
Telephone: 530-934-6500
Last EDR Contact: 05/03/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN GRANT: Grant Recipients List
Assembly Bill 998 (AB 998) established the Non-Toxic Dry Cleaning Incentive Program to provide financial assistance to the dry cleaning industry to switch from systems using perchloroethylene (Perc), an identified toxic air contaminant and potential human carcinogen, to non-toxic and non-smog forming alternatives.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 02/04/2021
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 816
Source: California Air Resources Board
Telephone: 916-323-0006
Last EDR Contact: 05/11/2023
Next Scheduled EDR Contact: 08/07/2023
Data Release Frequency: Varies

DRYCLEAN IMPERIAL CO DIST: Imperial County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Imperial County Air Pollution Control District

Date of Government Version: 05/14/2019
Date Data Arrived at EDR: 05/17/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1445
Source: Imperial County Air Pollution Control District
Telephone: 442-265-1800
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN LAKE CO DIST: Lake County Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Lake County Air Quality Management District,

Date of Government Version: 04/29/2019
Date Data Arrived at EDR: 05/07/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1455
Source: Lake County Air Quality Management District
Telephone: 707-263-7000
Last EDR Contact: 05/11/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN MENDO CO DIST: Mendocino County Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Mendocino County Air Quality Management District.

Date of Government Version: 02/08/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1441
Source: Mendocino County Air Quality Management District
Telephone: 707-463-4354
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN MOJAVE DESERT DIST: Mojave Desert Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Mojave Desert Air Quality Management District.

Date of Government Version: 04/17/2019
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1475
Source: Mojave Desert Air Quality Management District
Telephone: 760-245-1661
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN MONTEREY BAY DIST: Monterey Bay Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Monterey Bay Air Quality Management District.

Date of Government Version: 04/17/2019
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1475
Source: Monterey Bay Air Quality Management District
Telephone: 831-647-9411
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN NO COAST UNIFIED DIST: North Coast Unified Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the North Coast Unified Air Quality Management District.

Date of Government Version: 11/30/2016
Date Data Arrived at EDR: 04/19/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1473
Source: North Coast Unified Air Quality Management District
Telephone: 707-443-3093
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN NO SIERRA DIST: Northern Sierra Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Northern Sierra Air Quality Management District,

Date of Government Version: 05/07/2019
Date Data Arrived at EDR: 05/07/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1455
Source: Northern Sierra Air Quality Management District
Telephone: 530-274-9350
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SAN DIEGO CO DIST: San Diego County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the San Diego County Air Pollution Control District.

Date of Government Version: 02/01/2019
Date Data Arrived at EDR: 05/01/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1461
Source: San Diego County Air Pollution Control District
Telephone: 858-586-2616
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SACRAMENTO METO DIST: Sacramento Metropolitan Air Quality Management DistrictDrycleaner Facility Listing
A listing of drycleaner facility locations, for the Sacramento Metropolitan Air Quality Management District.

Date of Government Version: 04/24/2019
Date Data Arrived at EDR: 04/25/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1467
Source: Sacramento Metropolitan Air Quality Management District
Telephone: 916-874-3958
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SANTA BARB CO DIST: Santa Barbara County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Santa Barbara County Air Pollution Control District.

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1475
Source: Santa Barbara County Air Pollution Control District
Telephone: 805-961-8867
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SAN JOAQ VAL DIST: San Joaquin Valley Air Pollution Control District District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the San Joaquin Valley Air Pollution Control District.

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/03/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1459
Source: San Joaquin Valley Air Pollution Control District
Telephone: 559-230-6001
Last EDR Contact: 05/11/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SAN LUIS OB CO DIST: San Luis Obispo County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the San Luis Obispo County Air Pollution Control District.

Date of Government Version: 04/23/2019
Date Data Arrived at EDR: 04/25/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1467
Source: San Luis Obispo County Air Pollution Control District
Telephone: 805-781-5756
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SHASTA CO DIST: Shasta County Air Quality Management District District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Shasta County Air Quality Management District.

Date of Government Version: 04/17/2019
Date Data Arrived at EDR: 04/19/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1473
Source: Shasta County Air Quality Management District
Telephone: 530-225-5674
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN TEHAMA CO DIST: Tehama County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Tehama County Air Pollution Control District.

Date of Government Version: 04/24/2019
Date Data Arrived at EDR: 04/24/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1468
Source: Tehama County Air Pollution Control District
Telephone: 530-527-3717
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN YOLO-SOLANO DIST: Yolo-Solano Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Yolo-Solano Air Quality Management District.

Date of Government Version: 05/31/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1425
Source: Yolo-Solano Air Quality Management District
Telephone: 530-757-3650
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN FEATHER RIVER DIST: Feather River Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Feather River Air Quality Management District.

Date of Government Version: 03/08/2023
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 06/05/2023
Number of Days to Update: 88
Source: Feather River Air Quality Management District
Telephone: 530-634-7659
Last EDR Contact: 03/06/2023
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities
A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 08/27/2021
Date Data Arrived at EDR: 09/01/2021
Date Made Active in Reports: 11/19/2021
Number of Days to Update: 79
Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 06/06/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Annually

DRYCLEAN VENTURA CO DIST: Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Ventura County Air Pollution Control District.

Date of Government Version: 04/16/2019
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1475
Source: Ventura County Air Pollution Control District
Telephone: 805-645-1421
Last EDR Contact: 04/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 02/17/2023
Date Data Arrived at EDR: 02/17/2023
Date Made Active in Reports: 05/09/2023
Number of Days to Update: 81
Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 05/17/2023
Next Scheduled EDR Contact: 09/04/2023
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 02/23/2023
Date Data Arrived at EDR: 02/24/2023
Date Made Active in Reports: 05/15/2023
Number of Days to Update: 80
Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 05/23/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/30/2022
Number of Days to Update: 78
Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 03/16/2023
Next Scheduled EDR Contact: 06/26/2023
Data Release Frequency: Varies

ENF: Enforcement Action Listing
A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 01/10/2023
Date Data Arrived at EDR: 01/18/2023
Date Made Active in Reports: 04/04/2023
Number of Days to Update: 76
Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 04/18/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 01/11/2023
Date Data Arrived at EDR: 01/17/2023
Date Made Active in Reports: 04/04/2023
Number of Days to Update: 77
Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 04/12/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 02/06/2023
Date Data Arrived at EDR: 02/15/2023
Date Made Active in Reports: 05/09/2023
Number of Days to Update: 83
Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/17/2023
Next Scheduled EDR Contact: 08/21/2023
Data Release Frequency: Varies

ICE: ICE
Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 02/13/2023
Date Data Arrived at EDR: 02/14/2023
Date Made Active in Reports: 05/08/2023
Number of Days to Update: 83
Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 05/16/2023
Next Scheduled EDR Contact: 08/28/2023
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List
The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 02/13/2023
Date Data Arrived at EDR: 02/14/2023
Date Made Active in Reports: 05/08/2023
Number of Days to Update: 83
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/16/2023
Next Scheduled EDR Contact: 08/28/2023
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 01/03/2023
Date Data Arrived at EDR: 01/04/2023
Date Made Active in Reports: 03/21/2023
Number of Days to Update: 76
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/04/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Quarterly

HAZNET: Facility and Manifest Data
Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2021
Date Data Arrived at EDR: 07/05/2022
Date Made Active in Reports: 09/19/2022
Number of Days to Update: 76
Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/06/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Annually

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 05/23/2023
Number of Days to Update: 77
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 06/02/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing

The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 01/09/2023
Date Data Arrived at EDR: 02/28/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 78

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 05/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 02/06/2023
Date Data Arrived at EDR: 02/07/2023
Date Made Active in Reports: 04/28/2023
Number of Days to Update: 80

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/08/2023
Next Scheduled EDR Contact: 08/21/2023
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing

A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 02/27/2023
Date Data Arrived at EDR: 02/28/2023
Date Made Active in Reports: 05/22/2023
Number of Days to Update: 83

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 05/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Quarterly

PROC: Certified Processors Database

A listing of certified processors.

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 03/31/2023
Number of Days to Update: 24

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/02/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 03/09/2023
Date Data Arrived at EDR: 03/10/2023
Date Made Active in Reports: 05/24/2023
Number of Days to Update: 75

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 06/06/2023
Next Scheduled EDR Contact: 09/25/2023
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities

Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 01/26/2021
Number of Days to Update: 82

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 04/26/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Annually

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 03/31/2023
Number of Days to Update: 24
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 06/02/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 03/31/2023
Number of Days to Update: 24
Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/05/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 02/11/2021
Date Data Arrived at EDR: 07/01/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 90
Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 04/06/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9
Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/10/2023
Next Scheduled EDR Contact: 08/28/2023
Data Release Frequency: No Update Planned

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13
Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 03/16/2023
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 03/31/2023
Number of Days to Update: 24
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/05/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 03/31/2023
Number of Days to Update: 24

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/05/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing

In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 05/24/2023
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 06/02/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 02/27/2023
Date Data Arrived at EDR: 02/28/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 05/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 01/05/2023
Date Data Arrived at EDR: 01/06/2023
Date Made Active in Reports: 01/10/2023
Number of Days to Update: 4

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/18/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 03/31/2023
Number of Days to Update: 24

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/05/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 03/31/2023
Number of Days to Update: 24

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/05/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 03/31/2023
Number of Days to Update: 24

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/05/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 03/31/2023
Number of Days to Update: 24

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/05/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 03/06/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 03/31/2023
Number of Days to Update: 24

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/05/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Varies

HWTS: Hazardous Waste Tracking System
DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 04/05/2022
Date Data Arrived at EDR: 04/05/2022
Date Made Active in Reports: 04/26/2022
Number of Days to Update: 21

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 04/13/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Varies

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 03/30/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 08/23/2022
Date Data Arrived at EDR: 11/22/2022
Date Made Active in Reports: 02/28/2023
Number of Days to Update: 98

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 05/25/2023
Next Scheduled EDR Contact: 09/04/2023
Data Release Frequency: Varies

PFAS TRIS: List of PFAS Added to the TRI
Section 7321 of the National Defense Authorization Act for Fiscal Year 2020 (NDAA) immediately added certain per- and polyfluoroalkyl substances (PFAS) to the list of chemicals covered by the Toxics Release Inventory (TRI) under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) and provided a framework for additional PFAS to be added to TRI on an annual basis.

Date of Government Version: 03/07/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 03/24/2023
Number of Days to Update: 17

Source: Environmental Protection Agency
Telephone: 202-566-0250
Last EDR Contact: 03/30/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Varies

PCS: Permit Compliance System

PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 03/30/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: No Update Planned

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 03/29/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 12/28/2022
Date Data Arrived at EDR: 12/28/2022
Date Made Active in Reports: 03/17/2023
Number of Days to Update: 79

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 03/29/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 01/31/2023
Date Data Arrived at EDR: 02/02/2023
Date Made Active in Reports: 04/19/2023
Number of Days to Update: 76

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 04/26/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 03/29/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 03/17/2023
Date Data Arrived at EDR: 03/21/2023
Date Made Active in Reports: 06/06/2023
Number of Days to Update: 77

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 03/16/2023
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 04/26/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 12/28/2022
Date Data Arrived at EDR: 01/24/2023
Date Made Active in Reports: 04/10/2023
Number of Days to Update: 76

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 04/19/2023
Next Scheduled EDR Contact: 08/07/2023
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 02/13/2023
Date Data Arrived at EDR: 02/14/2023
Date Made Active in Reports: 05/08/2023
Number of Days to Update: 83

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 05/03/2023
Next Scheduled EDR Contact: 08/07/2023
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/08/2022
Date Data Arrived at EDR: 08/09/2022
Date Made Active in Reports: 09/01/2022
Number of Days to Update: 23

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 04/19/2023
Next Scheduled EDR Contact: 08/07/2023
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 06/28/2021
Date Data Arrived at EDR: 12/21/2021
Date Made Active in Reports: 03/03/2022
Number of Days to Update: 72

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 03/30/2023
Next Scheduled EDR Contact: 07/10/2023
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 04/12/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/12/2021
Date Data Arrived at EDR: 08/12/2021
Date Made Active in Reports: 11/08/2021
Number of Days to Update: 88

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/10/2023
Next Scheduled EDR Contact: 08/28/2023
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 01/13/2023
Date Data Arrived at EDR: 01/17/2023
Date Made Active in Reports: 04/04/2023
Number of Days to Update: 77

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 04/12/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/10/2023
Next Scheduled EDR Contact: 08/28/2023
Data Release Frequency: Varies

KERN COUNTY:

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 01/30/2023
Date Data Arrived at EDR: 02/01/2023
Date Made Active in Reports: 04/19/2023
Number of Days to Update: 77

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 05/10/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 01/30/2023
Date Data Arrived at EDR: 02/01/2023
Date Made Active in Reports: 04/21/2023
Number of Days to Update: 79

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/10/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/03/2020
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/14/2021
Number of Days to Update: 78

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/10/2023
Next Scheduled EDR Contact: 08/28/2023
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 04/27/2023
Date Made Active in Reports: 05/31/2023
Number of Days to Update: 34

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 04/05/2023
Next Scheduled EDR Contact: 07/24/2023
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 07/31/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 80

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 04/12/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 06/06/2023
Next Scheduled EDR Contact: 09/25/2023
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 01/09/2023
Date Data Arrived at EDR: 01/12/2023
Date Made Active in Reports: 03/29/2023
Number of Days to Update: 76

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 03/29/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 01/09/2023
Date Data Arrived at EDR: 01/10/2023
Date Made Active in Reports: 03/23/2023
Number of Days to Update: 72

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/11/2023
Next Scheduled EDR Contact: 07/24/2023
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 12/31/2022
Date Data Arrived at EDR: 01/12/2023
Date Made Active in Reports: 03/29/2023
Number of Days to Update: 76

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 04/05/2023
Next Scheduled EDR Contact: 07/24/2023
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 03/16/2023
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills
This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 01/10/2022
Date Data Arrived at EDR: 01/12/2022
Date Made Active in Reports: 04/04/2022
Number of Days to Update: 82

Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 04/05/2023
Next Scheduled EDR Contact: 07/24/2023
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory
A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 11/01/2022
Date Data Arrived at EDR: 12/14/2022
Date Made Active in Reports: 03/07/2023
Number of Days to Update: 83

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 03/24/2023
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory
A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 11/01/2022
Date Data Arrived at EDR: 12/14/2022
Date Made Active in Reports: 03/07/2023
Number of Days to Update: 83

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 03/24/2023
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 05/26/2021
Date Data Arrived at EDR: 07/09/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 82

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/18/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/05/2023
Next Scheduled EDR Contact: 07/24/2023
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 04/12/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 10/18/2022
Date Data Arrived at EDR: 10/19/2022
Date Made Active in Reports: 01/10/2023
Number of Days to Update: 83

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/12/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/10/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 72

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/10/2023
Next Scheduled EDR Contact: 08/28/2023
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 03/22/2023
Next Scheduled EDR Contact: 07/10/2023
Data Release Frequency: Semi-Annually

MENDOCINO COUNTY:

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/22/2021
Date Data Arrived at EDR: 11/18/2021
Date Made Active in Reports: 11/22/2021
Number of Days to Update: 4

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 05/17/2023
Next Scheduled EDR Contact: 09/04/2023
Data Release Frequency: Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 02/15/2022
Date Data Arrived at EDR: 02/17/2022
Date Made Active in Reports: 05/11/2022
Number of Days to Update: 83

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 04/26/2023
Next Scheduled EDR Contact: 08/28/2023
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 02/22/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 05/17/2023
Next Scheduled EDR Contact: 09/04/2023
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 10/04/2021
Date Data Arrived at EDR: 10/06/2021
Date Made Active in Reports: 12/29/2021
Number of Days to Update: 84

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 03/22/2023
Next Scheduled EDR Contact: 07/10/2023
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/17/2023
Next Scheduled EDR Contact: 09/04/2023
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/17/2023
Next Scheduled EDR Contact: 09/04/2023
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 01/23/2023
Date Data Arrived at EDR: 01/25/2023
Date Made Active in Reports: 04/10/2023
Number of Days to Update: 75

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 05/03/2023
Next Scheduled EDR Contact: 08/07/2023
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/02/2023
Date Data Arrived at EDR: 02/09/2023
Date Made Active in Reports: 05/09/2023
Number of Days to Update: 89

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/03/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 02/02/2023
Date Data Arrived at EDR: 02/09/2023
Date Made Active in Reports: 05/04/2023
Number of Days to Update: 84

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/03/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/06/2023
Date Data Arrived at EDR: 02/09/2023
Date Made Active in Reports: 05/03/2023
Number of Days to Update: 83

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/03/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 08/26/2022
Date Data Arrived at EDR: 08/29/2022
Date Made Active in Reports: 11/15/2022
Number of Days to Update: 78

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 05/08/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 04/12/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 01/18/2023
Date Data Arrived at EDR: 01/19/2023
Date Made Active in Reports: 04/04/2023
Number of Days to Update: 75

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/06/2023
Next Scheduled EDR Contact: 09/25/2023
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 01/18/2023
Date Data Arrived at EDR: 01/19/2023
Date Made Active in Reports: 04/04/2023
Number of Days to Update: 75

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/06/2023
Next Scheduled EDR Contact: 09/25/2023
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 11/07/2022
Date Data Arrived at EDR: 12/21/2022
Date Made Active in Reports: 03/16/2023
Number of Days to Update: 85

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 03/30/2023
Next Scheduled EDR Contact: 07/10/2023
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 11/07/2022
Date Data Arrived at EDR: 12/09/2022
Date Made Active in Reports: 03/01/2023
Number of Days to Update: 82

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 03/30/2023
Next Scheduled EDR Contact: 07/10/2023
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 02/08/2023
Date Data Arrived at EDR: 02/09/2023
Date Made Active in Reports: 05/04/2023
Number of Days to Update: 84

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 04/26/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 02/15/2023
Date Data Arrived at EDR: 02/15/2023
Date Made Active in Reports: 05/09/2023
Number of Days to Update: 83

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 04/26/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 02/27/2023
Date Data Arrived at EDR: 02/28/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 78

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 05/25/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/27/2021
Date Data Arrived at EDR: 03/04/2022
Date Made Active in Reports: 05/31/2022
Number of Days to Update: 88

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 04/04/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/22/2021
Date Data Arrived at EDR: 10/19/2021
Date Made Active in Reports: 01/13/2022
Number of Days to Update: 86

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 04/12/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

SAN DIEGO CO SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 05/23/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 02/03/2023
Date Data Arrived at EDR: 02/07/2023
Date Made Active in Reports: 04/26/2023
Number of Days to Update: 78

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 04/26/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Varies

LUST SAN FRANCISCO: Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 04/26/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 04/28/2023
Date Data Arrived at EDR: 04/28/2023
Date Made Active in Reports: 05/03/2023
Number of Days to Update: 5

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 04/26/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Quarterly

SAN FRANCISO COUNTY:

SAN FRANCISCO MAHER: Maher Ordinance Property Listing
a listing of properties that fall within a Maher Ordinance, for all of San Francisco

Date of Government Version: 10/11/2022
Date Data Arrived at EDR: 10/14/2022
Date Made Active in Reports: 01/04/2023
Number of Days to Update: 82

Source: San Francisco Planning
Telephone: 628-652-7483
Last EDR Contact: 04/13/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 06/06/2023
Next Scheduled EDR Contact: 09/25/2023
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 02/09/2023
Date Data Arrived at EDR: 02/10/2023
Date Made Active in Reports: 05/05/2023
Number of Days to Update: 84

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/10/2023
Next Scheduled EDR Contact: 08/28/2023
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/10/2023
Next Scheduled EDR Contact: 06/19/2023
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 05/31/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28
Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/10/2023
Next Scheduled EDR Contact: 08/28/2023
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 02/10/2023
Date Data Arrived at EDR: 02/10/2023
Date Made Active in Reports: 05/05/2023
Number of Days to Update: 84
Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 05/10/2023
Next Scheduled EDR Contact: 08/28/2023
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22
Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13
Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 05/17/2023
Next Scheduled EDR Contact: 09/04/2023
Data Release Frequency: No Update Planned

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/10/2023
Next Scheduled EDR Contact: 08/28/2023
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/10/2023
Next Scheduled EDR Contact: 08/28/2023
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 05/23/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 09/15/2021
Date Data Arrived at EDR: 09/16/2021
Date Made Active in Reports: 12/09/2021
Number of Days to Update: 84

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 05/23/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 07/02/2021
Date Data Arrived at EDR: 07/06/2021
Date Made Active in Reports: 07/14/2021
Number of Days to Update: 8

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 06/28/2021
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 06/30/2021
Date Data Arrived at EDR: 06/30/2021
Date Made Active in Reports: 09/24/2021
Number of Days to Update: 86

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 03/16/2023
Next Scheduled EDR Contact: 07/03/2023
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 02/08/2022
Date Data Arrived at EDR: 02/10/2022
Date Made Active in Reports: 05/04/2022
Number of Days to Update: 83

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 04/05/2023
Next Scheduled EDR Contact: 07/24/2023
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 08/03/2022
Date Data Arrived at EDR: 08/25/2022
Date Made Active in Reports: 11/14/2022
Number of Days to Update: 81

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 05/23/2023
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 11/17/2022
Date Data Arrived at EDR: 11/21/2022
Date Made Active in Reports: 02/10/2023
Number of Days to Update: 81

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 05/10/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 01/13/2023
Date Data Arrived at EDR: 01/17/2023
Date Made Active in Reports: 04/04/2023
Number of Days to Update: 77

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 04/12/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 10/07/2022
Date Data Arrived at EDR: 10/07/2022
Date Made Active in Reports: 12/21/2022
Number of Days to Update: 75

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 05/10/2023
Next Scheduled EDR Contact: 08/14/2023
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 04/12/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 12/27/2022
Date Data Arrived at EDR: 01/26/2023
Date Made Active in Reports: 04/19/2023
Number of Days to Update: 83

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/17/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/22/2023
Next Scheduled EDR Contact: 07/10/2023
Data Release Frequency: No Update Planned

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/03/2023
Next Scheduled EDR Contact: 08/21/2023
Data Release Frequency: No Update Planned

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 12/27/2022
Date Data Arrived at EDR: 01/26/2023
Date Made Active in Reports: 04/19/2023
Number of Days to Update: 83

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 04/17/2023
Next Scheduled EDR Contact: 07/31/2023
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 02/27/2023
Date Data Arrived at EDR: 03/07/2023
Date Made Active in Reports: 05/24/2023
Number of Days to Update: 78

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/02/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 12/19/2022
Date Data Arrived at EDR: 12/27/2022
Date Made Active in Reports: 03/17/2023
Number of Days to Update: 80

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 03/22/2023
Next Scheduled EDR Contact: 07/10/2023
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 01/26/2023
Date Data Arrived at EDR: 01/27/2023
Date Made Active in Reports: 04/19/2023
Number of Days to Update: 82

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 05/03/2023
Next Scheduled EDR Contact: 08/07/2023
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 11/16/2022
Date Data Arrived at EDR: 11/16/2022
Date Made Active in Reports: 02/06/2023
Number of Days to Update: 82

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/11/2023
Next Scheduled EDR Contact: 08/21/2023
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 03/30/2023
Next Scheduled EDR Contact: 07/17/2023
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 10/29/2021
Date Made Active in Reports: 01/19/2022
Number of Days to Update: 82

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 04/27/2023
Next Scheduled EDR Contact: 08/07/2023
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/06/2023
Next Scheduled EDR Contact: 07/24/2023
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/18/2022
Number of Days to Update: 80

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/10/2022
Next Scheduled EDR Contact: 08/28/2023
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 06/01/2023
Next Scheduled EDR Contact: 09/18/2023
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.
Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

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

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 from the U.S. Fish and Wildlife Service.

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

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

STREET AND ADDRESS INFORMATION

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CORRESPONDENCE

Form Center

By signing in or creating an account, some fields will auto-populate with your information and your submitted forms will be saved and accessible to you.

Request for Public Records

Sign in to Save Progress

PUBLIC RECORDS REQUEST

The Cosumnes Community Services District (District) understands and supports the public's right to access the public records created and maintained by the District in the course of their normal business. It is the goal of the District to provide service in a transparent manner, which includes timely access to requested records in accordance with the California Public Records Act (PRA), Government Code Sections 6250 to 6270. California law designates that the majority of the District's records be available for public disclosure. These laws also stipulate certain types of records that are exempt from public disclosure, such as personnel records, records related to current litigation or current real estate negotiations, and such.

INSTRUCTIONS

Complete the following information and click submit when done.

CONTACT INFORMATION

Select Language

Google Translate

First Name*

Travis

Last Name*

Stansbery

Address

1172 Saranap Ave. Apt. 22B

(Optional, required for response by mail)

City

Walnut Creek

(Optional, required for response by mail)

State

CA

(Optional, required for response by mail)

Zip

94595

(Optional, required for response by mail)

Phone Number

9493024403

(Optional, required for response by phone)

Email Address

records@pei-env.com

(Optional, required for response by email)

Contact Preference

Please select your preferred method of communication and receipt of records.

- [x] Email
- [ ] Phone
- [ ] US Mail

RECORDS REQUESTED

Please select the best category that best fits the records request. If you are unaware of the category, select "N/A". To expedite the request, please enter one (1) Public Request for each category. Thank you.

CATEGORY*

- [ ] Administrative Services
- [x] Fire / Emergency Medical
- [ ] Finance
- [ ] Recreation / Community Services
- [x] Other
- [ ] Park Operations
- [ ] N/A

INCIDENT

Is this record request related to an incident?

- ( ) Yes
- (•) No

Describe the records you wish to receive. In order to expedite the search for the records, please be as specific as possible.

Google Translate

REQUEST DESCRIPTION*

Pursuant to a Phase I ESA, I would like to review all relevant documentation (e.g., CUPA, HAZMAT and/or wastes, AST/UST, LUST, permitting, inspections, violations, complaints, etc.) that may be on file for the following property:

Undeveloped Parcels
East of Waterman Road
APNs: 127-0150-001-, -002, and -009
Elk Grove, CA

SUBMIT REQUEST

Date of Request

07/03/2023

Signature of person making the request

Travis Stansbery

I/We the undersigned, request documents as indicated and agree to pay for copies provided at the rate of ten cents ($0.10) per page or the cost of reproduction to use an outside vendor if necessary plus shipping. Payments can be made via check or cash.

Do you agree?*

By clicking I agree, you agree and acknowledge that 1) your application will not be "Signed" in the sense of a traditional paper document and 2) By signing in this alternate manner, you agree that your electronic signature is valid and binding upon you to the same force and effect as a handwritten signature.

☑ I Agree

protected by reCAPTCHA
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☑ Receive an email copy of this form.

Email address

records@pei-env.com

This field is not part of the form submission.

Submit

* indicates a required field

Google Translate

Gmail

Records Request <records@pei-env.com>

Online Form Submittal: Request for Public Records

1 message

Jenna Angus <JennaAngus@cosumnescsd.gov> Mon, Jul 10, 2023 at 12:44 PM
To: "records@pei-env.com" <records@pei-env.com>
Cc: Elenice Gomez <EleniceGomez@cosumnescsd.gov>, Amber Anderson <AmberAnderson@cosumnescsd.gov>

Hello,

I received your request for records for the property located at APNs: 127-0150-001, 127-0150-002, 127-0150-009

We have no open records for this address/ APN.

If you have additional requests, Sacramento County is the CUPA for our jurisdiction. For further information on storage tanks, hazardous materials, storage, spills, etc., please contact the County of Sacramento, Environmental Management District, 11080 White Rock Rd., Suite 200 Rancho Cordova, Ca 95670. The public file review number is 916-875-8484.

Thank you.

Jenna Angus
Fire Inspector

Fire Department

Cosumnes Community Services District

Phone 916-405-7100
Mobile 916-214-4997
Email JennaAngus@CosumnesCSD.gov
Website CosumnesCSD.gov
Address 10573 E. Stockton Blvd., Elk Grove, CA 95624

From: noreply@civicplus.com <noreply@civicplus.com>
Sent: Monday, July 3, 2023 1:05 PM

To: Elenice Gomez <EleniceGomez@cosumnescsd.gov>
Subject: Online Form Submittal: Request for Public Records

[CAUTION-EXTERNAL SENDER]

Request for Public Records

PUBLIC RECORDS REQUEST
The Cosumnes Community Services District (District) understands and supports the public's right to access the public records created and maintained by the District in the course of their normal business. It is the goal of the District to provide service in a transparent manner, which includes timely access to requested records in accordance with the California Public Records Act (PRA), Government Code Sections 6250 to 6270. California law designates that the majority of the District's records be available for public disclosure. These laws also stipulate certain types of records that are exempt from public disclosure, such as personnel records, records related to current litigation or current real estate negotiations, and such.

INSTRUCTIONS
Complete the following information and click submit when done.

CONTACT INFORMATION

First Name	Travis
Last Name	Stansbery
Address	1172 Saranap Ave. Apt. 22B
City	Walnut Creek
State	CA
Zip	94595
Phone Number	9493024403
Email Address	records@pei-env.com

Contact Preference	Email

RECORDS REQUESTED
Please select the best category that best fits the records request. If you are unaware of the category, select "N/A". To expedite the request, please enter one (1) Public Request for each category. Thank you.

CATEGORY	Fire / Emergency Medical, Other
INCIDENT	No

Describe the records you wish to receive. In order to expedite the search for the records, please be as specific as possible.

REQUEST DESCRIPTION	Pursuant to a Phase I ESA, I would like to review all relevant documentation (e.g., CUPA, HAZMAT and/or wastes, AST/UST, LUST, permitting, inspections, violations, complaints, etc.) that may be on file for the following property: Undeveloped Parcels East of Waterman Road APNs: 127-0150-001-, -002, and -009 Elk Grove, CA

SUBMIT REQUEST

Date of Request	7/3/2023
Signature of person making the request	Travis Stansbery
Do you agree?	I Agree

Email not displaying correctly? View it in your browser.

1172 Saranap Ave. Apt. 22B, Walnut Creek, CA 94595 ph 949)302-4403

June 9, 2023

Central Valley Regional Water Quality Control Board
11020 Sun Center Drive #200
Rancho Cordova, CA 95670
phone (916) 464-3291
fax (916) 464-4645 (all units)
r5s-pra@waterboards.ca.gov

Re: File Search/Review Request

To whom it may concern:

Pursuant to an Environmental Assessment, I would like to determine whether your agency has any information on file for the location(s) listed below (e.g., LUST, SLIC, hazardous material incident, wells, wastewater, etc.), and possibly review any files you may have.

Undeveloped Parcels
East of Waterman Road
APNs: 127-0150-001, -002, and -009
Elk Grove, CA 95624

Thanks in advance for your assistance.

Sincerely,
Pinnacle Environmental, Inc.

Travis Stansbery

Travis Stansbery, EP
Project Manager
Ph: 949)302-4403
e-mail: records@pei-env.com

Gmail

Records Request <records@pei-env.com>

Fw: PRA Pinnacle 8480_6923

Shelton, Brad@Waterboards <Brad.Shelton@waterboards.ca.gov> Mon, Jun 19, 2023 at 7:04 AM
To: "records@pei-env.com" <records@pei-env.com>

Hello,

The subject properties in the attached PRA request are adjacent to Elk Grove Landfill. Recent files for the landfill can be found at the geotracker entry for the site at the link below. Please let me know if you would like additional information about the landfill. Other programs at the CVRWQCB may have other files.

https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=L10008601447

Brad Shelton, P.G.
Senior Engineering Geologist
Title 27 Permitting and Mining Unit
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive, Suite 200
Rancho Cordova, California 95670
916-464-1588

From: Saldana, Margie@Waterboards <Margie.Saldana@Waterboards.ca.gov>
Sent: Friday, June 9, 2023 12:43 PM
To:

APNs:
127-0150-001, -002, -009
Elk Grove CA

1172 Saranap Ave. Apt. 22B, Walnut Creek, CA 94595 * ph 949)302-4403

June 9, 2023

Dept. of Toxic Substances Control
8800 Cal Center Drive
Sacramento, CA 95826
Phone (916) 255-3758
pubreqact@dtsc.ca.gov

Re: File Search/Review Request

To whom it may concern:

Pursuant to a Phase I Assessment, I would like to determine whether your agency has any information on file for the location(s) listed below, and review or obtain copies of any files you may have.

Undeveloped Parcels
East of Waterman Road
APNs: 127-0150-001, -002, and -009
Elk Grove, CA 95624

Thank you in advance for your assistance.

Sincerely,
Pinnacle Environmental, Inc.

Travis Stansbery

Travis Stansbery
Project Manager
Ph: 949)302-4403
Email: records@pei-env.com

Yana Garcia
Secretary for
Environmental Protection

Department of Toxic Substances Control

Meredith Williams, Ph.D.
Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Gavin Newsom
Governor

June 9, 2023

Travis Stansbery
Pinnacle Environmental Inc
records@pei-env.com

Public Records Request Number: 1-060923-01
Location(s): APNs: 127-0150-001, -002, & -009, Elk Grove, CA 95624

Dear Requestor:

On June 9, 2023 the Department of Toxic Substances Control (DTSC) received your email of June 9, 2023 requesting records under the Public Records Act. We were unable to locate an address in the county database using the APNs provided and we are unable to search our records using APNs as our databases do not include this information. If you have a specific address or cross streets, please let us know.

A large number of our records are available on EnviroStor, an online database that provides non-confidential, public access to DTSCs data management system. It tracks our cleanup, permitting, enforcement, and investigation efforts at hazardous waste facilities and sites with known or suspected contamination issues. EnviroStor is available 24/7, 365 days a year. The data reflects the latest updates as they are entered in the system. Access it from your computer or smartphone, the local library – anywhere Internet access is available. Just go to www.envirostor.dtsc.ca.gov. You'll find a step-by-step tour of EnviroStor under the "How to Use EnviroStor" menu on the website.

If you have any questions or would like further information regarding your request, please contact me at 916-255-4159 or via email at PubReqAct@dtsc.ca.gov.

Sincerely,
Julee Moua
Julee Moua
Regional Records Coordinator

Gmail

Records Request <records@pei-env.com>

City of Elk Grove, CA Public Records Request Records Request PRA-2023-231 No Responsive Records

Brandy Carpenter (Elk Grove, CA) <elkgroveca@justfoia.com> Wed, Jun 21, 2023 at 9:52 AM
Reply-To: 8d8d162d-8c35-490f-87fc-f82109e0eed6.elkgroveca@request.justfoia.com
To: records@pei-env.com

RE: Record Request Request Number: PRA-2023-231 Submitted on: 6/9/2023 at 10:00:55 am

Dear Requestor,

The (3) parcels are undeveloped and therefore the City has no building permits responsive to your request. We apologize that we were not able to help you in your research.

If you feel that this is an error, please contact the Office of the City Clerk or submit a new request with additional information about the records you are seeking.

Please let us know if you need additional information; this completes the City's response to this request for public records.

Sincerely,

Brenda Haggard, Assistant City Clerk

Office of the City Clerk
City of Elk Grove
8401 Laguna Palms Way
Elk Grove, CA. 95758
(916) 627-3453
bhaggard@elkgrovecity.org

* denotes a required field

Request for Public Records

8401 Laguna Palms Way - Elk Grove, CA. 95758
Phone: (916) 478-3635 Fax: (916) 627-4400
Email: cityclerk@elkgrovecity.org

Name of Requestor Travis Stansbery

Email records@pei-env.com

Phone 9493024403

Address 1172 Saranap Ave. Apt. 22B

City Walnut Creek

State CA

Zip 94595

Description of Request (Be as specific as possible, including name, dates, case numbers, etc, if known.)*

Pursuant to a Phase I ESA, I would like to review any relevant fire department records (e.g., CUPA, HAZMAT and/or wastes, AST/UST, LUST, inspections, permitting, violations, complaints, etc.) for the following properties:

Undeveloped Parcels
East of Waterman Road
APNs: 127-0150-001, -002, and -009

I request (*select one*):

Electronic copies when available; otherwise paper copies

☑ **By checking this box, I / We the undersigned, request documents as indicated and agree to pay for copies provided at the rate of ten cents ($0.10) each page or the cost of reproduction to use an outside vendor if necessary.**

Notice: This form and the information provided by the requesting party is a public record subject to public disclosure. The requestor will be notified of the availability of records, which are subject to legal review, pursuant to the provisions of the California Public Records Act. City will provide an estimated cost of any copies requested. Records not retrieved within fifteen (15) days of notification of the availability of records will be returned to their storage location. A new public records request will be required to initiate a new search and retrieval of

Attachments

If you have any supplemental information you would like to provide as a part of this request (i.e. letters, emails, etc.) please add them below:

Gmail

Records Request <records@pei-env.com>

City of Elk Grove Public Records Request PRA-2023-247 - Response

1 message

JustFOIA Notification <donotreply@request.justfoia.com> Wed, Jun 21, 2023 at 3:26 PM
To: records@pei-env.com

Dear Requestor,

Fire Department records for properties located in Elk Grove are maintained by the Cosumnes Community Services District Fire Department, a regional agency separate and distinct from the City of Elk Grove. Records may be requested via their website at https://yourcsd.com/fire.

Since this is a notification only email, please contact us at cityclerk@elkgrovecity.org if you need additional information at this time.

Thank you.

City of Elk Grove

Office of the City Clerk
8401 Laguna Palms Way
Elk Grove, CA 95758

**Note: This is an automated email notification. Please do not respond to this email.*

* denotes a required field

Request for Public Records

8401 Laguna Palms Way - Elk Grove, CA. 95758
Phone: (916) 478-3635 Fax: (916) 627-4400
Email: cityclerk@elkgrovecity.org

Name of Requestor Travis Stansbery

Email records@pei-env.com

Phone 9493024403

Address 1172 Saranap Ave. Apt. 22B

City Walnut Creek

State CA

Zip 94595

Description of Request (Be as specific as possible, including name, dates, case numbers, etc, if known.)*

Pursuant to a Phase I ESA, I would like to review all building permits (permits only; no copyrighted materials such as plans or calculations are wanted) and fire department records (e.g., CUPA, AST/UST, LUST, permitting, inspections, violations, complaints, etc.) for the following property:

Undeveloped Parcels
East of Waterman Road

I request (*select one*):

Electronic copies when available; otherwise paper copies

☑ **By checking this box, I / We the undersigned, request documents as indicated and agree to pay for copies provided at the rate of ten cents ($0.10) each page or the cost of reproduction to use an outside vendor if necessary.**

Notice: This form and the information provided by the requesting party is a public record subject to public disclosure. The requestor will be notified of the availability of records, which are subject to legal review, pursuant to the provisions of the California Public Records Act. City will provide an estimated cost of any copies requested. Records not retrieved within fifteen (15) days of notification of the availability of records will be returned to their storage location. A new public records request will be required to initiate a new search and retrieval of

Attachments

If you have any supplemental information you would like to provide as a part of this request (i.e. letters, emails, etc.) please add them below:

To add files, drag & drop or **choose files**...

SUBMIT

Request a public record

Documents, photos, emails, texts, videos, data and other records.

Request Description

Pursuant to a Phase I ESA, I would like to review any relevant documentation (e.g., CUPA, AST/UST, LUST, permitting, violations, complaints, inspections, etc.) for the following property:

Undeveloped Parcels
East of Waterman Road
APNs: 127-0150-001, -002, and -009

Data on building permits is available on our Open Data Portal.

Upload and attach files (optional)

Choose file(s)

Department
Environmental Management

Your information

Who can see my personal information?

Email
records@pei-env.com
Name
Travis Stansbery
Phone

9493024403

Street address

1172 Saranap Ave. Apt. 22B

City

Walnut Creek

State

California

Zip

94595

Company

Pinnacle Environmental

Make request

* Indicates required field

Tips

- Don't put personal information, like your social security number in your public request.
- If you don't know the name of the record, describe the information you believe is contained in it.

NextRequest
POWERED BY CIVICPLUS

Gmail

Records Request <records@pei-env.com>

[Document Released] Sacramento County public records request #23-2361

1 message

Sacramento County Public Records <messages@nextrequest.com> Mon, Jun 12, 2023 at 3:53 PM
Reply-To: saccounty_23-2361-requester-notes@inbound.nextrequest.com
To: records@pei-env.com

-- Attach a non-image file and/or reply ABOVE THIS LINE with a message, and it will be sent to staff on this request. --

Sacramento County Public Records

Documents have been released for record request #23-2361 along with the following message:

The Environmental Management Department records that were located have been released on the website. Thank you.
Peggy Silva, Administrative Services Officer – EMD

- Correspondence_0 WATERMAN ROAD_DAVE PRINGLE_Abandoned Wells_WP0049004_7-13-2015 12-00-00 AM.pdf
- Correspondence_0 WATERMAN ROAD_DAVE PRINGLE_Abandoned Wells_WP0049004_5-20-2015 12-00-00 AM.pdf
- Correspondence_0 WATERMAN ROAD_DAVE PRINGLE_Abandoned Wells_WP0049004_7-27-2010 12-00-00 AM.pdf
- Correspondence_0 WATERMAN ROAD_DAVE PRINGLE_Wells_WP0049004_9-26-2013 12-00-00 AM.pdf
- Inspection Reports_0 WATERMAN ROAD_DAVE PRINGLE_Abandoned Wells_WP0049004_7-13-2015 12-00-00 AM.pdf
- Permit_0 WATERMAN ROAD_DAVE PRINGLE_Wells_WP0049004_7-23-2013 12-00-00 AM.pdf
- Permit_0 WATERMAN ROAD_DAVE PRINGLE_Wells_WP0049004_3-29-2011 12-00-00 AM.PDF

View Request 23-2361

https://saccounty.nextrequest.com/requests/23-2361

Settings

Public Information Request Form

First Name	Travis
Last Name	Stansbery
Company	Pinnacle Environmental
Address	1172 Saranap Ave. Apt. 22B
City	Walnut Creek
State / Province	CA
ZIP/Postal Code	94595
Home Phone	9493024403
Business Phone	
Fax Number	
E-Mail	records@pei-env.com
Facility Description	Undeveloped Parcels east of Waterman Road APNs: 127-0150-001, -002, and -009
Information Description	Pursuant to a Phase I ESA, I would like to review any relevant documentation (e.g., permitting, violations, complaints, inspections, emission data, etc.) that may be on file for the address provided above.
Response Method	○ US Post ◉ E-mail ○ Fax
Attachments	Add Attachment

Save Cancel

Gmail

Records Request <records@pei-env.com>

Sac Metro Air District Public Records Act (PRA) Request 2791 - 06092023 Re APNs: 127-0150-001, -002, and -009

Virginia Muller <VMuller@airquality.org> Mon, Jun 12, 2023 at 11:13 AM
To: "records@pei-env.com" <records@pei-env.com>
Cc: Pat Smith <PSmith@airquality.org>

Dear Travis:

No documents were found related to the above captioned addresses.

Sincerely,

Virginia

Virginia Muller

Legal Assistant II / Clerk of the Hearing Board

Work: (279) 207-1138

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

www.airquality.org

FILE REVIEW INFORMATION

BUILDING PERMITS (SELECTED)

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FIRE DEPT. FILES (SELECTED)

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COUNTY ENVIRONMENTAL HEALTH DEPT. FILES (SELECTED)

Countywide Services Agency

Environmental Management Department

Environmental Compliance Division
Elise Rothschild, Acting Chief

Steven C. Szalay, Interim County Executive
Bruce Wagstaff, Interim Agency Administrator
Val F. Siebal, Department Director

County of Sacramento

July 27, 2010

Pac Capital LLC
10600 White Rock Road 100
Rancho Cordova, CA 95670

To Whom It May Concern:

SUBJECT: 0 WATERMAN ROAD ELK GROVE, CA 95624 (APN: 127-0150-002)

Due to a review of records and/or other information, the Sacramento County Environmental Management Department (EMD) believes it is likely that an abandoned or inactive water well(s) is present on your property.

Abandoned water wells have the potential to entrap people or animals. They may also be conduits that allow surface contamination such as pesticides, fertilizer, nitrates, and bacteria to reach drinking water aquifers and may be used without the property owner's knowledge as disposal sites for debris and/or hazardous waste. As such, it is a violation of Sacramento County Code section 6.28 .020 to allow an abandoned well to exist on a property.

We request that you contact **Derek Jacks** no later than **August 12, 2010**, in order to provide approval for an EMD specialist to gain access to the property or to arrange to meet with the specialist at the property to assess the condition of the well.

Various options exist to property owners found to have abandoned wells on their properties. Due to the cost of proper destruction, owners will often be provided with the option of obtaining inactivation permits for wells no longer in use, provided they are secured to prevent falls/injuries and to prevent possible groundwater contamination. Currently, inactivation permits are provided free of charge to encourage compliance.

Please contact specialist **Derek Jacks** at **(916) 875-8507**.

Sincerely,

Barry Marcus, P.G.
Supervising Environmental Specialist
Sacramento County Environmental Management Dept.
Environmental Compliance Division

BIM:DJ:rjd

W:\Data\WELLS\ABANDONED WELLS\AWP PROPERTY ACCESS LETTERS\DJACKS LETTERS\0 Waterman Road 127-0150-002 7-27-2010.docx

WELL APPLICATION AND PERMIT FORM

ENVIRONMENTAL MANAGEMENT DEPARTMENT – WATER PROTECTION DIVISION
8475 JACKSON ROAD, SUITE 230, SACRAMENTO, CA 95826-3904
TELEPHONE (916) 875-8400 FAX: (916) 875-8513

WELL INSPECTION LINE: (916) 875-8524

IS THIS PERMIT FOR A HAZARDOUS SUBSTANCE INVESTIGATION? ☐ YES ☐ NO

FOR OFFICE USE ONLY

☒ APPROVED ☐ APPROVED W/CONDITIONS (ATTACHED) EXPEDITED PROCESSING? ☐ YES ☐ NO

PERMIT NUMBER(S): 49004

BY: D. JAMES DATE: 3/29/11 DATE RECEIVED: 3-28-11 TOTAL FEE: 0

INITIAL GROUT BY: DATE: RECEIPT NO: Fee waiver DEPTH TO WATER:

FINAL INSPECTION BY: DF DATE: 3/29/11 WELL DEPTH: GROUT DEPTH:

DESTRUCTION BY: DATE: GPS: N 38° 41'30" W: -121° 35'36"

COMMENTS: WELL MEETS INACTIVATIONS REQUIREMENTS AT THIS TIME

SITE ADDRESS: ELK GROVE 95624	
Job Address: 0 WATERMAN ROAD	Nearest Major Cross Street: BETWEEN BOND & ELK GROVE BLVD
Property Owner: PAC CAPITAL, LLC	Parcel Number(s): 127-0150-002
Well Contractor: ROBERT ALLEN NICKEL DRILLING	CA License No.:
Contractor's Address: 9601 COSUMNES ROAD, WILTON, CA 95693	
Well/Boring Identification Number(s):	

TYPE OF WORK: (California C-57 License required unless noted otherwise)

☐ Well construction ☐ Vault box repair (General A or B) ☐ Well destruction (SUPPLEMENT REQUIRED)
☐ Pump replacement (or C-61) ☐ Well repair ☐ Exploratory boring (C-57 if water present)
☒ Well inactivation (Owner only) ☐ Pump repair (or C-61) ☒ Other: Temporary Well Deactivation

INTENDED USE:

☒ Domestic/private ☐ Dewatering ☐ Geotechnical boring
☐ Irrigation/agricultural ☐ Cathodic protection ☐ Environmental boring
☐ Water/vapor monitoring/extraction ☐ Heat exchange ☐ Other: _____
☐ Public water system: _____
(NAME OF WATER PURVEYOR WITH CONTACT NAME AND TELEPHONE NUMBER)

DRILLING METHOD:

☐ Mud rotary ☐ Air Rotary ☐ Cable tool ☐ Auger ☐ Driven ☐ Other: _____

SETBACKS: (Wells only)

Is the well located within 50 feet of a: ☐ sewer line, ☐ stream, ☐ ditch, ☐ drainage course, ☐ pond, or ☐ lake? ☐ No
Is the well located within 100 feet of a: ☐ septic tank, ☐ leach line, ☐ deep trench, or ☐ animal enclosure? ☐ No

SPECIFICATIONS:

BOREHOLE: Diameter: _____ Depth: _____ CASING: Diameter: _____ Depth: _____
Diameter: _____ Depth: _____ CASING: Diameter: _____ Depth: _____
CONDUCTOR: Diameter: _____ Depth: _____ IF STEEL: Gauge: _____ or Thickness: _____
ANNULAR SEAL: Depth: _____ Material: _____ IF PLASTIC: Type: _____ (Must meet ASTM F-480)
TRANSITION SEAL: Material: _____ MULTIPLE COMPLETION? ☐ Yes (DIAGRAM REQUIRED)
COMMENTS: _____

PUMP INSTALLATION/REPAIR:

Contractor: _____
License Number: _____ Type of Pump: _____ Horsepower: _____

I will comply with all Codes, Rules and Regulations of the State and County pertaining to or regulating wells and pumps, call (916) 875-8524 for a grout inspection at least 24 hours prior to the requested appointment time, submit a "Well Completion Report" (if required) within 60 days of the completion of my work so a final inspection can be made, and obtain WPD approval before placing a well in service.

SIGNATURE: Dave Pringle ☒ Property Owner
PRINTED NAME: DAVE PRINGLE ☐ Well Contractor
COMPANY: PAC CAPITAL LLC ☐ Agent (REQUIRES AUTHORIZATION FORM)
MAILING ADDRESS: 10600 WHITE ROCK RD #100, RANCHO CORDOVA, CA 95670
PHONE NUMBER: (916) 631-6500 FIELD PHONE: _____

A SITE PLAN MUST BE SUBMITTED WITH EACH APPLICATION.
PERMIT EXPIRES ONE (1) YEAR AFTER DATE APPROVED (UNLESS EXTENDED)

Countywide Services Agency

Environmental Management Department

Environmental Compliance Division
Elise Rothschild, Chief

County of Sacramento

Steven C. Szalay, Interim County Executive
Bruce Wagstaff, Agency Administrator
Val F. Siebal, Department Director

April 1, 2011

PAC Capital, LLC
c/o Dave Pringle
10600 White Rock Rd. #100
Rancho Cordova, CA 95670

Dear Mr. Pringle:

SUBJECT: EMD WELL INACTIVATION PERMIT #WP0049004
0 WATERMAN ROAD, ELK GROVE, CA 95624 (APN: 127-0150-002)

We have received and approved your permit application for the inactivation of a supply well located at the subject site. We have attached a copy of your approved permit for your records.

No further action is necessary at this time.

The term of your permit is two years from the date it was issued, so it will expire on **March 29, 2013**. Prior to that time you will need to either renew the inactivation permit or submit an application for the legal destruction of the well. You may access forms and information online at our "Well Program" website: http://www.emd.saccounty.net/WP/EMDwells.htm.

Thank you for your cooperation. If you have any further questions, please feel free to contact me at (916) 875-8452.

Sincerely,

Susan B. Williams, M.S.
Permitting & Enforcement

SBW:lbc

Attachment (1)

c: Tina McCauslin [Tina.McCauslin@DLB-ASSOC.COM]

W:\DATA\WELLS\INACTIVATION PERMITS\APPROVED INACTIVATION PERMITS\0 WATERMAN RD (WP0049004).DOC

WP0049004 INACTIVATION INSP. 3/29/11

WP0049004 INACTIVATION INSP 3/29/11

WP0049004 INACTIVATION INSP. 3/29/11

General Map Viewer

County of Sacramento

Rivers

Ortho - Street Names

Freeways

County Boundary Lines

Major Streets

Parcel Boundaries

Information For Parcel:
127-0150-002-0000

PROPERTY INFORMATION

APN	12701500020000
Situs Address	0 WATERMAN RD
Postal City/St/Zip	ELK GROVE, CA 95624
Thomas Bros	359 A 6
Landuse Code	IAAAAA
Jurisdiction	ELK GROVE
Sup. District	5-Don Nottoli

OWNERSHIP INFORMATION

Owner	PAC CAPITAL LLC
Owner Mail Address	10600 WHITE ROCK RD 100
Owner Mail City/St/Zip	RANCHO CORDOVA CA 95670
Property Transfer Info.	View Property Transfer Data
Deed	View Property Transfer Document
Owner History	View Owner History

PARCEL DETAIL LINKS

General Info	View General Parcel Data
Districts	View District Data
Recorded Map	No maps are available.
Assessor Maps	View Assessor Map
Parcel History	No Parcel History records available.
Assessment Info	View Assessor Data
Building Permits	No Permit record available.
Parcel Notes	View Parcel Notes
Business Licenses	No Business License Data available.
SHRA Info	View SHRA Data
CUBS Info	No CUBS data available.
Refuse Pickup	No Refuse Pickup schedule available.
Water Meters	No Water Meter Data available.

WELL PERMIT TIME LOG SHEET

FIRST PERMIT: WP0049004

PAID TIME: Fee Waiver (2 hrs)

SITE ADDRESS: 0 Waterman Rd.

Pac Capital LLC

1 Supply Well Inactivation

Date	Specialist	Activity	Hours	Time Remaining
3/28/11	ZBC	Permit processing	.5	1.5
3/29/11	DT	Inactivation Insp.	1.0	0.5
3/31/11	ZBC	Permit processing	.5	~~0~~

OPERATING AGREEMENT

PAC CAPITAL, LLC

A Nevada Limited Liability Company

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OPERATING AGREEMENT

PAC CAPITAL, LLC

A NEVADA LIMITED LIABILITY COMPANY

THIS OPERATING AGREEMENT is made effective as of the 18th day of November, 2005 (the "Effective Date"), by PACIFIC COAST BUILDING PRODUCTS, INC., a California corporation, who is hereinafter called "Member."

RECITALS

The undersigned desires to adopt this Operating Agreement pursuant to Chapter 86 of the Nevada Revised Statutes (the "Act") as the sole Member of the limited liability company (the "Company") identified in Section 1.2.

ARTICLE I

FORMATION OF COMPANY

1.1 Formation. The undersigned intends to form a Nevada limited liability company. The Company shall be formed upon the filing of Articles of Organization (the "Articles") with the Nevada Secretary of State.

1.2 Name. The name of the Company is PAC CAPITAL, LLC, a Nevada limited liability company.

1.3 Principal Place of Business. The Company's registered agent for service of process on the Company in the State of Nevada is the Corporation Trust Company of Nevada with address at 6100 Neil Road, Suite 500, Reno, Nevada 89511. The initial principal place of business and office of the Company shall be at 10600 White Road Road, Suite 100, Rancho Cordova, California 95670. The Company also may have such offices anywhere else, as the Board of Managers from time to time may determine, or the business of the Company may require. The Board of Managers may, from time to time, change the registered agent and principal place of business and office.

1.4 Term. The term of the Company shall commence on the date on which the Articles are filed and shall continue for fifty (50) years unless sooner dissolved as provided by this Agreement, the Articles or the Act.

ARTICLE II

CAPITAL CONTRIBUTIONS

2.1 Initial Capital Contribution. The Member shall contribute initial capital to the Company as set forth in the opening books of account submitted by the Member and duly approved on the Board of Managers.

ARTICLE III

BUSINESS OF COMPANY

3.1 Permitted Businesses. The permitted and authorized business of the Company shall be to:

A. Accomplish any lawful business whatsoever, which shall at any time appear conducive to or expedient for the protection or benefit of the Company and/or its assets;

B. Exercise all other powers necessary to or reasonably connected with the Company's business which may be legally exercised by limited-liability companies under the Act; and

C. Engage in all activities necessary, customary, convenient, and/or incidental to any of the foregoing.

ARTICLE IV

NAMES AND ADDRESSES OF MEMBERS

The name, address and Percentage Interest of the Member is:

Name	Address	Percentage Interest
Pacific Coast Building Products, Inc. ("PCBP")	10600 White Rock Road, Suite 100 Rancho Cordova, CA 95670	100%

ARTICLE V

ADDITIONAL MEMBERS

5.1 Admission of New Members. Any Person may be admitted as a new Member upon such terms and conditions as may be determined by unanimous vote of the existing Member(s).

5.2 Amendment of Company Records. Upon admission of a Member, the Officers shall add the new Member's Name, Address, Percentage Interest and Capital Account to the list of Members kept in the Company's principal executive office.

5.3 Additional Members Bound by Agreement. Before any Person is admitted to the Company as a Member:

A. That Person shall agree in writing to be bound by this Agreement as may be amended; and

B. All the Company's income, expenses, gains or losses for the taxable year of the date of admission shall be allocated between the new Member and the existing Member(s) so as to take into account their varying Percentage Interests and the effective date of the admission of the new Member.

ARTICLE VI

MANAGEMENT

6.1 Board of Managers; Officers. Subject to Section 9.2, below, the management of the business of the Company will be vested in a Board of Managers with duties and obligations as described in this Article VI.

A. The Board of Managers will be composed of Persons appointed in writing pursuant to Section 6.2 (the "Board of Managers").

B. The Board of Managers shall have the responsibility for establishing the operating policies and procedures with respect to the Business and affairs of the Company.

C. The Board of Managers shall have the authority to make all operating decisions save and except for Major Decisions.

D. All Major Decisions are hereby reserved by the Member and shall require the Member's approval and adoption in writing. The Member may, in the Member's sole and absolute discretion, delegate to the Board of Managers the responsibility for making any Major Decision. The Member reserves the right, in the Member's sole discretion, to amend the definition of a Major Decision at any time for any reason.

E. All Major Decisions made by the Member shall bind the Company and the Board of Managers.

6.2 Board of Managers.

A. The Board of Managers will consist of between two (2) and seven (7) Managers, each of whom shall be appointed by the Member. The initial Board of Managers shall consist of DARREN C. MORRIS and DAVID C. PRINGLE.

B. The Managers shall serve at the pleasure of the Member and may be removed with or without cause at any time with or without prior notice by the Member.

C. Each Manager shall have one (1) vote which may be exercised at a meeting or by a written proxy.

D. All matters shall be decided by majority vote.

E. Each Manager shall serve for a one (1), two (2) or three (3) year term as may be determined by the Member in the Member's sole and absolute discretion.

6.3 Board of Managers Meetings and Minutes.

A. Regular meetings of the Board of Managers shall be held at the times and places specified in an annual schedule adopted by the Board which shall provide meetings in person or by teleconference no less frequently than monthly and in person no less frequently than quarterly. No notice need be given of the holding of such scheduled regular meetings.

B. The Board of Managers shall meet at the principal offices of the Company unless otherwise agreed.

C. Special meetings of the Board of Managers shall be held on the call of any Manager upon at least five (5) days' oral or written notice to all Managers. Notice of any meeting of the Board of Managers need not be given to any manager who signs a waiver of notice, whether before or after the meeting, or who attends the meeting without protesting prior thereto or at its commencement, the lack of notice to such manager; provided, however, that a written agenda is still provided at least five (5) days prior to any such meeting.

D. A quorum at any meeting of the Board of Managers which is properly called shall consist of Managers collectively entitled to vote directly, by proxy or power of attorney at least fifty-one percent (51%) of all votes held by the Managers, either in person or by proxy.

E. The Board of Managers may act without a meeting if the action taken is approved in writing by a majority vote and evidenced by a written resolution prepared by the Company's Secretary within ten (10) days of such approval.

F. The Member shall designate a Chairperson of the Board of Managers who shall prepare a written agenda for any and all meetings of the Board of Managers and deliver the same to all Managers at least five (5) days prior to any such meeting.

G. Written minutes shall be taken at each meeting of the Board of Managers and transmitted to each Manager within ten (10) days thereafter for approval and signature.

H. Except for the quarterly meetings, Board of Managers meetings may be held by telephone, and in that event the Company minutes relating thereto shall immediately be prepared, dated and delivered to the Managers for signature.

I. Any Manager may vote on an issue by providing written approval.

6.4 Limitations on Liability of Managers and Officers.

A. Each Manager and Officer must discharge his or her duties as a Manager or Officer in accordance with good faith business judgment in what he or she believes is in the best interests of the Company. Each Manager and Officer is entitled to rely on information, opinions, reports and statements or other data prepared or presented by any Person to the Manager or Officer that the Manager or Officer reasonably believes in good faith to be reliable and competent in the matters presented.

B. No Manager or Officer shall be liable to the Company or to any Member for any loss or damage sustained by the Company or any Member, unless the loss or damage shall have been the result of gross negligence, fraud, recklessness, or gross misconduct by the Manager and/or Officer.

6.5 Approved Plan and Approved Budget.

A. On or before a date set by the Member of each calendar year, the President shall prepare a business plan and submit it to the Board of Managers for approval. Once the Board of Managers and the Member approves the business plan, the business plan will become an Approved Plan.

B. On or before a date set by the Member of each calendar year, the President shall prepare and submit to the Board of Managers for its approval a budget setting forth the

estimated receipts and expenditures (capital, operating and other) of the Company for the year ensuing or other period covered by the budget.

C. Once approved by the Board of Managers, the plan and budget shall be submitted to the Member for final review and approval. Upon approval by the Board of Managers and the Member, the plan and budget shall become the Approved Plan and the Approved Budget.

D. The Officers of the Company shall implement the Approved Plan and shall be authorized, without the need for further approval by the Board of Managers, to make the expenditures and incur the obligations provided in the Approved Budget.

6.6 Signature Authority. The Board of Managers shall determine the signatory authority and limitations thereon for all Officers.

6.7 Removal. The Board of Managers, subject to the written approval of a majority of the Member(s), may declare vacant the office of a manager who has been declared of unsound mind by an order of court or who has been convicted of a felony.

The entire Board of Managers or any individual manager may be removed from office without cause, by a vote of Members holding not less than a majority of the outstanding shares entitled to vote at an election of managers.

In the event an office of a manager is so declared vacant or in case the Board or any one or more managers is so removed, new managers may be elected by the Member(s) at the same meeting.

6.8 Resignations. Any manager may resign upon giving written notice to the Chairman of the Board, the President, the Secretary or the Board of Managers of the Company, effective on tender, unless the notice specifies a later effective date. If the resignation is effective at a later date, a successor may be elected to take office when the resignation becomes effective.

6.9 Vacancies. Except for a vacancy created by the removal of a manager, all vacancies in the Board of Managers, whether caused by resignation, death or otherwise, may be filled by a majority of the remaining managers, though less than a quorum, or by a sole remaining manager, and each manager so elected shall hold office until his successor is elected at an annual, regular or special meeting of the Members. All vacancies, whether created by the removal of a manager, resignation, death, or otherwise, may be filled only by written approval of

the Members. The Members may elect a manager at any time to fill any vacancy not filled by the managers.

6.10 Compensation. No stated salary shall be paid managers, as such, for their services, but, by resolution of the Board of Managers, a fixed sum for serving on the Board or any committee thereof, and the expenses of attendance at any meeting, if any, may be allowed; provided that nothing herein contained shall be construed to preclude any manager from serving the Company in any other capacity and receiving compensation therefor. Committee members of special or standing committees may be allowed like compensation for attending committee meetings.

6.11 Committees. The Board of Managers may, by resolution, adopted by a majority of the authorized number of managers, designate one or more committees, each consisting of two (2) or more managers, to serve at the pleasure of the Board of Managers. The Board of Managers may designate one or more managers as alternate members of any committee, who may replace any absent member at any meeting of such committee. Any such committee, to the extent provided in the resolution of the Board of Managers, shall have all the authority of the Board of Managers in the management of the business and affairs of the Company, except with respect to the following acts: (a) approval of any action requiring Members' approval; (b) filling of vacancies on the Board or any committee; (c) fixing of compensation of managers for serving on the Board or a committee; (d) the adoption, amendment or repeal of the Operating Agreement; (e) adoption, amendment or repeal of any resolution of the Board which by its express terms cannot be so amended or repealed; (f) distribution of money or property to Members, except at a rate or in a periodic amount or within a price range determined by the Board; or (g) the appointment of other committees of the Board or the committee members thereof.

ARTICLE VII

RIGHTS AND OBLIGATIONS OF MEMBERS

7.1 Limitation of Liability. No Member shall be liable for any debt, obligation or liability of the Company.

7.2 Not Proper Party. A Member is not a proper party to proceedings by or against the Company, except where the object is to enforce the Member's rights against or liability to the Company.

7.3 List of Members. If there is ever more than one Member, upon written request of any Member, the Board of Managers shall provide a list in alphabetical order, showing the names, last known addresses and Percentage Interests of the Members.

ARTICLE VIII

APPOINTMENT AND COMPENSATION OF OFFICERS

8.1 Appointment of Officers. The Board of Managers may appoint Officers to act on behalf of the Company at any time subject to written approval by PCBP. The Officers of the Company, if so appointed, may include a Chairperson, President, one or more Executive Vice Presidents, one or more Vice Presidents, Secretary, and Chief Financial Officer. The Officers shall serve at the pleasure of the Board of Managers and may be hired or fired at any time for any reason, with or without cause. The Officers shall exercise only such powers and perform such duties as determined by the Board of Managers.

8.2 Removal, Resignation and Filling of Vacancy of Officers. Any Officer may be removed at any time, either with or without cause, and with or without notice, by the Board of Managers subject to written approval by PCBP. Any Officer may resign at any time by giving thirty (30) days written notice to the Board of Managers. The Board of Managers can appoint Officers to fill and vacancy pursuant to Section 8.1.

8.3 Chairperson. The Chairperson, if such an officer be appointed, shall preside at meetings of the Members and the Board of Managers and exercise and perform such other powers and duties as may be assigned to him or her by the Board of Managers.

8.4 President. Subject to such powers as may be given by the Board of Managers to the Chairperson, the President shall be the Chief Executive Officer of the Company, and shall, subject to the control of the Board of Managers, manage the business of the Company.

8.5 Vice-President. The Vice President, or if there shall be more than one, the Vice Presidents, shall, perform the duties and exercise the powers as determined by the Board of Managers. The Board of Managers may designate one or more Vice Presidents as Executive Vice Presidents.

8.6 Secretary. The Secretary shall attend all meetings of the Board of Managers, and shall record all the proceedings of the meetings in a book to be kept for that purpose, and shall perform like duties for the standing committees when required. The Secretary shall give, or

cause to be given, notice of all meetings of the Board of Managers and shall perform such other duties as may be prescribed by the Board of Managers.

The Secretary shall keep, or cause to be kept, at the principal executive office or at the office of the Company's transfer agent or registrar, as determined by resolution of the Board of Managers, a register, or a duplicate register, showing the names and addresses of the Member(s). If the Company issues certificates of ownership to a Member, then the Secretary shall also maintain on the register the number and date of certificates issued for the same, and the number and date of cancellation of every certificate surrendered for cancellation. The Secretary shall have the duties, powers and responsibilities as determined by the Board of Managers.

8.7 Chief Financial Officer. The Chief Financial Officer shall keep and maintain, or cause to be kept and maintained, adequate and correct books and records of accounts of the properties and business of the Company. The Chief Financial Officer shall have the custody of the funds and securities of the Company, and shall keep full and accurate accounts of receipts and disbursements in books belonging to the Company.

The Chief Financial Officer shall perform such other duties and shall have such other responsibility and authority as may be prescribed elsewhere in this Agreement or from time to time by the Board of Managers.

8.8 Salaries. The salaries of the officers shall be fixed from time to time by the Board of Managers and no officer shall be prevented from receiving such salary by reason of the fact that such officer is also a manager of the Company.

8.9 Officers Holding More Than One Office. Any two or more offices may be held by the same person, but no officer shall execute, acknowledge or verify any instrument in more than one capacity.

ARTICLE IX

VOTING AND MEETINGS OF MEMBERS

9.1 Voting Rights of Members. If there ever is more than one (1) Member, all Major Decisions presented to the Members for vote shall be decided by the majority (more than 50%) vote of all of the Members' Percentage Interests. Each Member shall have one (1) vote for each one percent (1%) Percentage Interest. Members having a fractional Percentage Interest shall have a fraction of one (1) vote for the portion of that Members' Percentage Interest that is less than one percent (1%). A Member may vote on any matter in which it may have a conflict of interest.

9.2 Major Decisions. Each of the following constitutes a "Major Decision:"

A. Administrative Services.

1. General Policies relating to Accounting, Internal Auditing and Tax Functions for the Company and Affiliates;

2. General Human Resources and Development Policies. The Member shall provide the services of an Employee Benefits Coordinator to Company;

3. Policies relating to the Company and Affiliates ground transportation;

4. Administration of Centralized Qualified Deferred Compensation Plans and Administration of Nonqualified Compensation Plans for the Company and Affiliates;

5. Selection of Centralized Professional Advisors such as Accounting, Legal and Insurance Advisors for the Company and Affiliates;

6. Coordination and Supervision of Litigation and Legal Matters for the Company and Affiliates;

7. Insurance and Accounting for Insurance relating to Risk Management for the Company and Affiliates;

8. Centralized Banking and Financing for the Company and Affiliates;

9. Cash Flow Management Policies for the Company and Affiliates; and

10. Coordination of Annual Business Evaluations for the Company and Affiliates.

B. Policy Matters.

1. Selection of Division Management - Board of Managers and Officers;

2. Establishment of guidelines for the Approved Plan and Approved Budget (including repair and maintenance requirements for major equipment/plants) and Financial Reporting;

3. Formulation of Executive Compensation, including;

a. Current Salary.

b. Incentive Bonus.

c. Nonqualified Deferred Compensation.

d. Qualified Deferred Compensation.

4. Establishment of Banking and Financing Guidelines and Policies;

5. Establishment of Policies for Intercompany Transactions;

6. Establishment of Tax Policies;

7. Approval and Implementation of any Mergers, Acquisitions, Divestitures and Reorganizations;

8. Distributions of Available Cash;

9. Approval of Policies on Conflicts of Interest by the Managers and Officers; and

10. Any matter specified in this Operating Agreement as requiring the approval of the Member.

9.3 Meetings of Members. If there is ever more than one Member, meetings of Members may be held at such date, time and place as the Board of Managers may reasonably determine or as provided by law.

ARTICLE X
FINANCIAL

10.1 Capital Accounts.

A. Establishment. A separate Capital Account shall be established and maintained for each Member.

B. General Rules for Maintenance of Capital Accounts. The Capital Accounts shall be maintained in accordance with Treasury Regulations Section 1.704-1(b)(2)(iv), and shall be interpreted and applied in a manner consistent with such Regulations. Any matter relating to maintenance or adjustment to Capital Accounts not addressed in such regulations shall be made in accordance with generally accepted accounting principles.

10.2 Additional Capital Contributions; Loans. The Member, at the Member's sole and absolute discretion, may make Additional Capital Contributions or loans to the Company.

ARTICLE XI
ALLOCATIONS

11.1 Allocation of Net Profits and Net Losses.

A. Net Losses. Net Losses shall be allocated to the Members in proportion to their Percentage Interests.

B. Net Profits. Net Profits shall be allocated to the Members in proportion to their Percentage Interests.

11.2 Special Allocations.

A. Change in Percentage Interests. Notwithstanding the foregoing, in the event any Member's Percentage Interest changes during a year for any reason, including without limitation, the transfer of any interest in the Company, the Officers shall adjust (in a manner the Officers deem appropriate) such allocations of taxable income or loss as necessary to reflect the varying interests of the Members during such year.

B. Mandatory Allocations — Section 704(c). Notwithstanding the foregoing, (i) in the event Code Section 704(c) or Code Section 704(c) principles applicable under Regulations Section 1.704-1(b)(2)(iv) require allocations of income or loss of the Company in a manner different than that set forth above, the provisions of Code Section 704(c) and the Regulations thereunder shall control such allocations among the Members; and (ii) all tax deductions and taxable losses of the Company that, pursuant to Regulations Section 1.704-2(i), are attributable to a Member Nonrecourse Debt for which a Member (or a Person related to such Member under Regulations Section 1.752-4(b)) bears the economic risk of loss (within the meaning of Regulations Section 1.752-2), shall be allocated to such Member as required by Regulations Section 1.704-2(c). Any item of income, gain, loss and deduction with respect to

any property (other than cash) that has been contributed by a Member to the capital of the Company or which has been revalued for Capital Account purposes pursuant to Regulations Section 1.704-1(b)(2)(iv) and which is required or permitted to be allocated to such Member for income tax purposes under Code Section 704(c) so as to take into account the variation between the tax basis of such property and its fair market value at the time of its contribution shall be allocated solely for income tax purposes in the manner so required or permitted under Code Section 704(c) using any method selected by the Board of Managers and the contributing Member that is properly permitted under Regulations Section 1.704-3.

11.3 Excess Nonrecourse Liability Allocation. Pursuant to Regulations Section .752-3(a)(3), solely for purposes of determining each ember's proportionate share of the "excess nonrecourse liabilities" of the Company (as defined in Regulations Section 1.752-3(a)(3)), the Members' respective interests in the Company's profits shall be the Members' respective Percentage Interests.

11.4 Minimum Gain Chargeback. In order to comply with the "minimum gain chargeback" requirements of Regulations Sections 1.704-2(f)(1) and 1.704-2(i)(4), and notwithstanding any other provision of this Agreement to the contrary, except Section 11.2.B, in the event there is a net decrease in a Member's share of Company Minimum Gain or Member Nonrecourse Debt Minimum Gain during a Company taxable year, such Member shall be allocated items of income and gain for that year (and, if necessary, other years) as required by and in accordance with Regulations Sections 1.704-2(f)(1) and 1.704-2(i)(4) before any other allocation is made.

ARTICLE XII

DISTRIBUTIONS

12.1 Available Cash. Distributions of Available Cash shall be made pursuant to guidelines approved by the Member.

12.2 Amounts Withheld. All amounts withheld pursuant to the Code or any provision of any state or local tax law with respect to any payment or distribution to the Company or the Members shall be treated as if such amounts had been distributed to the Member(s).

ARTICLE XIII

ACCOUNTING

13.1 Books of Account. The Company shall furnish and make available all accounting, budgets and records of the Company so as to ensure that the Company and its Members and Managers shall have full and complete information available at all times concerning the economic status of the Company, its costs, revenues and projections concerning future economic performance and profitability. Books of Account shall be maintained at the place of business of the Company, and a complete, true and accurate account and record of all of the business of the Company shall be entered therein. The Books of Account shall be maintained in accordance with generally accepted accounting principles. Records shall be kept as necessary to reflect any difference between book and tax accounting.

13.2 General Accounting Provisions. The Books of Account shall be maintained, and Net Profits and Net Losses shall be calculated, on an accrual basis of accounting.

13.3 Financial Statements. Financial statements shall be prepared and maintained pursuant to guidelines and policies approved by the Member.

13.4 Financial and Tax Reporting. The Company shall prepare statements quarterly or more often as determined by the Board of Managers of actual costs with a comparison of amounts budgeted for such costs under the Approved Plan and Approved Budget. Upon sale of all or portions of the real property, the Company shall provide monthly reports of receipts and expenditures. The Company shall prepare and timely file all tax reports required by law.

13.5 Fiscal Year. The fiscal year of the Company shall commence on April 1 and end on March 31.

13.6 Tax Matters Partner. Pacific Coast Building Products, Inc., shall act as the Tax Matters Partner as defined in Code Section 6231(a)(7).

ARTICLE XIV

RELATIONSHIP OF PARTIES

14.1 Business Opportunities. All restrictions, if any, on competitive business activities shall be described in a separate and independent agreement.

14.2 Certificate of Nonforeign Status. Each Member which is an entity represents and warrants that it is composed of persons who are United States citizens or resident aliens. Upon formation of the Company, each Member will execute a Certificate of Nonforeign Status and

will inform the Company immediately of any changes that would render the certificate invalid or misleading.

ARTICLE XV

DISSOLUTION AND TERMINATION

15.1 Grounds for Dissolution. The Company shall be dissolved, its assets disposed of, and its affairs wound up on the first to occur of the following:

A. The expiration of the term of this Company;

B. The entry of a decree of judicial dissolution;

C. Unanimous vote of the Member(s); or

D. The sale of all or substantially all of the assets owned by the Company.

15.2 No Other Grounds for Dissolution. Any event not described in Section 17.1 shall not cause dissolution of the Company.

15.3 Winding Up. Upon the occurrence of any event specified in Section 17.1, the Company shall continue solely for the purpose of winding up its affairs in an orderly manner, liquidating its assets, and satisfying the claims of its creditors. The Managers or Officers designated by the Board of Managers shall oversee the winding up and give written notice of the commencement of winding up by mail to all known creditors and claimants whose addresses appear on the records of the Company.

15.4 Certificate of Cancellation. Upon the completion of the winding up of the affairs of the Company, including the completion of winding up of the Company, the Company shall cause to be filed a certificate of cancellation of the Articles.

15.5 General Provisions Relating to Distributions, Termination and Dissolution. The proceeds from the liquidation of the Company property shall be applied in the following order:

A. To payment of debts, liabilities and loans of the Company;

B. To setting up of any reserves which the Members may deem necessary for any contingent or unforeseen liabilities or obligations of the Company;

C. To payment of interest and then principal on any loans and advances made to the Company by Members;

D. To the Members proportionately to their Capital Accounts.

15.6 Notice of Dissolution. In the event of dissolution of the Company, the Company shall, within thirty (30) days thereafter, provide written notice thereof to each of the Members and to all other parties with whom the Company regularly conducts business.

15.7 Withdrawal. No Member may withdraw from the Company except by following the buy-sell procedures set forth in Article XV.

15.8 No Action for Dissolution. This Agreement has been drawn carefully to provide fair treatment of all parties and equitable payment in liquidation of the economic interests. Accordingly, except where the Managers, Officers, or Members have failed to liquidate the Company as required by Article XV, each Member hereby waives and renounces such Member's right to initiate legal action to seek the appointment of a receiver or trustee to liquidate the Company or to seek a decree of judicial dissolution of the Company on the ground that dissolution is reasonably necessary for the protection of the rights or interests of the complaining Member. Damages for breach of this Section 15.8 shall be in monetary damages only and the damages may be offset against distributions by the Company to which such Member would otherwise be entitled.

ARTICLE XVI
INDEMNIFICATION AND INSURANCE

16.1 Definitions. For purposes of this Article XVI, the following definitions shall apply:

A. "Indemnification expenses" shall include any of the following:

1. Any expense, liability, penalty of any kind, however derived, or loss, including attorneys' fees, judgments, fines, ERISA excise taxes and penalties, amounts paid or to be paid in settlement;

2. Any interest, assessments, or other charges imposed on any of the items in subsection 1 of this Section 16.1.A; and

3. Any federal, state, local, or foreign taxes imposed as a result of the actual or deemed receipt of any payments under this Article XVI paid or incurred in connection with investigating, defending, being a witness in, or participating in (including on appeal), or preparing for any of the foregoing in, any proceeding relating to any Proceeding.

B. "Proceeding" includes any threatened, pending, or completed action, suit, arbitration, alternative dispute resolution mechanism, inquiry, investigation, administrative hearing or other proceeding (conducted by the Company or any other party), whether civil, criminal, administrative or investigative in nature.

16.2 Indemnification of Officers, Members and Managers.

A. The indemnification of a person under this Article XVI is an obligation of the Company only (i) after claims have been made against the Company's directors' and officers' liability insurance policy (and such policy coverage has been exhausted); (ii) to the extent of the deductible in such insurance policy; and (iii) for which the indemnified person was acting in the course of such person's duties for the Company.

B. To the fullest extent permitted by law, the Company shall indemnify any manager, officer or member of the Company who was or is a party or is threatened to be made a party to, or otherwise becomes involved in, any Proceeding (other than a Proceeding by or in the right of the Company) by reason of the fact that such manager, officer or member of the Company is or was a manager, officer or agent of the Company, or is or was serving at the request of the Company as a manager, officer, or agent of another limited liability company, corporation, partnership, joint venture, trust or other enterprise, against all indemnification expenses, amounts paid in settlement, judgments, fines, and other amounts actually and reasonably incurred by or levied against such manager, officer or member of the Company in connection with any Proceeding (other than an action by or in the right of the Company to procure a judgment in its favor).

C. Notwithstanding anything to the contrary, the manager, officer, or agent of the Company shall not be entitled to indemnification under this Article XVI in connection with any Proceeding initiated by any manager, officer or agent of the Company against (i) the Company; or (ii) any manager, officer or agent of the Company, unless:

D. The Company has joined in or the Board has consented to the initiation of such Proceeding; or

E. The Proceeding is one to enforce indemnification rights under this Article XVI.

16.3 Payment of Expenses in Advance. If so requested by a manager, officer or agent of the Company, the Company shall, within ten (10) business days of such request, advance all

expenses incurred in connection with any Proceeding in which the manager, officer or agent of the Company is made a participant, or threatened to be made a participant, to the manager, officer, or agent of the Company (an "Expense Advance"). Notwithstanding the foregoing, to the extent that the manager, officer or agent of the Company would not be or was not permitted to be so indemnified under applicable law, the Company shall be entitled to be reimbursed by the manager, officer, or agent of the Company for all such amounts, and the manager, officer, or agent of the Company shall reimburse the Company promptly for the same. If the manager, officer or agent of the Company has commenced legal proceedings in a court of competent jurisdiction to secure a determination that the manager, officer or agent of the Company should be indemnified under applicable law, as provided in this Article XVI, any determination that the manager, officer or agent of the Company would not be permitted to be indemnified under applicable law shall not be binding, and the manager, officer or agent of the Company shall not be required to reimburse the Company for any Expense Advance until a final judicial determination is made with respect thereto and all rights of appeal therefrom have been exhausted or have lapsed.

16.4 Mandatory Indemnification. Notwithstanding any other provision of this Article XVI, to the extent that the manager, officer or agent of the Company has been successful on the merits or otherwise in defense of any Proceeding, the manager, officer or agent of the Company shall be indemnified against all expenses, including, but not limited to attorneys' fees, actually and reasonably incurred in connection with that Proceeding.

16.5 Partial Indemnification. If the manager, officer or agent of the Company is entitled under any provision of this Article XVI to indemnification by the Company for a portion of expenses actually and reasonably incurred, but not for the total amount of expenses, the Company shall indemnify the manager, officer or agent of the Company for the portion to which the manager, officer or agent of the Company is entitled.

16.6 Prohibited Indemnification. No indemnification under this Article XVI shall be paid by the Company on account of any action, suit or proceeding in which judgment is rendered against the manager, officer or agent of the Company for an accounting of profits made from the purchase or sale by the manager, officer or agent of the Company of securities of the Company under the provisions of Section 16(b) of the Exchange Act, or similar provisions of any federal, state, or local laws.

16.7 Indemnification for Expenses Incurred in Enforcing Rights. The Company shall indemnify the manager, officer or agent of the Company against any and all expenses. If requested by the manager, officer or agent of the Company, the Company shall, within ten (10) business days of such request, advance to the manager, officer or agent of the Company such expenses as are incurred by the manager, officer or agent of the Company in connection with any claim asserted against or action brought by the manager, officer or agent of the Company for:

A. Indemnification of expenses or advances of expenses by the Company under this Article XVI, or any other agreement, or under applicable law, now or hereafter in effect relating to indemnification for any Proceeding; and/or

B. Recovery under managers' and officers' liability insurance policies maintained by the Company, for amounts paid in settlement.

16.8 Settlement of Proceedings. The Company shall not settle any Proceeding in any manner that would impose any penalty or limitation on the manager, officer or agent of the Company without the manager's, officer's or agent's written consent. Neither the Company nor the manager, officer or agent of the Company will unreasonably withhold its consent to any proposed settlement. The Company shall not be liable to indemnify the manager, officer or agent of the Company under this Article XVI with regard to any judicial award if the Company was not given a reasonable and timely opportunity, at its expense, to participate in the defense of such action; however, the Company's liability under this Article XVI shall not be excused if participation in the Proceeding by the Company was barred by this Article XVI.

ARTICLE XVII

MISCELLANEOUS PROVISIONS

17.1 Notices. Any notice, demand, or communication required or permitted to be given by any provision of this Agreement shall be deemed to have been sufficiently given or served for all purposes if delivered personally to the party or to an executive officer of the party to whom the same is directed or, if sent by registered or certified mail, return receipt requested, postage and charges prepaid, addressed to the Member's and/or Company's address as it appears in the Company's records, as appropriate. Except as otherwise provided herein for notice of meetings of the Members or Managers, any such notice shall be deemed to be given three (3)

business days after the date on which the same was deposited in a regularly maintained receptacle for the deposit of United States mail, addressed and sent as aforesaid.

17.2 Application of Nevada Law. This Agreement, and the application or interpretation hereof as between the Members, Economic Interest holders, Managers, Officers and Members as between or among themselves or as between or among themselves and the Company shall be governed exclusively by the laws of the State of Nevada and case law thereunder.

17.3 Amendments. An amendment to this Agreement shall become effective only at such time as it has been approved in a writing signed by sixty-six and two-thirds percent (66.66%) of the Members.

17.4 Execution of Additional Instruments. Each Member hereby agrees to execute such other and further statements of interest and holdings, designations, powers of attorney and other instruments necessary to comply with any laws, rules or regulations concerning this Agreement.

17.5 Construction. Whenever the singular number is used in this Agreement and when required by the context, the same shall include the plural, and the masculine gender shall include the feminine and neuter genders and vice versa.

17.6 Headings. The headings in this Agreement are inserted for convenience only and are in no way intended to describe, interpret, define, or limit the scope, extent or intent of this Agreement or any provision hereof.

17.7 Waivers. The failure of any party to seek redress for violation of or to insist upon the strict performance of any covenant or condition of this Agreement shall not prevent a subsequent act, which would have originally constituted a violation, from having the effect of an original violation.

17.8 Rights and Remedies Cumulative. The rights and remedies provided by this Agreement are cumulative and the use of any one right or remedy by any party shall not preclude or waive the right to use any or all other remedies. Said rights and remedies are given in addition to any other rights the parties may have by law, statute, ordinance or otherwise.

17.9 Severability. If any provision of this Agreement or the application thereof to any Person or circumstance shall be invalid, illegal or unenforceable to any extent, the remainder of

this Agreement and the application thereof shall not be affected and shall be enforceable to the fullest extent permitted by law.

17.10 Heirs, Successors and Assigns. Each and all of the covenants, terms, provisions and agreements herein contained shall be binding upon and inure solely to the benefit of the parties hereto and their respective Affiliates, heirs, legal representatives, successors and assigns.

17.11 Creditors; Third Parties. None of the provisions of this Agreement shall be for the benefit of or enforceable by any creditors of the Company or third persons who are not a party hereto.

17.12 Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original but all of which shall constitute one and the same instrument.

17.13 Classification of a Partnership. The parties intend that the Company and its Members shall be taxed as a partnership for income tax purposes.

17.14 Further Assurances. The parties will do all acts and execute all documents necessary or convenient for carrying out the intent of this Agreement.

ARTICLE XVIII
DEFINITIONS

For purposes of this Agreement, and unless otherwise specifically herein provided, the following terms shall have the respective meanings indicated in the Act and more specifically defined below. Any references in this Agreement to particular Sections or Articles shall, unless otherwise expressly provided or unless the context otherwise requires, be deemed to refer to the specific Sections or Articles in this Agreement.

18.1 "Act" means the Chapter 86 of the Nevada Revised Statutes, as the same may be amended from time to time.

18.2 "Additional Capital Contributions" means the amount of cash or property which may be contributed from time to time by the Member(s).

18.3 "Affiliate" means, with respect to any Person: (i) any Person directly or indirectly controlling, controlled by or under common control with such Person; (ii) any Person owning or controlling ten percent (10%) or more of the outstanding voting interests of such Person; (iii) any Officer, Manager, executive, or general partner of such Person; or (iv) any Person who is an

Officer, Manager, general partner, trustee, member, or the holder of ten percent (10%) or more of the voting interests of any Person described in clauses (i) through (iii), above.

18.4 "Agreement" means this Operating Agreement, as amended from time to time. Words such as "herein," "hereinafter," "hereof," "hereto," and "hereunder" refer to this Agreement as a whole, unless the context otherwise requires.

18.5 "Approved Budget" means the Company's budget, as updated and amended, that has been approved by the Member.

18.6 "Approved Plan" means the business plan as updated and amended, that has been approved by the Member.

18.7 "Articles" means the Articles of Organization of the Company filed and accepted by the Nevada Secretary of State.

18.8 "Available Cash" means cash of the Company available for distribution to the Members as determined pursuant to policies established by the Member.

18.9 "Board of Managers" shall have the meaning ascribed to it in Section 6.1.

18.10 "Books of Account" means all projections and financial records of the Company, including, but not limited to the budgets and Approved Budgets.

18.11 "Capital Account" means with respect to any Member, the Capital Account maintained in accordance with tax law including Treasury Regulations Section 1.704-1.

18.12 "Capital Contribution" refers to the total amount of cash and the value of property (net of liabilities, if any) contributed to the Company by a Member.

18.13 "Code" means the Internal Revenue Code of 1986, as amended, or any replacement or successor thereof.

18.14 "Company" means PAC CAPITAL, LLC, a Nevada limited-liability company.

18.15 "Company Minimum Gain" shall have the meaning ascribed to the term "partnership minimum gain" in Regulations section 1.704-2(d).

18.16 "Economic Interest" shall mean the right to receive distributions of the Company's assets and allocations of income, gain, loss, deduction, credit and similar items from the Company pursuant to this Agreement and the Act, but shall not include any other rights of a Member, including, without limitation, the right to vote or participate in the management, or, except as provided to a nonmember assignee under Section 86.351 of the Nevada Revised Statutes, any right to information concerning the business and affairs of the Company.

18.17 "Effective Date" means the date that this Agreement is effective.

18.18 "Major Decision" means a decision within the authority of the Member.

18.19 "Manager" means an individual serving on the Board of Managers and shall have the same meaning as attributable to a "Manager" in Section 86.071 of the Nevada Revised Statutes.

18.20 "Members" or "Member" means Person(s) or entity(ies) admitted to the Company as Member(s).

18.21 "Member Nonrecourse Debt" shall have the meaning ascribed to the term "partner nonrecourse debt" in Regulations Section 1.704-2(b)(4).

18.22 "Member Nonrecourse Debt Minimum Gain" shall have the meaning ascribed to the term "partner nonrecourse debt minimum gain" in Regulations Section 1.704-2(i)(2).

18.23 "Net Profits" and "Net Losses" shall mean the income, gain, loss, deductions, and credits of the Company in the aggregate or separately stated, as appropriate, determined in accordance with Regulations Section 1.704-1(b) and under the method of accounting chosen by the Company determined at the close of each fiscal year or portion thereof.

18.24 "Nonrecourse Liability" shall have the meaning ascribed to the term "nonrecourse liability" in Regulations Section 1.752-1(a)(2).

18.25 "Percentage Interest" shall mean the percentage ownership of each Member in the Company.

18.26 "Person" shall mean an individual, partnership, limited partnership, limited liability company, corporation, trust, estate, association or any other entity.

18.27 "Regulations" shall mean the final or temporary regulations that have been issued by the U.S. Department of Treasury pursuant to its authority under the Code, and any successor regulations.

18.28 "Tax Matters Partner" shall have the meaning ascribed to it in Section 13.6.

CERTIFICATE

The undersigned Member hereby agrees, acknowledges and certifies that the foregoing Agreement, excluding the Table of Contents but including the page(s) signed by it, as well as any exhibits, constitutes the Operating Agreement of PAC CAPITAL, LLC, a Nevada limited-liability company.

PACIFIC COAST BUILDING PRODUCTS, INC., A California Corporation

By: _____
DAVID C. PRINGLE
Its: Executive Vice President

By: _____
DARREN C. MORRIS
Its: Chief Financial Officer

Christy. Lisa

From: Tina McCauslin [Tina.McCauslin@DLB-ASSOC.COM]
Sent: Friday, March 25, 2011 2:42 PM
To: Christy. Lisa
Cc: Jacks. Derek
Subject: RE: Well located at APN 127-0150-002
Attachments: Well Deactivation App.Pac Capital.executed,pdf.pdf

Importance: High

Lisa,

Finally, I am forwarding to you the Deactivation Permit signed by Dave Pringle, who is the authorized signatory for Pac Capital, LLC. Please process at your earliest convenience. Due to the delays and return for signature, we appreciate anything you can do to expedite this permit. Please feel free to call me with any questions or to send me the approved permit. Thank you!

Tina McCauslin
9916) 567-6666

From: Christy. Lisa [mailto:ChristyL@saccounty.net]
Sent: Thursday, March 03, 2011 11:55 AM
To: Tina McCauslin
Cc: Jacks. Derek
Subject: FW: Well located at APN 127-0150-002

Hi Tina,

Sorry for the delay in getting back to you. The above parcel is owned by Pac Capital LLC, but the inactivation permit is signed by Dale Waldschmitt of Pacific Coast Companies, Inc. We need an authorized representative from Pac Capital LLC to sign the permit or we need documentation indicating that Mr. Waldschmitt is authorized to sign. Thanks.

Business Entity Detail

Data is updated weekly and is current as of Friday, February 25, 2011

Entity Name:	PAC CAPITAL, LLC
Entity Number:	200536310007
Date Filed:	12/28/2005
Status:	ACTIVE
Jurisdiction:	NEVADA
Entity Address:	10600 WHITE ROCK RD STE 100
Entity City, State, Zip:	RANCHO CORDOVA CA 95670
Agent for Service of Process:	DANIEL S YANAGIHARA
Agent Address:	10600 WHITE ROCK RD STE 100
Agent City, State, Zip:	RANCHO CORDOVA CA 95670

Lisa Christy
County of Sacramento
Environmental Management Department
Environmental Compliance Division
(916) 875-8466
(916) 875-8524 (Well Inspection Line)
(916) 875-8513 (Fax)

From: Jacks. Derek
Sent: Wednesday, March 02, 2011 4:37 PM
To: Christy. Lisa
Subject: FW: Well located at APN 127-0150-002

Lisa- could you follow-up with Tina on this. Thanks!

From: Tina McCauslin [mailto:Tina.McCauslin@DLB-ASSOC.COM]
Sent: Wednesday, March 02, 2011 3:14 PM
To: Jacks. Derek
Subject: RE: Well located at APN 127-0150-002

Derek,

Just my monthly follow-up on the permit. I didn't hear from Lisa Christy, is there anything else you all need to approve this permit?

Tina

From: Jacks. Derek [mailto:JacksD@saccounty.net]
Sent: Tuesday, February 01, 2011 4:58 PM
To: Christy. Lisa
Cc: Tina McCauslin
Subject: FW: Well located at APN 127-0150-002

Hi Tina,

Lisa Christy who processes permit will be in contact with you regarding the permit with a couple of questions.

I apologize for the delay,

Derek

From: Tina McCauslin [mailto:Tina.McCauslin@DLB-ASSOC.COM]
Sent: Tuesday, February 01, 2011 2:17 PM
To: Jacks. Derek
Subject: RE: Well located at APN 127-0150-002

Derek,

Were you able to make the required site visit and sign off on this permit? If so, is there anything you can send me to show the County's acceptance? If not, what is your anticipated schedule?

Tina

From: Jacks. Derek [mailto:JacksD@saccounty.net]
Sent: Thursday, December 30, 2010 3:04 PM
To: Tina McCauslin
Subject: RE: Well located at APN 127-0150-002

Tina,

Thanks for the permit and great photos. I will be required to visit the site for an up close visual. We recently had a meeting about a month ago and it was decided that instead of accepting photos of wells that have been sealed and designated as 'Inactive' (same as deactivated), that we must perform a site visit. We were trying to be efficient and we got caught. On a serious note it was decided that to verify some of these photos/wells, that a specialist would be required to show up to each site and so for purposes of consistency we have been returning and inspecting all sites (in some cases this is necessary and valid and in others- not necessary but we do it anyway). Since it's no problem I'll probably stop on by there in the next week or so.

It sure is recognizable. Nix does good work, I find it is always consistent, which is great for piece of mind and regulatory purposes.

Happy New Year!

From: Tina McCauslin [mailto:Tina.McCauslin@DLB-ASSOC.COM]
Sent: Thursday, December 30, 2010 2:15 PM
To: Jacks. Derek
Subject: RE: Well located at APN 127-0150-002

Derek,

As promised, attached is the signed Temporary Deactivation Permit for the well on APN #127-0150-002 located on Waterman Road. We have also included a couple of photos for your files. Please contact me to let me know if this is sufficient to close the file or if you still need to enter onto the property. It's no problem, just let me know. I can be reached at (916) 567-6666.

PS. Bingo, Robert A. Nix did the work, is it that recognizable?!!

Tina

From: Jacks. Derek [mailto:JacksD@saccounty.net]
Sent: Wednesday, December 22, 2010 12:12 PM
To: Tina McCauslin
Subject: Well located at APN 127-0150-002

Hi Tina,

I think the 2 weeks has passed since we last spoke. I haven't heard from you. What is the status of the well in regard to me receiving permission to enter the property? Also I drove by the site and noticed some work done at the unit. It appears by the configuration of the work done that it maybe either possibly Hedman or Nix that did the work? Regardless of the contractor it doesn't matter, I just need to document the unit and have you or the property owner complete and submit an 'Inactivation permit'.

Email or call me back for a heads up.

Thanks

Derek Jacks
Environmental Specialist
Sacramento County EMD
Environmental Compliance
10590 Armstrong Ave suite A
Mather, CA 95655
Phone: 916-875-8507
Fax: 916-875-8513

COUNTY OF SACRAMENTO EMAIL DISCLAIMER:
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privileged material for the sole use of the intended recipient. Any review,
copying, or distribution of this email (or any attachments thereto) by other
than the County of Sacramento or the intended recipient is strictly prohibited.

If you are not the intended recipient, please contact the sender immediately
and permanently delete the original and any copies of this email and any
attachments thereto.

7-31-13 Yes
Tracy Zertuche

Environmental Management Department
Val F. Siebal, Director

County of Sacramento

Divisions
Environmental Compliance
Environmental Health
916-631-6539

Exp 3-29-13

WP0049004

July 23, 2013

Pac Capital, LLC
c/o Dave Pringle
10600 Whiterock Road, #100
Rancho Cordova, CA 95670

Tracy Zertuche
PCBP Properties, Inc. (Sister Co.)
Same address

CERTIFIED MAIL: 7012 0470 0002 4374 8904

Dear Mr. Pringle:

SUBJECT: WATER WELL INACTIVATION PERMIT EXPIRATION ADMINISTRATIVE EXTENSION

Your supply well inactivation permit from the Sacramento County Environmental Management Department (EMD) has expired. The location of this well is:

0 Waterman Road, Elk Grove, CA 95624 **Permit No. 49004**
(APN: 127-0150-002)

At this time EMD would like to offer you the opportunity to administratively extend your existing well inactivation permit(s) for two additional years at no cost to you. Please consider whether a well is a feasible asset for future use. If not, we encourage you to legally destroy the well under an EMD permit. **If you choose to retain the well(s) for potential future use, please contact Lisa Christy at (916) 875-8466 within 14 days of this letter to complete the administrative extension.**

Sincerely,

Cheryl Hawkins

Cheryl Hawkins, REHS
Supervising Environmental Specialist
Environmental Management Department

CAH:LBC:dw

W:\DATA\WELLS\INACTIVATION PERMITS\INACTIVATION PERMIT EXTENSIONS\0 WATERMAN RD_49004.DOCX

7012 0470 0002 4374 8904

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at www.usps.com®

OFFICIAL USE

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	

Postmark Here

PAC CAPITAL LLC
C/O DAVE PRINGLE
10600 WHITEROCK RD #100
RANCHO CORDOVA CA 95670

PS Form 3800, August 2006 — See Reverse for Instructions

O Waterman Rd.

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

PAC CAPITAL LLC
C/O DAVE PRINGLE
10600 WHITEROCK RD #100
RANCHO CORDOVA CA 95670

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X D. Lick ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* D. Lick | C. Date of Delivery 7-23-13

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

JUL 24 2013

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

7012 0470 0002 4374 8904 | 0 Waterman Rd 2 of 2 (W)

PS Form 3811, February 2004 Domestic Return Receipt WSLB 102595-02-M-1540

0 Waterman Rd.

Environmental Management Department
Val F. Siebal, Director

County of Sacramento

Divisions
Environmental Compliance
Environmental Health

September 26, 2013

PCBP Properties, Inc.
c/o Dave Pringle
10600 White Rock Road, #100
Rancho Cordova, CA 95670

Dear Mr. Pringle:

SUBJECT: EMD WELL INACTIVATION PERMIT #WP0049004
0 WATERMAN ROAD, ELK GROVE, CA 95624 (APN: 127-0150-002)

The Sacramento County Environmental Management Department, (EMD) has approved your request to renew the inactivation permit for the domestic supply well located at the subject site.

Pursuant to Sacramento County Code, Chapter 6.28, Section 6.28.030.H ("Inactivation Permits"), compliance with the requirements below must still be met:

(1) The well shall not allow impairment of the quality of water within the well and groundwater encountered by the well.

(2) The top of the well and the well casing shall be provided with watertight covers that are secured by locks or by other means to prevent their removal without the use of equipment or tools, to prevent unauthorized access, to prevent a safety hazard to humans and animals, and to prevent illegal disposal of wastes in the well.

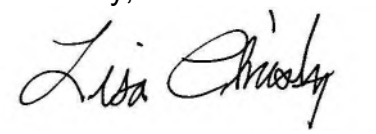
(3) The well shall be marked so as to be easily visible and located, and labeled so as to be easily identified as a well.

(4) The area surrounding the well shall be kept clear of brush, debris, and waste materials.

The term of renewal is two years, so it will expire on **March 29, 2015**. Prior to that time you will need to either renew the inactivation permit, bring the well back into service, or submit an application for the legal destruction of the well. You may access forms and information online at our "Well Program" website: http://www.emd.saccounty.net/WP/EMDwells.htm.

Thank you for your cooperation. If you have any further questions, please feel free to contact me at (916) 875-8466 or Susan Williams at (916) 875-8452.

Sincerely,



Lisa Christy
Environmental Compliance Technician

SBW:LBC

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Environmental Management Department
Val F. Siebal, Director

May 20, 2015

PCBP Props Incorporated
c/o Dave Pringle
10600 White Rock Rd., #100
Rancho Cordova, CA 95670

Dear Mr. Pringle:

SUBJECT: ADMINISTRATIVE EXTENSION: WATER WELL INACTIVATION PERMIT

Your supply well inactivation permit from the Sacramento County Environmental Management Department (EMD) has expired. The location of this well is:

0 WATERMAN ROAD
ELK GROVE, CA 95624
(APN: 127-0150-002-0000)

Permit No. 49004

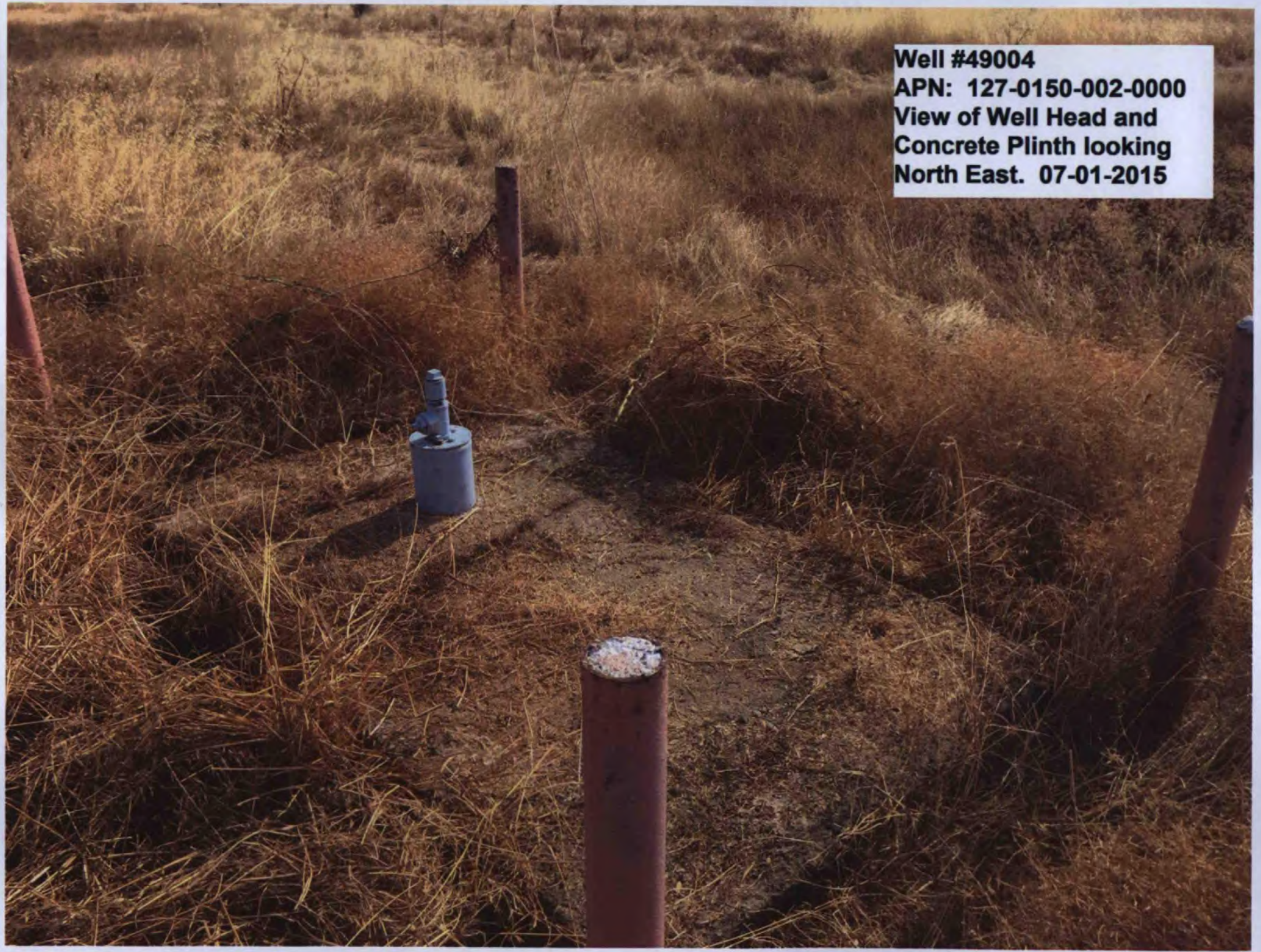
At this time, EMD would like to offer you the opportunity to administratively extend your existing well inactivation permit(s) for two additional years at no cost to you. If you would like to extend your permit, please provide us with photographs confirming that the well is still in the same condition as when we did the final inspection two years ago. Also, please consider whether a well is a feasible asset for future use. If not, we encourage you to legally destroy the well under an EMD permit. **If you choose to retain the well(s) for potential future use, please contact Wendy Yen at (916) 876-6584 within 14 days of this letter.**

Sincerely,

Cheryl Hawkins, REHS
Supervising Environmental Specialist
Environmental Management Department

CAH:wy

W:\Data\WELLS\INACTIVATION PERMITS\INACTIVATION PERMIT EXTENSIONS\0 WATERMAN RD_49004 (2).docx


Well #49004
APN: 127-0150-002-0000
View of Well Head and
Concrete Plinth looking
North East. 07-01-2015

Well #49004
APN: 127-0150-002-0000
Close-up of Well Head
07/01/2015

Environmental Management Department
Val F. Siebal, Director

July 13, 2015

PCBP Properties
c/o Dave Pringle
10600 White Rock Rd #100
Rancho Cordova, CA 95670

Dear Mr. Pringle:

SUBJECT: EMD WELL INACTIVATION PERMIT #WP0049004
0 WATERMAN RD, ELK GROVE, CA 95624 (APN: 127-0150-002-0000)

The Sacramento County Environmental Management Department, (EMD) has approved your request to renew the inactivation permit for the domestic supply well located at the subject site.

Pursuant to Sacramento County Code, Chapter 6.28, Section 6.28.030.H ("Inactivation Permits"), compliance with the requirements below must still be met:

(1) The well shall not allow impairment of the quality of water within the well and groundwater encountered by the well.
(2) The top of the well and the well's casing shall be provided with watertight cover that is secured by locks or by other means to prevent their removal without the use of equipment or tools, to prevent unauthorized access, to prevent a safety hazard to humans and animals, and to prevent illegal disposal of wastes in the well.
(3) The well shall be marked so as to be easily visible and located, and labeled so as to be easily identified as a well.
(4) The area surrounding the well shall be kept clear of brush, debris, and waste materials.

The term of renewal is two years, so it will expire on **March 29, 2017**. Prior to that time you will need to either renew the inactivation permit, bring the well back into service, or submit an application for the legal destruction of the well. You may access forms and information online at our "Well Program" website: http://www.emd.saccounty.net/WP/EMDwells.htm.

Thank you for your cooperation. If you have any further questions, please feel free to contact me at (916) 875-8056 or Sara Heynen at (916) 875-8427.

Sincerely,

Z McCormack

Zack McCormack
Environmental Specialist

ZM:sh

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AQMD FILE INFORMATION (SELECTED)

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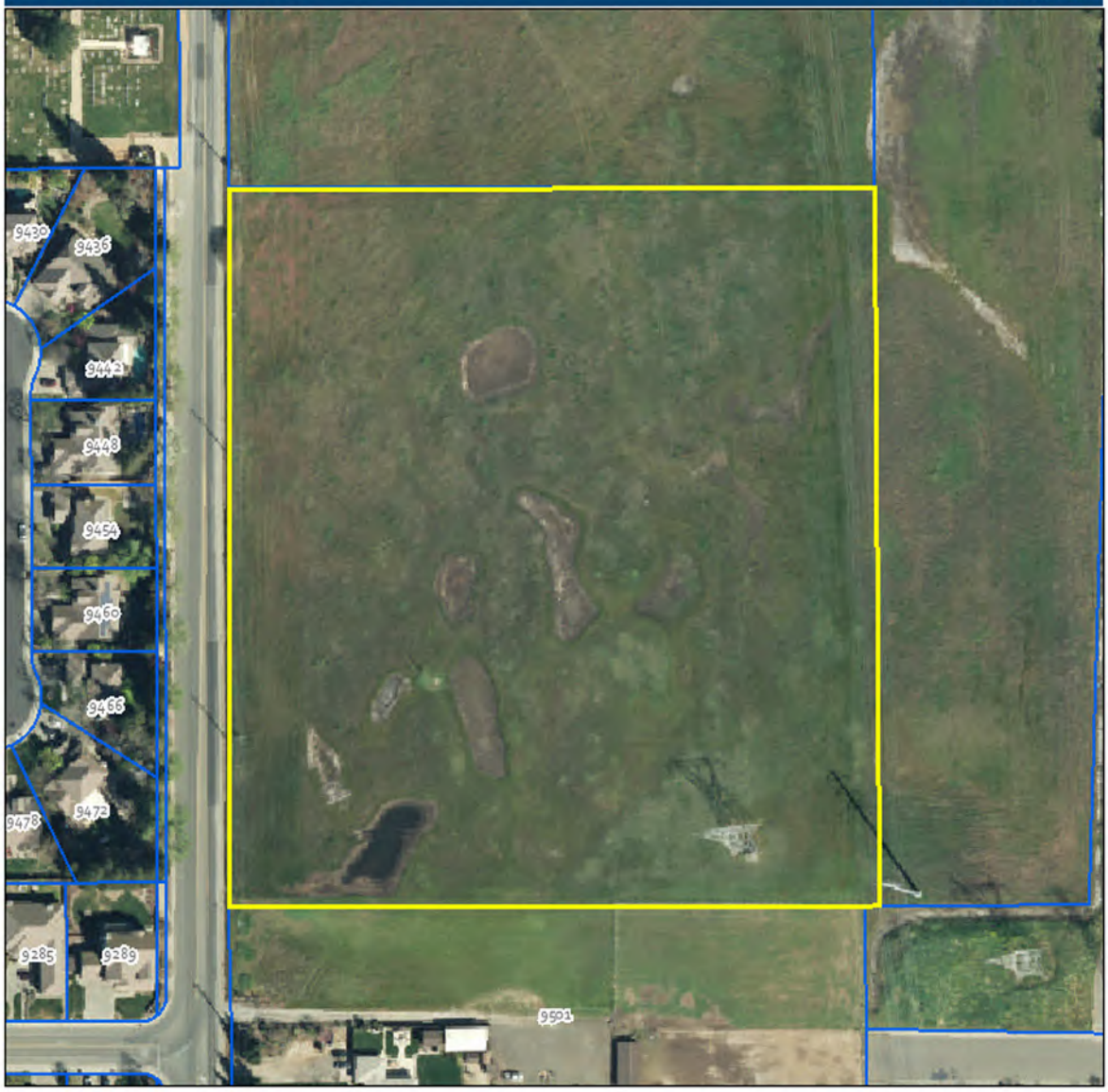
ON-LINE RESEARCH (SELECTED)

SACRAMENTO COUNTY

Assessor Parcel Viewer

APN: 12701500020000

Print date: 7/10/2023



N

1" = 149'

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Information for Parcel:
127-0150-002-0000

Read Our Data Disclaimer

PROPERTY INFORMATION

Assessor Parcel #	12701500020000
Address	WATERMAN RD
Postal City, Zip	ELK GROVE 95624
Jurisdiction	City of Elk Grove
County Supervisor District	**Patrick Hume - District 5**
Assessor Roll Status	ACTIVE
Assessor's Map	**Assessor's Map Bk.127, Pg.015**

PROPERTY TAX BILL

e-PropTax

Tax Rate Area Code	**07-088**
Jurisdiction Used on Most Recent Tax Roll	ELK GROVE
Last Roll Year	2022

LAND INFORMATION

Thomas Brothers Map	359 A 6
Assessor Land Use Code	**IAAAAA**
Assessor's Property Description	N 660 FT OF S 3/4 OF W 1/4 OF SW 1/4 SEC 32 TWP 7 N, R 6 E, MDB&M EXC M/R CONTG 10 + AC
Approx. Parcel Area	435600 sq ft / 10 acres

ZONING

Zoning:	**O - OPEN SPACE**
Zoning:	**RD-4 - LOW DENSITY RESIDENTIAL**

OWNER INFORMATION

California Government Code Section 6254.21 states that “No state or local agency shall post the home address or telephone number of any elected or appointed official on the internet without first obtaining the written permission of that individual.” As the cost to collect and continuously update that information is prohibitive, the Assessor’s website does not display the Assessee name. It may be obtained by calling 916-875-0700 or by visiting the Assessor's Office at 3636 American River Drive, Suite 200, in Sacramento.

Last Ownership Transfer Document Type	GRANT DEED/CORP. DEED/GIFT DEED/JNT TEN DEED
County Recorder's Document Number	Book 20211124, Page 1429
Event Date	Wed Nov 24 2021

PROPERTY BUILDING INFORMATION

No Property Characteristics are available for this property

Additional information regarding property building information can be obtained by contacting the Assessor's Office at 916-875-0700 or assessor@saccounty.net.

BUILDING PERMITS

Refer to the appropriate city jurisdiction agency for incorporated areas.

SACRAMENTO COUNTY

Assessor Parcel Viewer

APN: 12701500010000

Print date: 7/10/2023

N

1" = 74'

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Information for Parcel:
127-0150-001-0000

Read Our Data Disclaimer

PROPERTY INFORMATION

Assessor Parcel #	12701500010000
Address	WATERMAN RD
Postal City, Zip	ELK GROVE 95624
Jurisdiction	City of Elk Grove
County Supervisor District	**Patrick Hume - District 5**
Assessor Roll Status	ACTIVE
Assessor's Map	**Assessor's Map Bk.127, Pg.015**

PROPERTY TAX BILL

e-PropTax

Tax Rate Area Code	**07-088**
Jurisdiction Used on Most Recent Tax Roll	ELK GROVE
Last Roll Year	2022

LAND INFORMATION

Thomas Brothers Map	359 A 5
Assessor Land Use Code	**IAAAAA**
Assessor's Property Description	N 660 FT OF 1/4 OF SW 1/4 SEC 32 TWP 7 N, R 6 E, MDB&M 10 +- AC
Approx. Parcel Area	435600 sq ft / 10 acres

ZONING

Zoning:	**O - OPEN SPACE**
Zoning:	**RD-4 - LOW DENSITY RESIDENTIAL**

OWNER INFORMATION

California Government Code Section 6254.21 states that “No state or local agency shall post the home address or telephone number of any elected or appointed official on the internet without first obtaining the written permission of that individual.” As the cost to collect and continuously update that information is prohibitive, the Assessor’s website does not display the Assessee name. It may be obtained by calling 916-875-0700 or by visiting the Assessor's Office at 3636 American River Drive, Suite 200, in Sacramento.

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BUILDING PERMITS

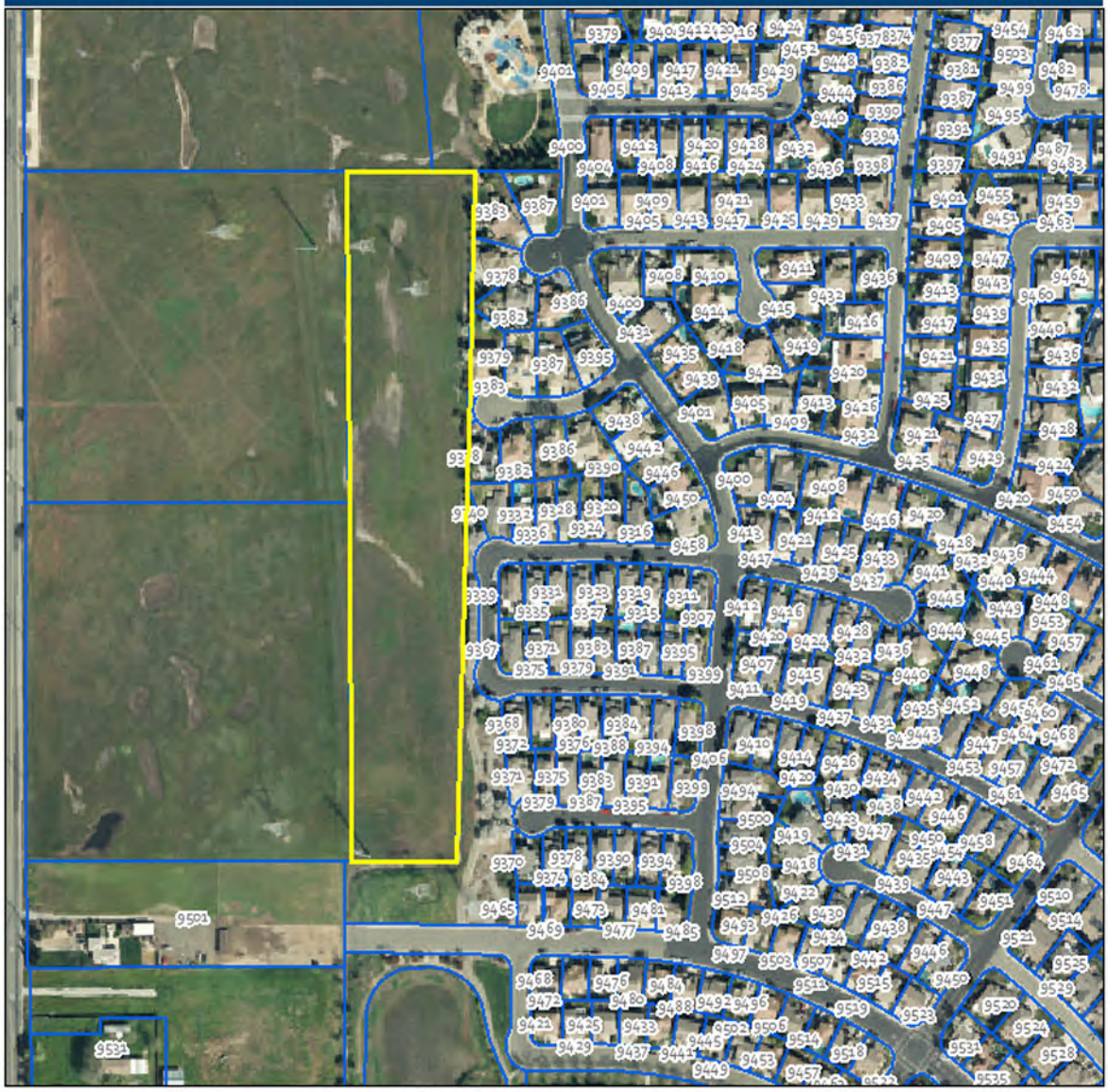
Refer to the appropriate city jurisdiction agency for incorporated areas.

SACRAMENTO COUNTY

Assessor Parcel Viewer

APN: 12701500090000

Print date: 7/10/2023



N

1" = 297'

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Information for Parcel:
127-0150-009-0000

Read Our Data Disclaimer

PROPERTY INFORMATION

Assessor Parcel #	12701500090000
Address	WATERMAN RD
Postal City, Zip	ELK GROVE 95624
Jurisdiction	City of Elk Grove
County Supervisor District	**Patrick Hume - District 5**
Assessor Roll Status	ACTIVE
Assessor's Map	**Assessor's Map Bk.127, Pg.015**

PROPERTY TAX BILL

e-PropTax

Tax Rate Area Code	**07-088**
Jurisdiction Used on Most Recent Tax Roll	ELK GROVE
Last Roll Year	2022

LAND INFORMATION

Thomas Brothers Map	359 A 6
Assessor Land Use Code	**IAAAAA**
Assessor's Property Description	POR E 1/2 OF W 1/2 OF SW 1/4 SEC 32 TWP 7 N, R 6 E, MDB&M DES AS BEG AT NW COR OF E 1/2 OF W 1/2 OF SW 1/4 TH S 1320 FT TH E 228 FT TH NE TO A P T ON THE 1/4 SEC LINE LOC E 265 FT FROM PT OF BE G THE W 265 FT TO BEG CONTG 7.8 AC EXC M/R
Approx. Parcel Area	339768 sq ft / 7.8 acres

ZONING

Zoning:	**O - OPEN SPACE**

OWNER INFORMATION

California Government Code Section 6254.21 states that “No state or local agency shall post the home address or telephone number of any elected or appointed official on the internet without first obtaining the written permission of that individual.” As the cost to collect and continuously update that information is prohibitive, the Assessor’s website does not display the Assessee name. It may be obtained by calling 916-875-0700 or by visiting the Assessor's Office at 3636 American River Drive, Suite 200, in Sacramento.

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BUILDING PERMITS

Refer to the appropriate city jurisdiction agency for incorporated areas.

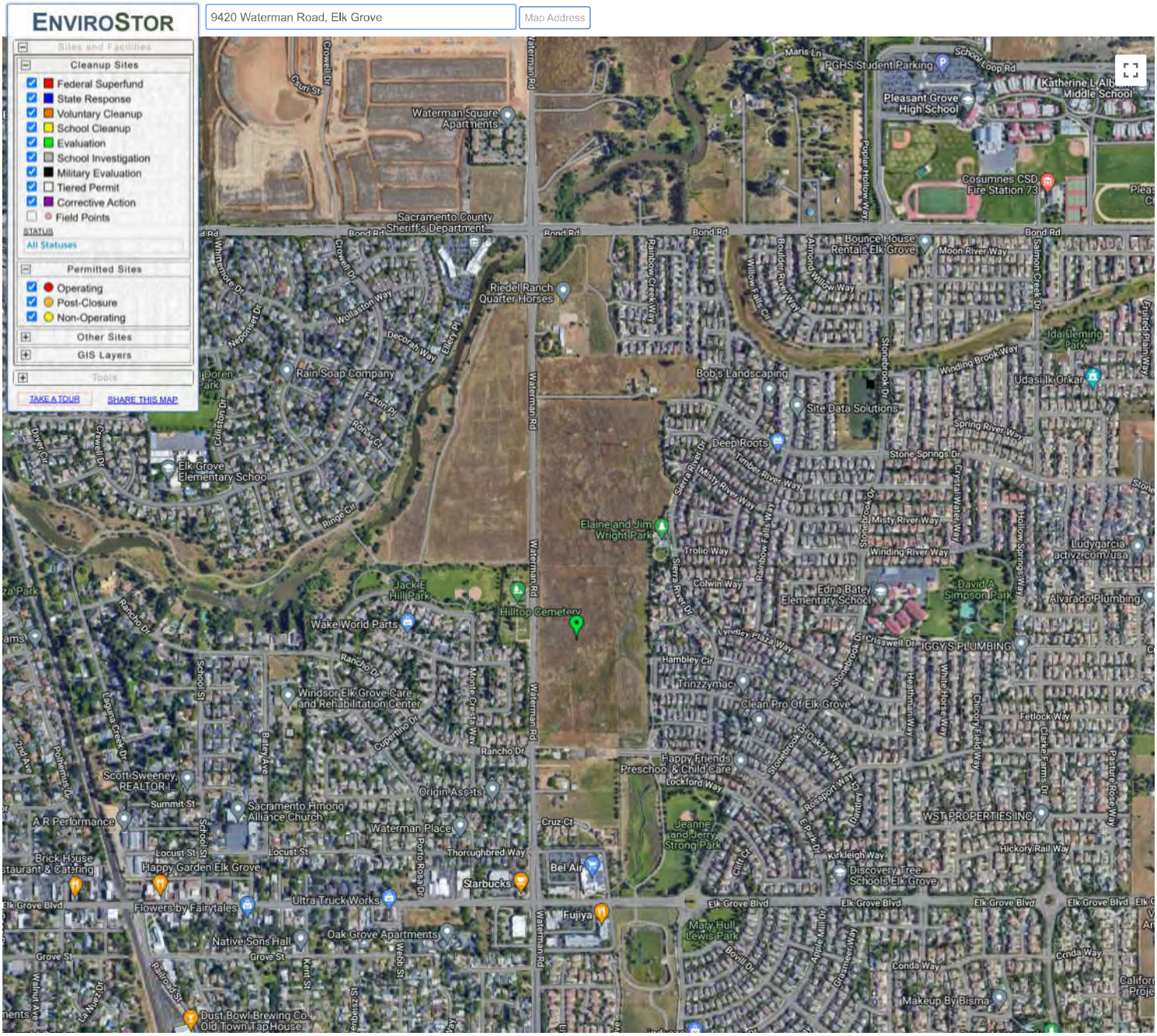
Well Finder CalGEM GIS Powered by WellSTAR

Layer List

Layers

- Notice & Permit
- Well
- Facility
- Underground Gas Storage
- Well Stimulation
- TR26 Onshore Seep Count
- CalGEM District
- CalGEM Oil & Gas Field
- City, Island, Offshore Lease, and Platform
- Public Land Survey System
- Legislative District
- County
- Geologic Map of California

GEOTRACKER/ENVIROSTOR INFORMATION (SELECTED)

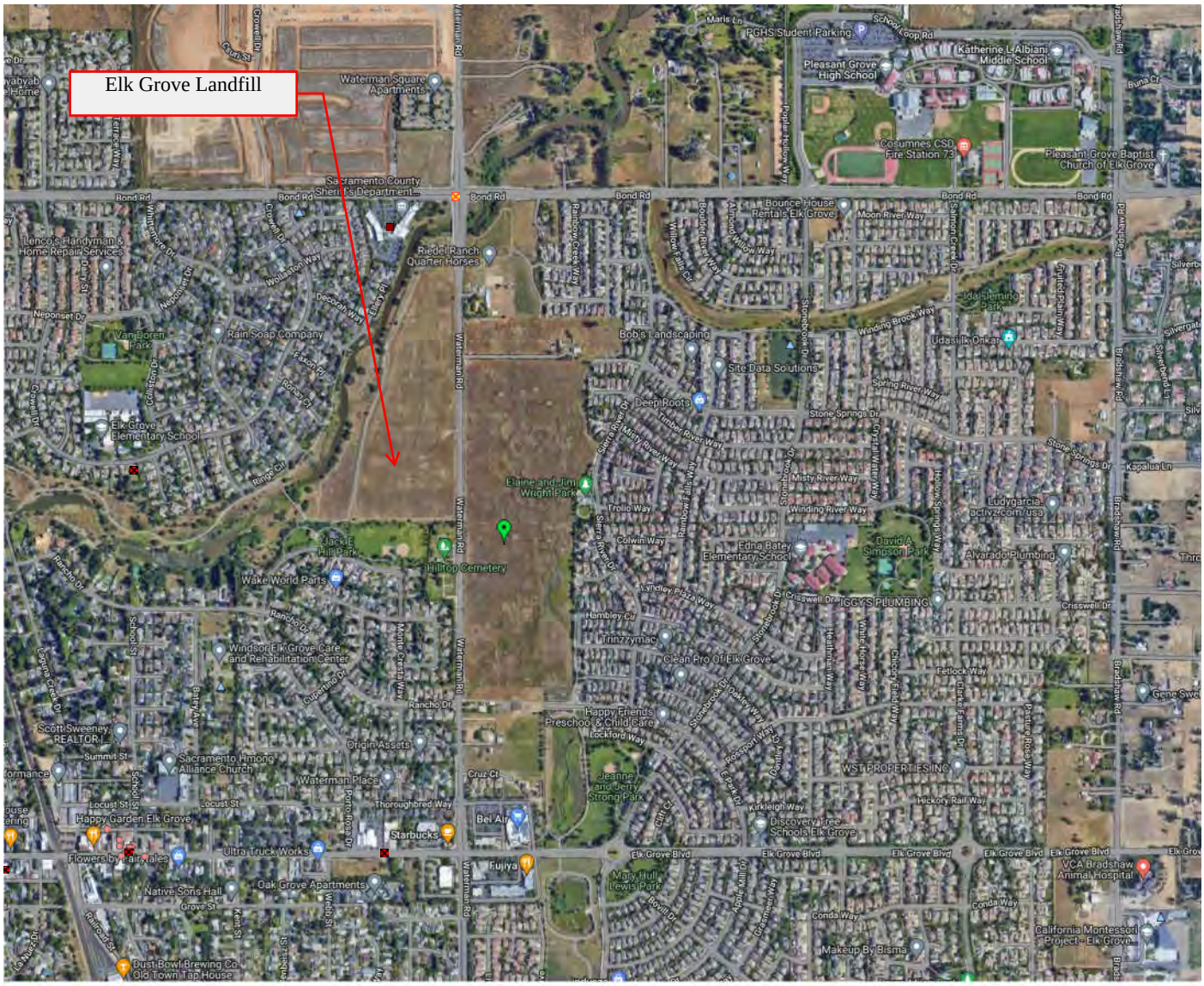


SITES CURRENTLY VISIBLE ON MAP

2 SITES LISTED

EXPORT THIS LIST TO EXCEL

PROJECT NAME	STATUS	PROJECT TYPE	ADDRESS	CITY
CRESLEIGH RANCH NO. 39	NO ACTION REQUIRED	SCHOOL INVESTIGATION	ELK GROVE BOULEVARD/FOULKS RANCH DRIVE	ELK GROVE
ELK GROVE (J09CA0797)	NO FURTHER ACTION	MILITARY EVALUATION		ELK GROVE



LEGEND - CHOOSE MORE SITES
- LUST Cleanup Sites - REMOVE
- Cleanup Program Sites - REMOVE
- Military Cleanup Sites - REMOVE
- Military Privatized Sites - REMOVE
- Military UST Sites - REMOVE
- DTSC Cleanup Sites - REMOVE
- Permitted USTs - REMOVE
- Single-Walled UST Sites - REMOVE
- Sampling Points - Public - REMOVE
- Field Points - REMOVE

Signifies a Closed Site

ACTIVE MAP COVERAGES:
- Military Bases - REMOVE

LIST SITES VISIBLE ON MAP

Map data ©2023 Imagery ©2023 , Airbus, CNES / Airbus, Maxar Technologies, U.S. Geological Survey, USDA/FPAC/GEO 100 m Report a map error

Sites Shown on Map: 16 Total Sites 4 Open Sites 7 Closed Sites 1 Sites w/Water Quality Data

See note file
34-AA004

COUNTY OF SACRAMENTO

DEPARTMENT OF PUBLIC WORKS
SOLID WASTE MANAGEMENT DIVISION
9660 Ecology Lane
Sacramento, CA 95827
(916) 366-2625

BRIAN H. RICHTER, Director
W. C. WANDERER, Deputy Director
H. D. KERTON, Superintendent

November 30, 1977

Independent Disposal Company
Eugene Pinasco
8834 Elk Grove Blvd.
Elk Grove, CA

701
H

SUB: SOLID WASTE FACILITY PERMIT
ELK GROVE DISPOSAL SITE

Pursuant to Section 66796.34 of the California State Government Code and Sections 18207 and 18208 of Title 14 of the California State Administrative Code, a Waste Facility Permit has been prepared with attending conditions for your waste handling facility and is herein attached for your review and comment.

Action by the Local Enforcement Agency to grant or deny the permit will be taken on January 26, 1978. If you wish to appeal any of the conditions of the attached permit you may do so by placing a check in the following box /__/ and returning this letter by January 2, 1978 with an attached letter stating the conditions which you are appealing, the reason for the appeal, and any proposed alternate conditions which might satisfy both you and the Local Enforcement Agency.

The Permit process has various steps which are defined in State Solid Waste Management Law and completion times are set for each step of the process. If you have problems with the attached Permit package you should contact this office at the earliest possible time so that State Mandated time requirements may be met. Failure on your part to initiate an appeal will result in the attached Permit being approved or denied as written.

Please call me at 366-2625 if you have any questions.

Sincerely,

George E. Lynch
Administrative Officer
Regulation and Control Section

GEL:dss
Attachment
cc: Jim Buntin, State Solid Waste Management Board
Bob Berger, County Health Department

52

10321240041

State of California
CIWMB 188
(Rev 09/08)

California Integrated Waste Management Board

Closed Disposal Site Inspection Report

Blue or Black Ink Pen

Enforcement Agency: County of Sacramento EMD

FACILITY FILE NUMBER (99-xx-9999): 34-AA-0004

INSPECTION DATE (MM/DD/YYYY): 10/22/2010

PROGRAM CODE *(Select only one code)*
(●) LEA Periodic ( ) CIWMB Closed Sites ( ) CIWMB Focused
( ) LEA Focused ( ) CIWMB Enforcement Agent ( ) CIWMB Periodic

Time In:
Time Out:
Inspection Time

For Official CIWMB Use Only
Received Date
RECEIVED
NOV 12 2010
( ) Attachments On File (Not Scanned)
BY:

Facility Name
Elk Grove Disposal Site

Facility Location
Bond and Waterman

Inspector
Victoria Krohn, LEA

Inspector Signature

Received By (Operator) Signature
INTER OFFICE MAIL

Owner Signature (if present)

Also Present (Name)

THE ABOVE FACILITY WAS INSPECTED FOR COMPLIANCE WITH APPLICABLE SECTIONS OF DIVISION 30 OF THE PUBLIC RESOURCES CODE (PRC), AND TITLE 14 AND TITLE 27 CALIFORNIA CODE OF REGULATIONS (CCR).

THE STANDARDS BELOW ARE CONSIDERED IN COMPLIANCE UNLESS OTHERWISE MARKED WITH ONE OF THE FOLLOWING: V=VIOLATION A=AREA OF CONCERN

POSTCLOSURE	V	A
20750 - SITE MAINTENANCE	○	○
21180 - POSTCLOSURE MAINTENANCE	○	○
21190 - POSTCLOSURE LAND USE	○	○
GAS MONITORING AND CONTROL SYSTEMS		
20918 - EXEMPTIONS	○	○
20919 - GAS CONTROLS	○	○
20921 - GAS MONITORING AND CONTROLS	○	○
20923 - MONITORING	○	○
20925 - PERIMETER MONITORING NETWORK	○	○
20931 - STRUCTURE MONITORNG	○	○
20932 - MONITORED PARAMETERS	○	○
20933 - MONITORING FREQUENCY	○	○
20934 - REPORTING	○	○
20937 - REPORTING & CONTROL OF EXCESSIVE GAS CONCENTRATIONS	○	○
GRADING/FINAL COVER		
20650 - GRADING OF FILL SURFACES	○	○
21140 - FINAL COVER	○	○
21142 - FINAL GRADING	○	○
21145 - SLOPE STABILITY	○	○

DRAINAGE AND EROSION CONTROL	V	A
20820 - DRAINAGE/EROSION	○	○
21150 - DRAINAGE/EROSION CONTROL	○	○
MONITORING AND CONTROL SYSTEMS		
20790 - LEACHATE CONTROL	○	○
20830 - LITTER CONTROL	○	○
21160 - LF GAS CONTROL/LECHATE CONTACT	○	○
SECURITY		
20530 - SITE SECURITY	○	●
21135 - SECURITY AT CLOSED SITES	○	○
21137 - STRUCTURAL REMOVAL	○	○
RECORDS		
21130 - EMERGENCY RESPONSE PLAN	○	○
21170 - RECORDING	○	○
21200 - CHANGE OF OWNERSHIP	○	○
CLOSURE PLANS		
21880 - CERTIFICATION OF CLOSURE	○	○
21890 - REVISION OF APPROVED PLANS FOR C/PC MAINTENANCE	○	○
OTHER		
	○	○
	○	○
	○	○

Comments: *(Note: for additional or continued comments use the CIWMB 03 or attach additional pages.)*

Conducted the quarterly inspection of the Elk Grove Disposal Site on this day, no violations were noted.

AREA OF CONCERN 20530- Site Security: Some areas of the fencing along the western boundary are beginning to come apart. Repair immediately to prevent site access.

INSTRUCTIONS ON BACK Correct: ● Incorrect: ⊘ ✓

EXAMPLE 123

Top White - CIWMB Middle Pink - LEA Bottom Yellow - Operator

CALIFORNIA
Water Boards

H701

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Central Valley Regional Water Quality Control Board

RECEIVED
SEP 3 2014
By

29 August 2014

Tim Israel, P.E.
County of Sacramento
Department of Waste Management & Recycling
9850 Goethe Road
Sacramento, California 95827-3561

APPROVAL OF DESIGN PLANS FOR FINAL COVER AND LANDFILL GAS SYSTEM REPAIRS, ELK GROVE LANDFILL, SACRAMENTO COUNTY

Central Valley Water Board staff has reviewed the June 2014 plans and specifications (Design Report) for repairs to the final cover and landfill gas (LFG) system at the Elk Grove Landfill prepared by SCS Engineers. We received the Design Report on 14 August 2014 via email and a hard copy was received on 22 August 2014. The Design Report for the proposed work was submitted by Sacramento County (the County) on a proactive/voluntary basis, and includes a construction quality assurance plan (CQA Plan), construction drawings, technical specifications, and a storm water pollution prevention plan.

As approved by Waste Discharge Requirements (WDRs) R5-2013-0134, the final cover profile for the repair areas will consist of compacted foundation layer, geosynthetic clay liner, 60-mil HDPE geomembrane, one foot of vegetative soil, and vegetation. Two main areas of the landfill final cover to be graded and repaired are along the eastern side of the landfill totaling approximately 4 acres as shown on the construction plans. Imported soil for the work will be stockpiled at the southeastern corner of the landfill within the limits of the final cover. The purpose of the grading and repairs is to correct areas of the final cover that have settled such that adequate slopes for drainage are no longer present. Additionally, the County will replace the main LFG system lateral and the LFG system condensate traps in order to improve the performance of the LFG extraction system.

Our review indicates that the Design Report for the final cover grading and repairs complies with the WDRs. Based on our review, we concur with the Design Report including the CQA Plan given the information and certifications contained therein. Please contact us prior to beginning of the final cover repairs so that we can schedule inspections. We also note that the County will be applying for coverage under the general construction storm water permit. That application will be processed separately by our storm water unit and their staff should be contacted if there are questions about the application or permitting requirements.

If you have any questions, please contact me at (916) 464-4622 or Bill.Brattain@waterboards.ca.gov.

WILLIAM BRATTAIN, P.E.
Water Resource Control Engineer
Title 27 Permitting and Mining Unit

cc list: see next page

cc: Diane Nordstrom-Lamkin, California Department or Resources Recovery and Recycling, Sacramento
Victoria Pena, Sacramento County Environmental Management Department, Sacramento
Ambrose McCready, P.E., SCS Engineers, Pleasanton

Department of Waste Management & Recycling
Paul Philleo, Director

County of Sacramento

February 1, 2016

Todd Del Frate
California Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670-6114

SUBJECT: ELK GROVE LANDFILL – 2015 SECOND SEMIANNUAL AND ANNUAL MONITORING REPORT

Dear Mr. Del Frate:

This "2015 Second Semiannual and Annual Monitoring Report for the Elk Grove Landfill" was prepared to meet the requirements of the site's Monitoring and Reporting Program No. R5-2013-0134. It presents a summary of 2015 compliance.

The Central Valley Regional Water Quality Control Board (CVRWQCB) issued a Notice of Violation (NOV) on January 30, 2013 to the Sacramento County Department of Waste Management and Recycling (DWMR) for continued presence of Volatile Organic Compounds (VOCs) in groundwater at Elk Grove Landfill (specifically in the areas of wells MW-3 and MW-6), in violation of the Waste Discharge Requirements (WDRs). DWMR has made significant progress in responding to this NOV, as noted in the quarterly progress reports. A substantial decrease in VOC concentrations has been observed at MW-3 and MW-6. A detailed discussion of the actions taken is contained in the accompanying report.

CVRWQCB issued a Notice Of Applicability (NOA) and Monitoring and Reporting Program (MRP) under general WDRs Order R5-2008-0149 on July 31, 2014, for injections of Hydrogen Release Compound (HRC). In 2014, DWMR drilled three injection wells, and injected HRC at these wells and two other locations in August 2014 and April 2015. Detailed information regarding these injections, and monitoring results specific to this program are being reported separately under Order No. R5-2008-0149.

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Sincerely,

Mike Koza
Senior Civil Engineer

Attachment: 2015 Second Semiannual and Annual Monitoring Report, Elk Grove Landfill

2015 SECOND SEMIANNUAL AND ANNUAL MONITORING REPORT

ELK GROVE LANDFILL

SACRAMENTO COUNTY, CALIFORNIA

Prepared for

Regional Water Quality Control Board, Central Valley Region

February 1, 2016

Prepared by

Sacramento County Municipal Services
Department of Waste Management and Recycling
9850 Goethe Road
Sacramento, California 95827

2015 Second Semiannual and Annual Monitoring Report
Elk Grove Landfill
Sacramento County, California

The material and data in this report were prepared under the supervision and direction of the undersigned.

Sacramento County

Mike Koza
Senior Civil Engineer

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EXECUTIVE SUMMARY

The Elk Grove Landfill is a closed 37-acre class III solid waste disposal site that is owned and operated by Sacramento County Municipal Services (County). The landfill is located about 1 mile northeast of Elk Grove at the intersection of Waterman and Bond Road (see Figure 1-1).

In response to the confirmed detection of Volatile Organic Compounds (VOCs) in the four landfill perimeter groundwater monitoring wells, eight new wells, designated MW-5 through MW-12, were constructed beyond the landfill perimeter in 2001 and early 2002. In response to detections of VOCs in three of these new offsite monitoring wells and in a nearby water supply well, two operating groundwater extraction/reinjection wells (EW-5, EW-6) were installed (see Figure 1-2) in 2002, along with two additional extraction wells (EW-1, EW-4) that were not put into operation due to low VOCs. The operating wells contained in-well aerators with vadose zone reinjection. These in-well aerators were operated almost continuously from April 2002 until October 2008, when they were shut down due to declining VOC levels. The shut down extraction wells (EW-5, EW-6) have not exceeded Concentration Limits for VOCs since 2010.

During 2007 the County conducted a Corrective Action Investigation, which included soil gas monitoring for VOCs and subsequent treatments with HRC (Hydrogen Release Compound, Regenesis Corp.). HRC was injected in the vicinity of wells MW-1, MW-6, MW-7R, MW-10, EW-4, EW-5 and EW-6 in Summer/Fall 2007 in an attempt to reduce VOC levels. These HRC injections continued annually through 2011. Results indicated that a significant reduction in VOCs occurred at MW-7R, EW-5 and EW-6, although complete compliance with the Water Quality Protection Standard (WQPS) was not achieved at MW-7R. No significant rebound in VOC concentrations has been observed at any of these sites since the injections ended.

The Central Valley Regional Water Quality Control Board (CVRWQCB) issued a Notice of Violation (NOV) on January 30, 2013 to the Sacramento County Department of Waste Management and Recycling (DWMR) for continued presence of VOCs in groundwater at Elk Grove Landfill (specifically in the areas of wells MW-3 and MW-6), in violation of the Waste Discharge Requirements (WDRs). On April 15, 2013, DWMR submitted a Landfill Gas Optimization Report (Optimization Report) evaluating the effectiveness of the Landfill Gas (LFG) system and providing proposals to remediate groundwater.

The CVRWQCB transmitted a review of the Optimization Report on July 23, 2013, generally approving the remedial scope proposed by DWMR, and providing further details about requirements in three areas: (1) progress of corrective action toward the Water Quality Protection Standard (WQPS) by various dates, (2) submittal of a Notice Of Intent (NOI), including a proposed Monitoring and Reporting Program (MRP), for injections of Hydrogen Release Compound (HRC) under general WDRs Order R5-2008-0149, and (3) submittal of all required historical reports into Geotracker. Regarding these requirements:

(1) The required progress of corrective action was finalized with the issuance of WDR Order No. R5-2013-0134 on October 4, 2013. Provision 7.c of these WDRs provides a compliance review date of 2017 that requires DWMR to start the planning process for further corrective actions if VOCs are not trending downward by that time. Compliance with Provision 7, including trend analyses, is discussed and demonstrated in Section 6 of this report.

(2) DWMR submitted the HRC NOI on August 20, 2013. This NOI was amended in November 2013 to agree with newly issued Order No. R5-2013-0134. CVRWQCB issued a Notice Of Applicability (NOA) and Monitoring and Reporting Program (MRP) under general WDRs Order R5-2008-0149 on July 31, 2014. DWMR drilled three injection wells in June 2014, and injected HRC at these wells and two other locations in August 2014 and April 2015. Detailed information regarding these injections, and monitoring results specific to this program are being reported separately under Order No. R5-2008-0149. To date, DWMR has not detected any significant increase in concentrations of methane, measured HRC signature compounds, or inorganic compounds as a result of the injections.

(3) DWMR completed uploading of required historical reports into Geotracker on March 24, 2014.

DWMR has been providing quarterly reports of progress on the tasks described in the Optimization Report.

On January 31, 2014, DWMR submitted a Landfill Gas Collection and Control System Optimization Report (System Optimization Report), in accordance with Provision 7.a of WDR Order No. R5-2013-0134. This System Optimization Report, which was prepared by SCS Engineers, provides the results of a review of site conditions and operations conducted by SCS, and contains an Operations Procedures Document that describes on-going procedures that will be implemented to ensure that LFG extraction is continuously optimized. Additional information regarding new HRC injection wells and a new background well was provided in the cover letter for the submittal of the System Optimization Report.

Results of second half 2015 water quality analysis are summarized as follows:

VOCs (Volatile Organic Constituents) were detected at most of the 16 operating monitoring wells during 2015 (see Tables 3-1, 3-2 and 3-3). Concentration Limits were exceeded at 7 wells. However, with the exception of a single unregulated Freon (Freon 22), VOC levels were less than 1 ug/l (ppb). Drinking water standards (EPA Maximum Contaminant Limits and Calif. Notification Levels) were not exceeded for VOCs. Some wells are impacted only for freons, highly mobile but generally nontoxic contaminants. Trend analysis (see Section 6) indicates that VOCs at three monitoring wells are in a downtrend, and one monitoring well is in an uptrend. A decrease in VOCs is being observed at MW-3 and MW-6, which are the two ground water monitoring wells specifically addressed in the NOV.

For inorganics, statistical analysis shows that inorganic constituent concentrations at most downgradient wells are elevated relative to historical background, and site-specific concentration limits specified in MRP No. R5-2013-0134 are being exceeded. Bicarbonate, which can be

created by groundwater contact with LFG, exceeds concentration limits at many downgradient wells, and is elevated relative to current upgradient conditions (EW-1, MW-13). Thus, landfill impact upon the ground water is indicated at many locations. Many of the exceedances for inorganic compounds other than bicarbonate are believed to be caused by bicarbonate impacts on water chemistry (balance) or the result of variability in background. No major changes in overall inorganic constituent concentrations were observed in 2015.

The inorganic concentration limits are based upon historical information that is more than 15 years old, from a former background well. A new background well has been constructed, and a revision to Concentration Limits is expected to be proposed in 2016, once sufficient data has been collected.

Operation of the LFG collection system, which has resulted in generally nondetect levels of methane in perimeter gas probes since 2001 (see Section 5), has positively impacted the site. However, VOCs, primarily low-toxicity freons, have been detected in some of these probes. As a result of declining gas levels, the destruction of LFG (via the flare) is no longer required. In 2015, LFG continues to be extracted and vented in accordance with our SMAQMD permit, although the system was shut down for a few weeks in spring 2015 for final cover maintenance and repairs.

Based on statistical comparisons of historical data to background, quality of surface water downstream of the landfill (site R-2, see Figure 1-2) appears to be unaffected by the landfill.

1 INTRODUCTION

The Elk Grove Landfill is a closed 37-acre class III solid waste disposal site that is owned and operated by Sacramento County Municipal Services (County). The landfill is located about 1 mile northeast of Elk Grove at the intersection of Waterman and Bond Road (see Figure 1-1).

This "Second Semiannual and Annual 2015 Monitoring Report for the Elk Grove Landfill" was prepared to meet the requirements of the site's MRP No. R5-2013-0134. It provides an annual summary of the 2015 compliance with WDR Order No. R5-2013-0134 and presents the results of the third and fourth quarter monitoring events. By reference, the site's WDRs incorporate the following federal, state and local regulations as they pertain to the Elk Grove groundwater monitoring program:

- California Code of Regulations (CCR) Title 27, Division 2, Subdivision 1, Chapter 3, Subchapter 3
- Standard Provisions and Reporting Requirements (SPRR), dated January 2012

The monitoring and reporting programs, as specified in MRP No. R5-2013-0134, require the site to have a detection monitoring program. For groundwater, a corrective action monitoring program is also required. The site's monitoring network for groundwater, surface water, and the unsaturated zone is listed in Table 1-1. Chemical analyses to be conducted include field monitoring parameters and volatile organic constituents (VOCs) (to be analyzed semiannually), inorganic monitoring parameters (to be analyzed semiannually) and constituents of concern (COCs) (to be analyzed every 5 years). In addition, the MRP specifies that ground water extraction well pre- and post-treatment water be monitored, when ground water extraction wells are operating. Ground water extraction has not been conducted since 2008. Samples are to be collected from the wells, probes, and surface water monitoring points for the parameters listed in Table 1-2 at the frequencies listed in that table. Monitoring locations are shown on Figure 1-2.

Table 1-1: Elk Grove Landfill Monitoring Network

Groundwater Monitoring Network:
Background Well: MW-1 (historical data prior to 1998), MW-13
Detection Monitoring Wells: MW-8, MW-9, MW-11, W-7, EW-1, EW-5, EW-6
Corrective Action Wells: MW-1, MW-2, MW-3, MW-4, MW-6, MW-7R, MW-10, MW-12, EW-4

Per WDR Order No. R5-2013-0134: Groundwater samples shall be collected from the detection monitoring wells, corrective action wells, and any additional wells added as part of the approved ground water monitoring system.

Unsaturated Zone Monitoring Network:
Lysimeters 1U, 2US, 2UN (soil-pore liquid)
Soil Moisture/Vapor Extraction Wells SMVE-1 and SMVE-2 (soil-pore gas)
Gas Probes AGC-5, E-2, E-6, P-3, S-2, S-4, W-2, W-8, W-9 (soil-pore gas)

Per WDR Order No. R5-2013-0134: The unsaturated zone monitoring system shall monitor for the presence of landfill gas and vapor-phase volatile organic compounds (VOCs) in the unsaturated zone adjacent to the landfill unit.

Surface Water Monitoring Network:
R-1 (background) is identified as a point in the Laguna Creek channel 20 feet downstream from the crossing of Laguna Creek under Waterman Road.
R-2 (detection) is identified as a point in the Laguna Creek channel approximately 2800 feet downstream from the crossing of Laguna Creek under Waterman Road.
R-3 is identified as the southern landfill surface drainage outfall adjacent to Laguna Creek.
R-4 is identified as the northern landfill surface drainage outfall adjacent to Laguna Creek.

Per WDR Order No. R5-2013-0134: Semiannual surface water monitoring is required twice per year when there is water present at the designated surface water monitoring point any time during the reporting period (1 January to 30 June or 1 July to 31 December).

Table 1-2
Elk Grove Landfill - Monitoring Parameters and Frequencies

Parameters/Constituents	Test Method	Units	Monitoring Frequency			
			Ground Water	Unsaturated Zone		Surface Water
				Gas Probes	Lysimeters	
Field Parameters						
Groundwater Elevation	Field Measurement	ft	Quarterly	---	---	---
Temperature	Field Measurement	degrees F	Semiannual	---	---	---
Electrical Conductivity	Field Measurement	µmhos/cm	Semiannual	---	Annual	Semiannual
pH	Field Measurement	pH units	Semiannual	---	Annual	Semiannual
Turbidity	Field Measurement	NTU	Semiannual	---	---	Semiannual
Methane	Field Measurement	%	---	Semiannual	---	---
Carbon Dioxide	Field Measurement	%	---	Semiannual	---	---
Monitoring Parameters						
Bicarbonate	SM 2320B	mg/L	Semiannual	---	---	Semiannual
Carbonate	SM 2320B	mg/L	Semiannual	---	---	Semiannual
Calcium	EPA Method 200.7	mg/L	Semiannual	---	---	Semiannual
Chloride	EPA Method 300.0	mg/L	Semiannual	---	---	Semiannual
Magnesium	EPA Method 200.7	mg/L	Semiannual	---	---	Semiannual
Nitrate-Nitrogen	EPA Method 300.0	mg/L	Semiannual	---	---	Semiannual
Potassium	EPA Method 200.7	mg/L	Semiannual	---	---	Semiannual
Sodium	EPA Method 200.7	mg/L	Semiannual	---	---	Semiannual
Sulfate	EPA Method 300.0	mg/L	Semiannual	---	---	Semiannual
Total Dissolved Solids	SM 2540C	mg/L	Semiannual	---	Annual	Semiannual
VOCs (gas)	EPA Method TO-15	µg/L	---	Annual	---	---
VOCs (water)	EPA Method 8260 [1]	µg/L	Semiannual	---	Annual	---
VOCs (MW-6,10 only)	EPA Method 8260 [1]	µg/L	Quarterly	---	---	---
Constituents Of Concern						
Total Organic Carbon	SM 5310B	mg/L	5 years	---	---	Semiannual
VOCs (extended list)	EPA Method 8260B	µg/L	5 years	---	---	5 years
Semivolatile Organics	EPA Method 8270	µg/L	5 years	---	---	5 years
Herbicides	EPA Method 8151	µg/L	5 years	---	---	5 years
Pesticides	EPA Method 8141	µg/L	5 years	---	---	5 years
Cyanide	EPA Method 9010	µg/L	5 years	---	---	5 years
Sulfides	Field Measurement	µg/L	5 years	---	---	5 years
Aluminum	EPA Method 200.7	µg/L	5 years	---	---	5 years
Antimony	EPA Method 200.7	µg/L	5 years	---	---	5 years
Arsenic	EPA Method 200.7	µg/L	5 years	---	---	5 years
Barium	EPA Method 200.7	µg/L	5 years	---	---	5 years
Beryllium	EPA Method 200.7	µg/L	5 years	---	---	5 years
Cadmium	EPA Method 200.7	µg/L	5 years	---	---	5 years
Chromium	EPA Method 200.7	µg/L	5 years	---	---	5 years
Cobalt	EPA Method 200.7	µg/L	5 years	---	---	5 years
Copper	EPA Method 200.7	µg/L	5 years	---	---	5 years
Iron	EPA Method 200.7	µg/L	5 years	---	---	5 years
Lead	EPA Method 200.7	µg/L	5 years	---	---	5 years
Manganese	EPA Method 200.7	µg/L	5 years	---	---	5 years
Mercury	EPA Method 200.7	µg/L	5 years	---	---	5 years
Nickel	EPA Method 200.7	µg/L	5 years	---	---	5 years
Selenium	EPA Method 200.7	µg/L	5 years	---	---	5 years
Silver	EPA Method 200.7	µg/L	5 years	---	---	5 years
Thallium	EPA Method 200.7	µg/L	5 years	---	---	5 years
Tin	EPA Method 200.7	µg/L	5 years	---	---	5 years
Vanadium	EPA Method 200.7	µg/L	5 years	---	---	5 years
Zinc	EPA Method 200.7	µg/L	5 years	---	---	5 years

[1] or equivalent EPA method that has the same constituents, such as EPA 524.2

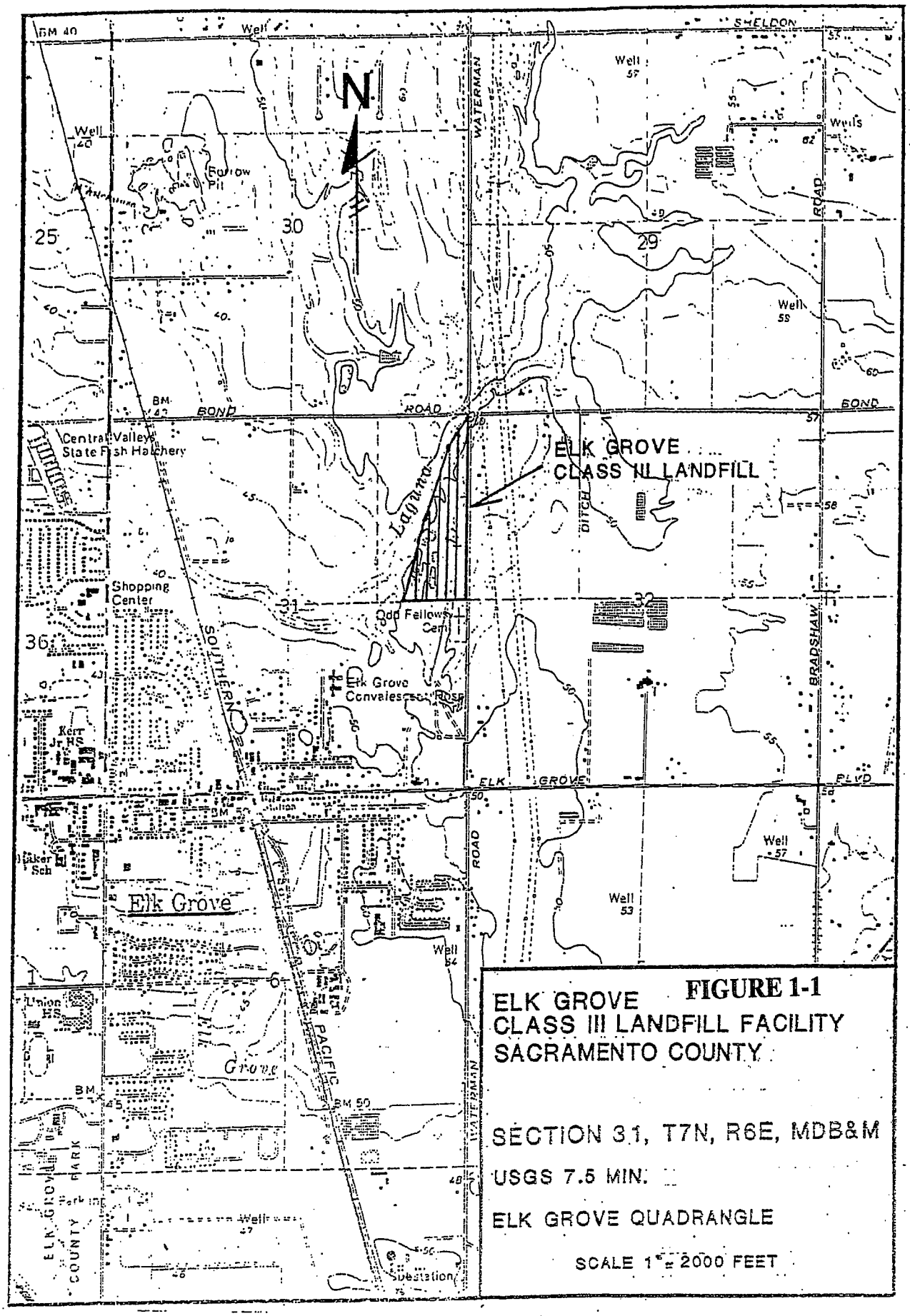


FIGURE 1-1

ELK GROVE
CLASS III LANDFILL FACILITY
SACRAMENTO COUNTY

SECTION 31, T7N, R6E, MDB&M

USGS 7.5 MIN.

ELK GROVE QUADRANGLE

SCALE 1" = 2000 FEET

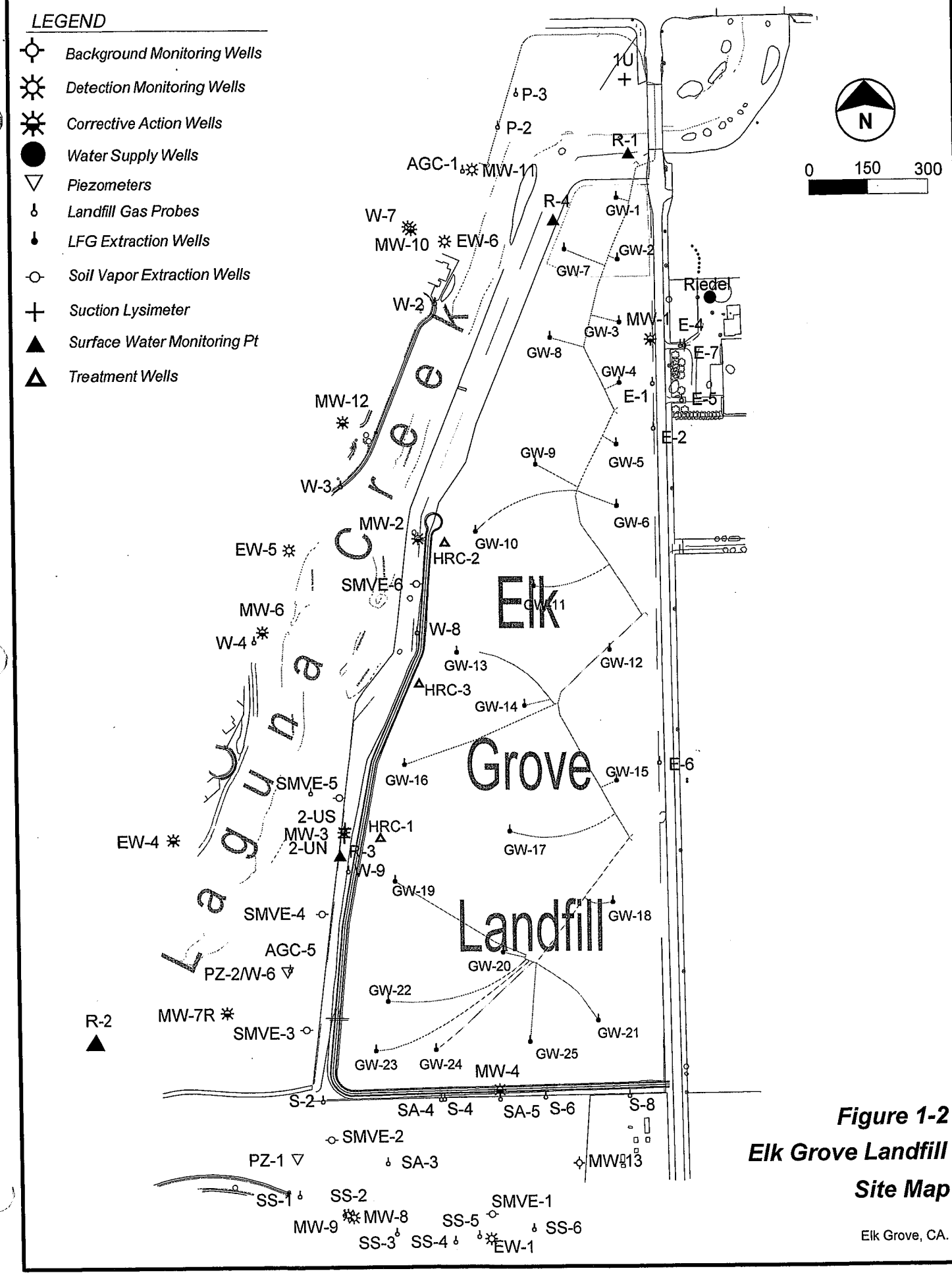


Figure 1-2
Elk Grove Landfill
Site Map

Elk Grove, CA.

2 GROUNDWATER AND SURFACE WATER FLOW

2.1 Hydrogeological Setting

The following information was quoted from the site's WDR Order No. R5-2013-0134:

> The surface soils in the area of the Elk Grove Landfill are predominantly Arroyo Seco Gravel, which extend to a maximum depth of 20 feet. Regional geology consists of the erosional ridge of exposed Laguna Formation surrounded by the adjacent plains and stream channels underlain by younger unconsolidated alluvium and Riverbank formation. Information on geology is outlined in the Ground Water Monitoring Facilities and Baseline Water Quality Results report dated September 1989. Four test borings beneath the landfill encountered solely the Laguna formation, below the landfill waste or cover soil. The report designated three members within the Laguna formation. The uppermost Laguna member consists of reddish clayey sand and gravel to a depth of up to 40 feet below surface grade (bsg). The underlying middle member extends to a depth of about 180 feet bsg and consists of weakly compacted silty clays with interbedded thin sandy beds. The sandy beds of this member are less than 15 feet thick and are variable in their sand size distribution. Below a depth of about 180 feet bsg, a more massive, silty clay is found, which has been informally referred to as the lower member of the Laguna formation.
>
> The first water-bearing formation is approximately 80 feet bgs [below ground surface].

2.2 Surface Water Hydrology

Surface water drainage is to Laguna Creek, which is tributary to Morrison Creek, which flows into the Sacramento River and the Sacramento-San Joaquin Delta. Surface water is sampled at upstream sampling location R-1, which is identified as a point 20 feet downstream from the crossing of Laguna Creek under Waterman Road, and at downstream sampling location R-2, which is identified as a point approximately 2,800 feet downstream of the aforementioned crossing. Sampling is also conducted at onsite drainage points R-3 and R-4.

2.3 Groundwater Flow and Velocity

MRP No. R5-2013-0134 requires quarterly measurements of groundwater elevations at 17 monitoring wells, one of which is dry (W-7). Water elevation measurements were made during March, May, August and November 2015 and are presented in Table 2-1. In Table 2-1, DWMR has also included water level data for piezometers PZ-1 and PZ-2. Graphs of historical ground water elevations are located in Appendix C.

2015 groundwater elevations are submitted as groundwater contour maps (see Figures 2-1 through 2-4). Ground water gradients (flow directions) were estimated from these groundwater contour maps. Groundwater flow is generally to the northwest or west on the southern portion of the site, to the south or southeast on the northern portion of the site, and to the west or southwest on the central portion of the site. The gradient in the northern portion of the site shifted from to northwest to the south over the course of 2014, and this trend continued into 2015. In the second half of 2015, the groundwater gradient in the northern portion of the site shifted to the southeast, essentially in the opposite direction to that gradient in the first quarter of 2014 (Figure 2-5). The ground water gradient in the northern portion of the landfill now appears to be flowing from the creek towards the landfill. This change in gradient may have implications for ground water quality near the creek (including background water quality) and the HRC injection program, which are discussed in Sections 3 and 6 which follow.

Drought conditions combined with possible infiltration from persistent ponding in the streambed of Laguna Creek towards the north end of the site may have caused this shift in gradient. This ponding has created large perennial lagoons in the creek bed just west of the landfill. These lagoons are being fed in the summer by a source or sources upstream of the landfill. In recent years, substantial high density housing developments have been built near Laguna Creek upstream of the landfill. Many of these developments are directly east of the landfill. In addition to potential impacts upon runoff, these developments also may have reduced the land area available for groundwater infiltration east of the landfill. The historical ground water gradient/flow at Elk Grove Landfill is from the east, but has recently become somewhat indeterminate along the eastern edge of the landfill. DWMR plans to conduct some field research in Summer/Fall 2016 to determine the source of the summertime creek inflows. The results of this research will help DWMR assess whether ground water gradient changes in the north end of the landfill site may be long-term or short-term.

Darcy velocities for groundwater flow were calculated using data from the ground water contour maps and a range of site-specific conductivities (see Appendix A). The results of these calculations are shown in Table 2-2.

Table 2-1

2015 Groundwater Elevations (ft MSL)

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Well Site	3/4/15	5/27/15	8/13/15	11/10/15
MW-1	-25.99	-25.88	-26.57	-27.23
MW-2	-26.09	-26.01	-26.62	-27.28
MW-3	-26.19	-26.11	-26.72	-27.41
MW-4	-26.03	-25.89	-26.50	-27.34
MW-6	-26.19	-26.13	-26.74	-27.35
MW-7R	-26.26	-26.23	-26.83	-27.50
MW-8	-26.08	-25.94	-26.68	-27.43
MW-9	-26.34	-26.39	-27.06	-27.77
MW-10	-25.93	-25.80	-26.40	-27.01
MW-11	-25.87	-25.76	-26.39	-26.99
MW-12	-25.96	-25.88	-26.45	-27.07
MW-13	-25.92	-25.72	-26.46	-27.30
EW-1	-25.94	-25.78	-26.53	-27.38
EW-4	-26.28	-26.28	-26.88	-27.46
EW-5	-26.21	-26.17	-26.76	-27.39
EW-6	-25.78	-25.63	-26.22	-26.84
PZ-1	-26.24	-26.19	-26.86	-27.57
PZ-2	-26.15	DRY	DRY	DRY

Table 2-2

Ground Water Gradients and Flows

	Quarter			
	First	Second	Third	Fourth
Gradient (ft per 1000 ft)	0.2	0.3	0.3	0.2
Flow (ft/year)	100	150	150	100
Estimated Bearing	NW to S	NW to S	NW to S	NW to S

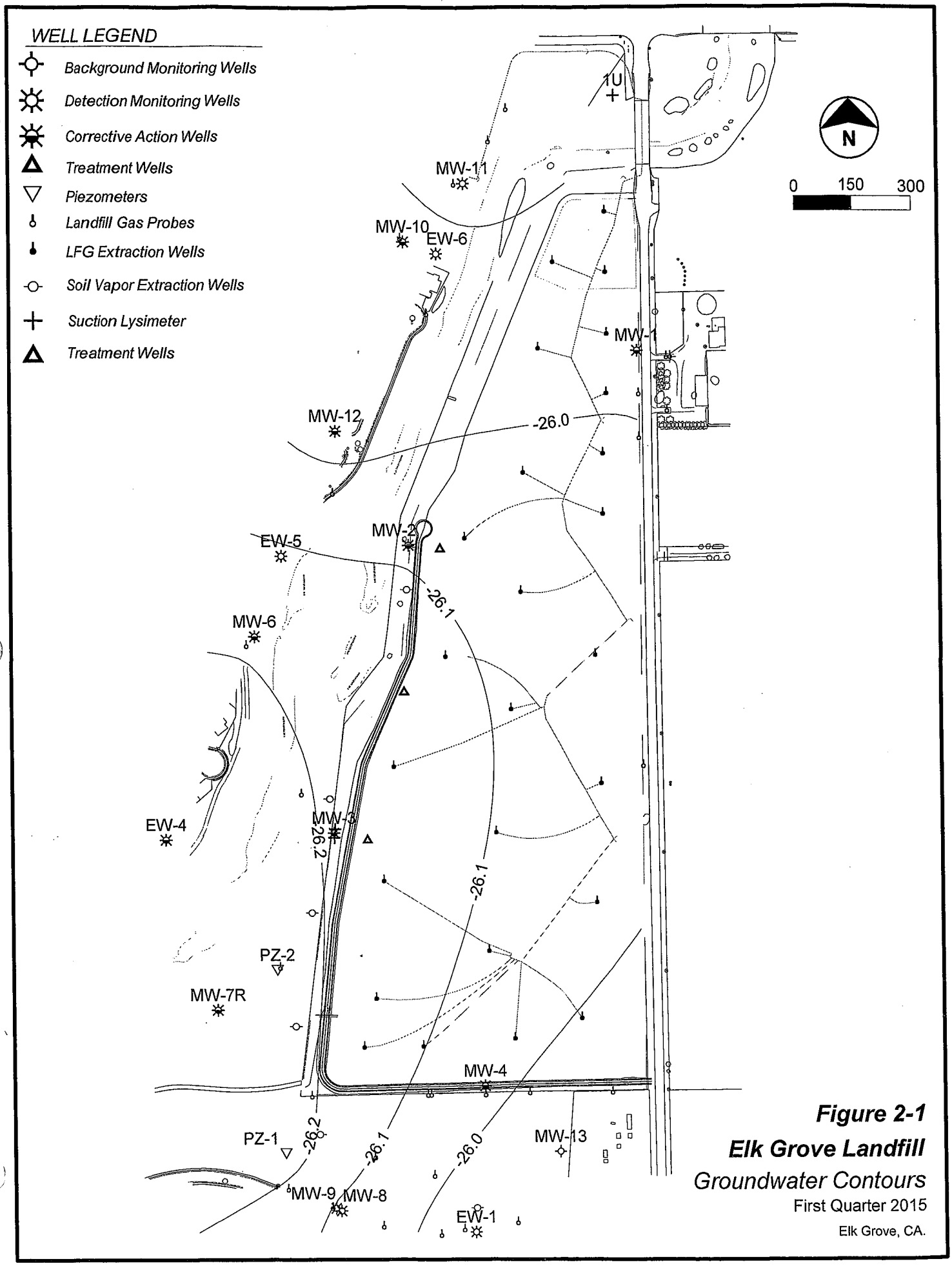


Figure 2-1

Elk Grove Landfill

Groundwater Contours

First Quarter 2015

Elk Grove, CA.

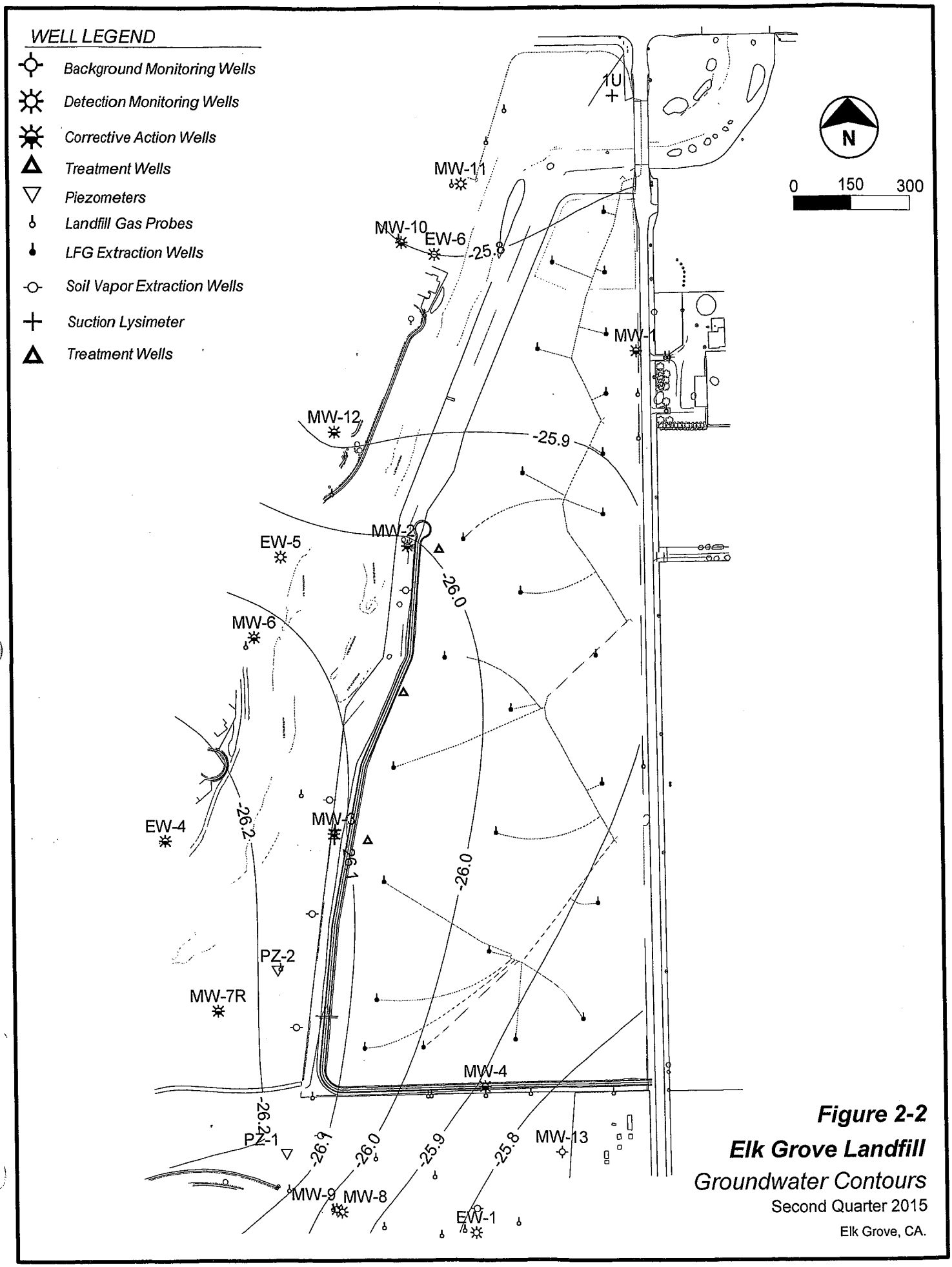


Figure 2-2

Elk Grove Landfill

Groundwater Contours

Second Quarter 2015

Elk Grove, CA.

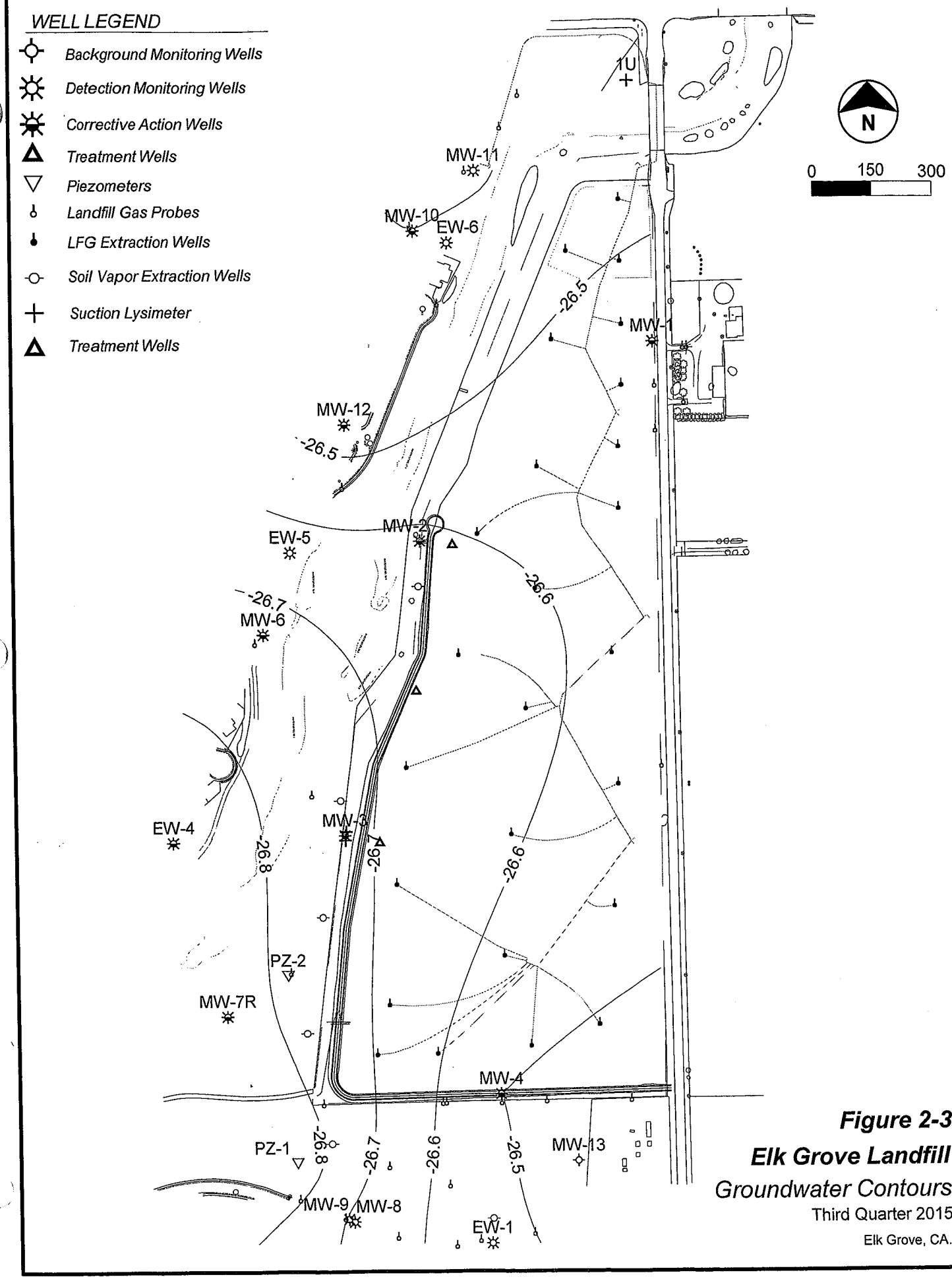


Figure 2-3

Elk Grove Landfill

Groundwater Contours

Third Quarter 2015

Elk Grove, CA.

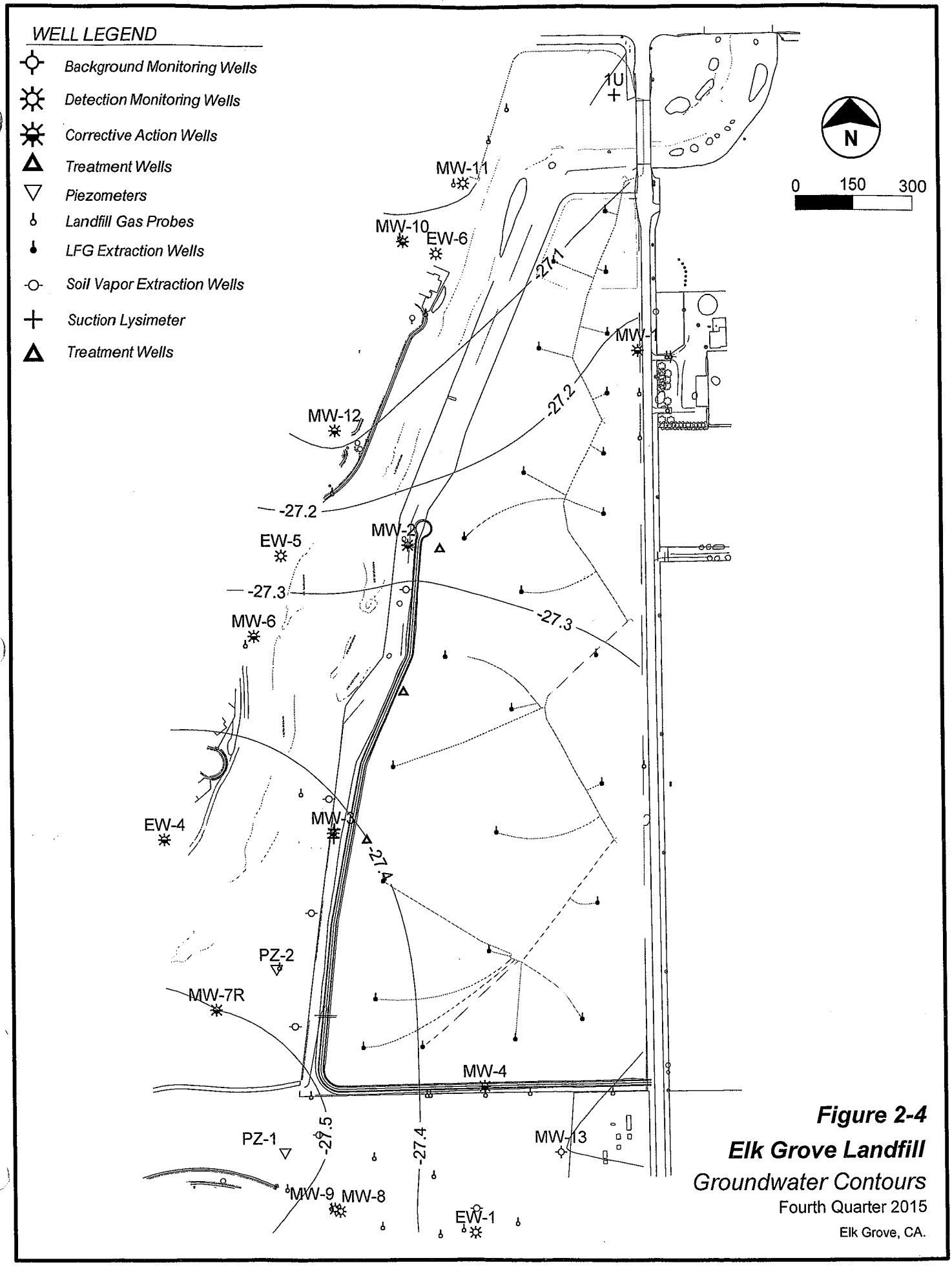


Figure 2-4

Elk Grove Landfill

Groundwater Contours

Fourth Quarter 2015

Elk Grove, CA.

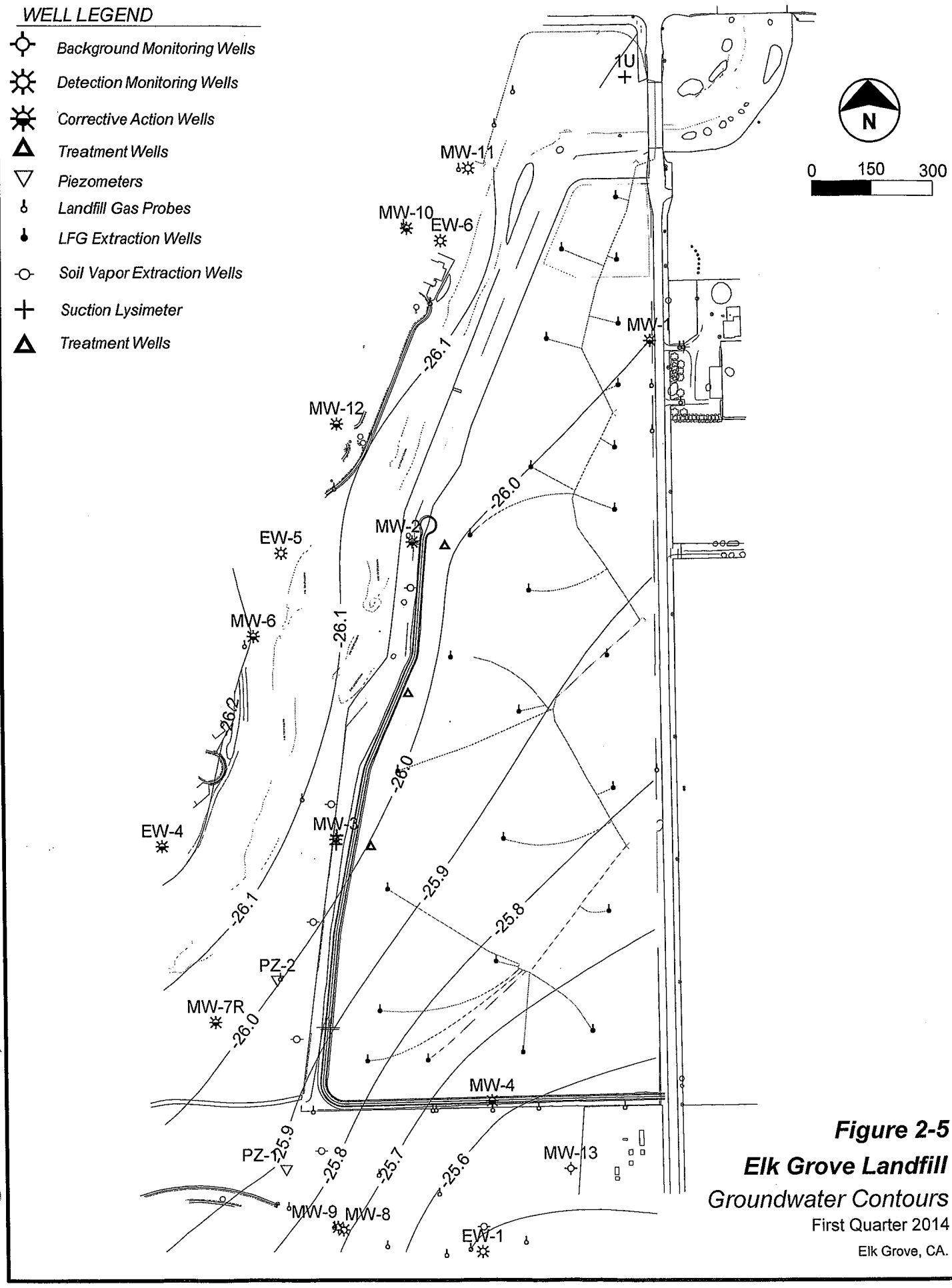


Figure 2-5

Elk Grove Landfill

Groundwater Contours

First Quarter 2014

Elk Grove, CA.

3 GROUND WATER MONITORING PROGRAM

3.1 Description of Program

Monitoring and Reporting Program (MRP) No. R5-2013-0134 specifies that the ground water monitoring network shall consist of 17 ground water monitoring wells, including a proposed new background well, to be designated MW-13 (see Table 1-1 and Figure 1-2). MW-13 was drilled and installed in August 2014. Eight ground water monitoring wells (one of which is dry) are designated as detection monitoring wells, and nine wells are designated as corrective action wells. Monitoring points are sampled for the chemical analyses listed in Table 1-2.

3.2 Sampling Event and Presentation of Results

Semiannual monitoring of all operating monitoring wells was performed during 2015, as required by MRP No. R5-2013-0134. 5-year Constituents Of Concern (COC) monitoring was performed in October 2015 in conjunction with the second semiannual sampling event. Sampling procedures are described in Appendix F. All wells were purged before sampling. Section 6 (Compliance Evaluation Summary) contains a detailed discussion of procedures, protocols and quality control.

Appendices G and H contain field and laboratory data for the third and fourth quarter sampling events. Tables 3-1 through 3-4 present third and fourth quarter ground water monitoring well data. Table 3-5 presents the 5-year COC monitoring results. Figures 3-1 and 3-2 contain graphs of selected historical monitoring well VOC data. Contour maps of inorganic anions (bicarbonate, chloride, nitrate and sulfate) are presented in Figures 3-3 through 3-6. Tables and graphs of all historical constituent data are contained in Appendix C. Tables and graphs were only prepared for VOCs that have been detected on a regular basis.

3.3 Discussion of Results, Compliance and Corrective Actions

3.3.1 Volatile Organic Compounds (VOCs)

Water Quality Protection Standard (WQPS)

Since VOCs are not (generally) naturally occurring, the concentration limits for VOCs are generally set near the technological limits of accurate repeatable quantitation, but not so low as to generate false positive indications of a release. Most concentration limits for VOCs have been set at the 0.5 ug/l reporting limit specified as a Minimum Level (lowest enforceable reporting

limit) by the California State Water Resources Control Board (SWRCB) in its 2005 "Policy for Implementation of Toxics Standards for Inland Surface Waters", also referred to as the SIP (State Implementation Policy). However, improving technology and increased demands for environmental protection have led to concentration limits being set lower for some constituents with lower water quality objectives, such as tetrachloroethene (PCE) and vinyl chloride, which have concentration limits set at 0.06 ug/l and 0.05 ug/l, respectively, in accordance with MRP R5-2013-0134. These concentration limits are near the limit of available laboratory technology, and quantitation at these levels can be difficult; however, DWMR believes that its laboratories currently under contract provide adequate quantitation at these levels for these compounds. The WQPS for VOCs was not updated for 2015, and no updates or proposed changes are planned at this time.

If a compound detected in a sample is also detected in the associated field and/or travel blank at a similar level, that compound will not be considered as being detected. EPA Method 8260B analysis is currently used for VOCs, in accordance with the provisions of MRP No. R5-2013-0134.

Detection Monitoring Wells (MW-8, 9, 11, 13, EW-1, 5, 6, W-7)

See Table 3-1 and Figure 3-1. W-7 has been dry throughout 2015. The other detection monitoring wells were generally nondetect for all VOCs throughout 2015, except for traces of freons and chloromethane. Traces (< 0.5 ug/l) of freons were found in MW-8, EW-1 and EW-5. Freons are highly mobile, and are nontoxic even at concentrations orders of magnitude higher than the levels being detected. Chloromethane is occasionally detected in field blanks (but was not detected in the field blank for this sampling event), hence the detections of chloromethane in MW-11 and EW-1 are suspect. Several other VOCs were detected at trace levels, but all of these VOCs were found in the field blanks at similar or higher levels, and hence these detections were not counted as hits in terms of the determination of a potential release. No Concentration Limits were exceeded. These results represent little or no change from prior periods, except for the disappearance of PCE from MW-11 in 2015, where traces had been detected in previous years. Ground water gradients at MW-11 appear to have reversed direction, as discussed in Section 2.

Corrective Action Monitoring Wells (MW-1, 2, 3, 4, 6, 7R, 10, 12, EW-4)

VOCs (Volatile Organic Constituents) were detected at most corrective action monitoring wells (see Table 3-2 and Figure 3-2). However, MW-4 had no confirmed VOC detections except for low-toxicity Freons (CFCs), which were detected at levels less than 0.5 ug/l (drinking water standards for Freons are 1000 ug/l and higher). MW-10 had no confirmed VOC detections in the second quarter or the second half of 2015, and was temporarily replaced by MW-7R in the quarterly monitoring program. VOC concentrations are decreasing at MW-3, MW-6 and MW-12, and are increasing at MW-2 and MW-7R. The unregulated TIC (tentatively identified compound) Freon 22 was detected at several corrective action wells, most notably MW-3. Freon 22, a refrigerant, has no known published toxicity or water quality objectives. PCE has recently appeared at former background well MW-1, possibly due to a reversal in ground water gradient at that location. Changes in ground water gradients in the past 2 years may also be responsible for changes in VOC levels at other monitoring wells.

Drinking water standards (EPA MCLs and Calif. Notification Levels) were not exceeded for VOCs.

Operation of the LFG collection system, which has resulted in nondetect levels of methane in perimeter gas probes since 2001 (see Section 5), has positively impacted the site. As a result of declining gas levels, the destruction of LFG (via the flare) is no longer required. LFG continues to be extracted and vented in accordance with our SMAQMD permit.

Injections of Hydrogen Release Compound (HRC) previously occurred from 2007 to 2011. DWMR received issuance in July 2014 of a Notice Of Applicability (NOA) to re-commence HRC injections. In the June 2014, DWMR drilled 3 HRC injection wells as shown in Figure 1-2. The first scheduled HRC injection occurred in August 2014, and a second injection occurred in April 2015. This program is described in detail in separate reports prepared for WDR Order No. R5-2008-0149-048, "General Waste Discharge Requirements for In-situ Groundwater Remediation at Sites with Volatile Organic Compounds". DWMR may propose to increase injection rates beyond the 1 gallon limit in Order R5-2008-0149-048, in order to deal with increasing VOC levels at monitoring well MW-2. Such an increase in injection rate may be possible without impacting boundary receptors (MW-6, MW-12, EW-4, EW-5), since the ground water gradient at MW-2 is currently in a direction towards the landfill and away from these receptors. This will be discussed in more detail in the annual monitoring report being prepared for Order R5-2008-0149-048.

3.3.2 Inorganic Compounds

Water Quality Protection Standard

The concentration limits for inorganic constituents for groundwater were established based on the interwell tolerance interval procedure. The tolerance interval method can be used in determining statistically significant evidence of a release of inorganic constituents from a waste management unit.

With one exception, analytical data are compared to the upper tolerance limit; an exceedance of an upper tolerance limit may be indicative of a release from the landfill. The exception is pH, for which both a lower and an upper tolerance limit are proposed. The pH values that fall below the lower limit or exceed the upper limit may be indicative of landfill impact.

Due to the detections of VOCs at background well MW-1 (confirmed VOC detections were first recorded at MW-1 in late 1998), only data prior to 1998 was used in calculation of tolerance limits, except for Constituents Of Concern, where no data prior to 1998 exists. Numerical values of these tolerance limits are used herein as concentration limits for statistical comparisons. These concentration limits are identical to those listed in MRP No. R5-2013-0134. Following sufficient sampling of new background well MW-13 during all seasons, the Water Quality Protection Standard (WQPS) will be revised. This revision will require RWQCB approval and is expected to occur within the next year, after 8 samples have been collected over a two year period. MW-13 is located at the south end of the site. Changes in ground water gradients may

result in additional proposed changes to the Water Quality Protection Standard (WQPS), including the possibility of designating MW-10 or MW-11 as a background well for the northern portion of the landfill. MW-10 and MW-11 are currently nondetect for VOCs, and MW-10 only slightly exceeds WQPS's for several inorganic compounds.

Downgradient Detection Monitoring Wells (MW-8, 9, 11, EW-5, 6, W-7)

The calculated concentration limits for the monitoring parameters were compared to second half 2015 analytical results (see Table 3-1). For inorganics, the results of the monitoring parameter tolerance interval procedure for the detection monitoring wells indicate that many tolerance limits were exceeded. Exceedances were recorded at the following downgradient detection monitoring wells (CL = Concentration Limit):

Electrical Conductivity (CL = 358)
MW-11: 422 umhos/cm
EW-5: 434 umhos/cm
(Drinking Water Standard = 1600 umhos/cm)

Chloride (CL = 9.9)
MW-8: 12.3 mg/l
MW-11: 10.8 mg/l
EW-5: 11.8 mg/l
EW-6: 10.4 mg/l
(Drinking Water Standard = 250 mg/l)

Nitrate (as N) (CL = 1.5)
MW-8: 2.0 mg/l
EW-1: 3.3 mg/l
(Drinking Water Standard = 10 mg/l)

Sulfate (CL = 6.8)
MW-8: 7.7 mg/l
(Drinking Water Standard = 250 mg/l)

Magnesium (CL = 17.5)
MW-11: 26 mg/l
EW-1: 18.3 mg/l
EW-5: 27.6 mg/l
(no Drinking Water Standard)

For electrical conductivity, a slight impact may be indicated at MW-11, as a result of the contribution of bicarbonate concentration to conductivity. A contour map of bicarbonate concentration is presented as Figure 3-3. Bicarbonate could be indicative of historical LFG impact, although no VOCs are currently being detected at this well (there have been trace detections in the past). EW-5 previously had substantial VOCs prior to nearby HRC injections from 2008 to 2011, but bicarbonate levels at EW-5 still exceed the CL (HRC does not remove bicarbonate).

For chloride, please see Figure 3-4, a contour map of chloride concentration. Based on the figure, the chloride exceedances do not appear to be related to landfill impacts. Historical chloride concentrations of 20 mg/l at upgradient well EW-1 exceed all downgradient detection monitoring well concentrations.

For nitrate, please see Figure 3-5. The Concentration Limit exceedances for nitrate at MW-8 do not appear to be related to the landfill.

For sulfate (Figure 3-6), the exceedance at crossgradient well MW-8 (7.7 mg/l) does not appear to be significant. Sulfate concentration at MW-8 is similar to that at upgradient wells EW-1 and MW-13.

Magnesium is a positive ion (cation) which would be expected to appear in conjunction with negative ions; hence magnesium's presence in excess of CLs would be explained by the discussion of negative ions bicarbonate, chloride, nitrate and sulfate above. The magnesium exceedances were recorded at the same wells that had elevated electrical conductivity, and the magnesium levels at these wells were approximately proportional to conductivity levels.

Thus, no landfill impact upon the ground water is indicated for inorganic compounds at the detection monitoring wells, except possibly for minor bicarbonate residuals at MW-11 and EW-5. No regulatory agency drinking water standards were exceeded. No major changes in overall inorganic constituent concentrations were observed.

Corrective Action Monitoring Wells (MW-1, 2, 3, 4, 6, 7R, 10, 12, EW-4)

See Table 3-2 and Figures 3-3 through 3-6. The most significant inorganic compound detected in excess of CLs was bicarbonate. The Secondary MCL for specific electrical conductance (700 umhos/cm) was slightly exceeded at MW-3 and MW-6. However, only the recommended MCL, and not the upper limit MCL, was exceeded for this parameter. Bicarbonate can be produced by carbon dioxide infiltration of water (in either the saturated or unsaturated zone) by contact with LFG. No significant trends in inorganic constituent concentrations were noticeable, except that bicarbonate concentrations are increasing slowly at MW-2, MW-3 and MW-7R, and EC is falling at MW-3, MW-4 and MW-10. Chloride concentration in monitoring wells in the southern portion of the site is elevated relative to the northern portion. The highest chloride concentration is at MW-4, which is at the southern boundary of the landfill, where ground water gradients are estimated to be from the southeast.

MW-3 has elevated sulfate concentration (Figure 3-6), which may possibly be related to infiltration from a substantial receiving water outfall (R-3) located within 10 feet of the well. When this well is pumped for longer periods, sulfate and nitrate concentrations drop quickly. In recent years, DWMR has improved its maintenance procedures regarding brush and organic matter removal from the outfalls, and DWMR relocated outfall R-3 in late spring 2015. Sulfate concentration at MW-3 declined throughout 2015.

3.3.3 5-Year Constituents Of Concern (COC) Monitoring

See Table 3-5. Concentration Limits for four inorganic COCs (metals) were exceeded. The 6 ug/l CL for arsenic was slightly exceeded at MW-1, the former background well. MW-1 will be retested for arsenic in 2016. MW-1 also had elevated levels of iron and manganese, which may be residual impact from a prior HRC injection at this location several years ago. Barium, iron and manganese CLs were also exceeded at several corrective action wells and at new background well MW-13. These compounds, which are present in soil, can dissolve when groundwater is subjected to anaerobic (oxygen deficient) conditions such as those often present beneath landfills, or where a substantial depth of organic matter and/or lack of air penetration is present. MW-13 is located in a park that has been subject to very high irrigation rates in recent history. Iron and manganese were tested under previous WDRs, and are also part of the current monitoring program for the HRC injections (Order R5-2008-0149-48).

No EPA 8260-listed VOCs other than VOCs in the regular monitoring program list were detected; i.e., none of the additional VOCs on the COC list was detected. The detection limits for the COC test were much higher than for regular semiannual monitoring; thus fewer VOCs were detected. The Tentatively Identified Compounds (TICs) trimethyl silanol and isobutyl alcohol were detected in many samples and field blanks, hence these detections were regarded as not confirmed and not subject to retest. No EPA 8270-listed semivolatile organic compounds (SVOCs) were detected. However, some common naturally occurring fatty acids were detected as Tentatively Identified Compounds (TICs). These TICs were detected at almost all wells including background locations. No pesticides or herbicides were detected.

Table 3-1
Elk Grove Landfill Detection Monitoring Wells
Second Half 2015 Monitoring Results

Units: mg/l, except as noted

Sample Designation (Well #) Sampling Date	*CL*	MW-8 10/19/15	MW-9 10/19/15	MW-11 10/20/15	EW-1 10/28/15	EW-5 10/29/15	EW-6 10/19/15
Field Parameters							
Groundwater Elevation (ft. MSL)	---	-27.43	-27.77	-26.99	-27.38	-27.39	-26.84
Specific Conductance (umhos/cm)	*358*	271	258	**422**	335	**434**	304
pH (units)	*6.0-7.6*	7.28	7.36	7.31	7.32	7.35	**7.79**
Temperature (°F)	---	67.6	67.6	65.1	67.5	68.0	65.5
Turbidity (NTU)	---	0.41	0.87	0.29	1.48	0.44	0.93
Dissolved Oxygen (mg/l)	---	6.07	1.42	5.35	5.63	4.2	6.52
Oxidation-Reduction Potential (mV)	---	86	68	112	69	104	106
Sulfide (mg/l)	---	<0.01	<0.01	<0.01	<0.01	<0.01	
Volatile Organic Compounds (ug/L)							
Acetone	*10*	<0.04	**0.44 J,F**	<0.04	<0.04	<0.04	<0.04
Benzene	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
2-Butanone	*10*	<0.04	<0.04	<0.04	**0.10 J,F**	<0.04	<0.04
Chlorobenzene	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Chloroform	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Chloromethane	*0.5*	<0.04	<0.04	**0.05 J**	**0.04 J**	<0.04	<0.04
1,4-Dichlorobenzene	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Dichlorodiflouromethane (Freon 12)	*1.0*	**0.29**	<0.04	<0.04	**0.07 J**	<0.04	<0.04
1,1-Dichloroethane	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
1,2-Dichloroethane	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
cis-1,2-Dichloroethene	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
1,2-Dichloropropane	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Methylene Chloride	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	*0.06*	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Toluene	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Trichloroethene	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Trichlorofluoromethane	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Vinyl Chloride	*0.05*	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Other standard VOCs	*0.5*	<0.04	<0.04	**0.1 J,F,B**	**0.08 J,F**	<0.04	**0.1 J,F,B**
Total standard VOCs		0.29	0.00	0.00	0.00	0.00	0.00
Chlorodiflouromethane (F22)**		<0.04	<0.04	<0.04	<0.04	**0.20 J**	<0.03
Dichloroflouromethane (F21)**		< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Other Monitoring Parameters							
Calcium	*NA*	21.7	21.7	32.7	24.9	36.2	21.6
Magnesium	*17.5*	16	14.2	**26**	**18.3**	**27.6**	16
Potassium	*NA*	1.8	3.1	2.3	2.4	1.7	1.9
Sodium	*NA*	14.1	14.1	18	16	20.2	17.8
Bicarbonate (as CaCO3)	*287*	122	134	218	156	236	150
Carbonate	*20*	<5	<5	<5	<5	<5	<5
Chloride	*10*	**12.3**	8.8	**10.8**	7.6	**11.8**	**10.4**
Nitrate as N	*1.5*	**2.0**	1.2	0.3	**3.3**	0.5	0.1
Sulfate	*6.8*	**7.7**	4.7	0.5	7.9	2.4	1.8
Total Dissolved Solids	*290*	121	173	233	229	272	181

Notes: CL = Concentration Limit, J = trace value (below PQL), F = detected in field blank, B = detected in method blank

** This compound is not normally measured by any EPA method but has been added to the regular compound list at DWMR request due to repeated detections as a Tentatively Identified Compound (TIC).

Table 3-2a
Elk Grove Landfill Corrective Action Wells
Second Half 2015 Monitoring Results

Units: mg/l, except as noted

Sample Designation (Well #) Sampling Date	*CL*	MW-1 10/28/15	MW-2 10/20/15	MW-3 10/21/15	MW-4 10/20/15
Field Parameters					
Groundwater Elevation (ft. MSL)	---	-27.23	-27.28	-27.41	-27.34
Specific Conductance (umhos/cm)	*358*	301	**535**	**754**	**447**
pH (units)	*6.0-7.6*	6.64	7.13	6.97	7.21
Temperature (°F)	---	69.4	70.3	68.2	68.3
Turbidity (NTU)	---	1.48	0.12	0.12	0.76
Dissolved Oxygen (mg/l)	---	1.3	0.25	0.46	3.22
Oxidation-Reduction Potential (mV)	---	-94	109	142	125
Sulfide (mg/l)	---	<0.01	<0.01	<0.01	<0.01
Volatile Organic Compounds (ug/L)					
Acetone	*10*	**1.5 J,F**	**0.4 J,F**	**0.79 J,F**	**0.44 J,F**
Benzene	*0.5*	<0.04	<0.04	<0.04	<0.03
2-Butanone	*10*	<0.04	<0.04	**0.11 J,F**	<0.03
Chlorobenzene	*0.5*	<0.04	<0.04	<0.04	<0.03
Chloroform	*0.5*	<0.04	**0.05 J**	<0.04	<0.03
Chloromethane	*0.5*	<0.04	**0.04 J**	**0.06 J**	<0.03
1,2-Dichlorobenzene	*0.5*	<0.04	<0.04	<0.04	<0.03
1,4-Dichlorobenzene	*0.5*	<0.04	<0.04	**0.09 J**	<0.03
Dichlorodiflouromethane (Freon 12)	*1.0*	**0.34**	**0.21**	<0.04	**0.40**
1,1-Dichloroethane	*0.5*	<0.04	**0.33**	**0.05 J**	<0.03
1,2-Dichloroethane	*0.5*	<0.04	<0.04	<0.03	<0.03
cis-1,2-Dichloroethene	*0.5*	<0.04	**0.93**	**0.14**	<0.03
1,2-Dichloropropane	*0.5*	<0.04	<0.04	**0.04 J**	<0.03
Methylene Chloride	*0.5*	<0.04	**0.32 J**	**0.04 J,F**	<0.03
Methyl tert-butyl Ether	*0.5*	<0.04	<0.04	<0.04	<0.03
Naphthalene	*0.5*	<0.04	<0.04	<0.04	<0.03
Tetrachloroethene	*0.06*	**0.13**	**0.29**	**0.16**	<0.03
Toluene	*0.5*	<0.04	<0.04	<0.04	<0.03
Trichloroethene	*0.5*	<0.04	**0.39**	**0.11**	<0.03
Trichlorofluoromethane	*0.5*	<0.04	<0.04	<0.04	<0.03
Vinyl Chloride	*0.05*	<0.04	<0.04	<0.04	<0.03
Other standard VOCs	*0.5*	**0.08 J,F**	**0.08 J,F,B**	**0.18 J,F,B**	**0.08 J,F,B**
Total standard VOCs		0.47	2.15	0.41	0.40
Chlorodiflouromethane (Freon 22)**		<0.04	**3.60**	**6.50**	**0.11 J**
Dichloroflouromethane (Freon 21)**		<0.08	**0.95**	**0.42 J**	<0.08
Other Monitoring Parameters					
Calcium	*NA*	21.3	49.4	86.5	37.8
Magnesium	*17.5*	18.9	**38.6**	**67.6**	**29.1**
Potassium	*NA*	1.5	2.5	2.6	4.0
Sodium	*NA*	15.9	21.5	26.3	19.7
Bicarbonate (as CaCO3)	*287*	150	**308**	**508**	180
Carbonate	*20*	<5	<5	<5	<5
Chloride	*10*	7.8	9.4	**47.4**	**47**
Nitrate as N	*1.5*	<0.11	0.3	0.7	**2.5**
Sulfate	*6.8*	5.2	4.8	**17.4**	5
Total Dissolved Solids	*290*	210	**340**	**563**	**290**

Notes: CL = Concentration Limit, J = trace value (below PQL), F = detected in field blank, B = detected in method blank

** This compound is not normally measured by any EPA method but has been added to the regular compound list at DWMR request due to repeated detections as a Tentatively Identified Compound (TIC).

Table 3-2b
Elk Grove Landfill Corrective Action Wells
Second Half 2015 Monitoring Results

Units: mg/l, except as noted

Sample Designation (Well #) Sampling Date	*CL*	MW-6 10/22/15	MW-7R 10/20/15	MW-10 10/19/15	MW-12 10/21/15	EW-4 10/21/15
Field Parameters						
Groundwater Elevation (ft. MSL)	---	-27.35	-27.50	-27.01	-27.07	-27.46
Specific Conductance (umhos/cm)	*358*	**762**	**539**	310	**308**	**491**
pH (units)	*6.0-7.6*	7.19	7.14	7.36	7.38	7.20
Temperature (°F)	---	69.6	69.4	66.2	67.6	67.5
Turbidity (NTU)	---	0.40	0.45	0.13	1.94	0.03
Dissolved Oxygen (mg/l)	---	0.77	0.99	5.75	4.95	3.2
Oxidation-Reduction Potential (mV)	---	94	106	95	142	137
Sulfide (mg/l)	---	<0.01	<0.01	<0.01	<0.01	<0.01
Volatile Organic Compounds (ug/L)						
Acetone	*10*	<0.04	<0.04	**0.27 J,F**	**0.04 J,F**	**0.2 J,F**
Benzene	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04
2-Butanone	*10*	<0.04	<0.04	<0.04	**0.05 J,F**	<0.04
Chlorobenzene	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04
Chloroform	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04
Chloromethane	*0.5*	<0.04	**0.12 J**	<0.04	**0.05 J**	**0.05 J**
1,2-Dichlorobenzene	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04
1,4-Dichlorobenzene	*0.5*	<0.04	**0.09 J**	<0.04	<0.04	<0.04
Dichlorodiflouromethane (Freon 12)	*1.0*	<0.04	**0.33**	<0.04	**0.04 J**	**0.05 J**
1,1-Dichloroethane	*0.5*	**0.06 J**	**0.05 J**	<0.04	<0.04	<0.04
1,2-Dichloroethane	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04
cis-1,2-Dichloroethene	*0.5*	**0.09 J**	**0.59**	<0.04	<0.04	<0.04
1,2-Dichloropropane	*0.5*	<0.04	**0.07 J**	<0.04	<0.04	<0.04
Methylene Chloride	*0.5*	<0.04	**0.24 J**	<0.04	<0.04	<0.04
Methyl tert-butyl Ether	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04
Naphthalene	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	*0.06*	**0.25**	**0.28**	<0.04	**0.27**	**0.17**
Toluene	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04
Trichloroethene	*0.5*	**0.11**	**0.13**	<0.04	<0.04	**0.04 J**
Trichlorofluoromethane	*0.5*	<0.04	<0.04	<0.04	<0.04	<0.04
Vinyl Chloride	*0.05*	<0.04	<0.04	<0.04	<0.04	<0.04
Other standard VOCs	*0.5*	**0.15 J,F,B**	**0.07 J,F,B**	<0.04	<0.04	**0.11 J,F,B**
Total standard VOCs		0.36	1.33	0.00	0.27	0.17
Chlorodiflouromethane (Freon 22)**		**1.70**	**2.70**	<0.03	**0.09 J**	**1.40**
Dichloroflouromethane (Freon 21)**		<0.08	**0.69**	<0.08	<0.08	<0.08
Other Monitoring Parameters						
Calcium	*NA*	70.4	55	27.2	27.7	41.4
Magnesium	*17.5*	**52.7**	**42.8**	**21.3**	**21.5**	**40.2**
Potassium	*NA*	2.9	2.8	2.1	1.9	2.0
Sodium	*NA*	29.2	21.3	18.3	16.1	21.5
Bicarbonate (as CaCO3)	*287*	**408**	278	188	182	**314**
Carbonate	*20*	<5	<5	<5	<5	<5
Chloride	*10*	**14.2**	**48.1**	**11.5**	**10.6**	**18.5**
Nitrate as N	*1.5*	0.5	**2.3**	0.2	0.5	0.8
Sulfate	*6.8*	**8.5**	5.1	1.4	2	6.3
Total Dissolved Solids	*290*	**448**	**369**	207	229	**350**

Notes: CL = Concentration Limit, J = trace value (below PQL), F = detected in field blank, B = detected in method blank

** This compound is not normally measured by any EPA method but has been added to the regular compound list at DWMR request due to repeated detections as a Tentatively Identified Compound (TIC).

Table 3-3
Elk Grove Landfill MW-13
Second Half 2015 Monitoring Results
Units: mg/l, except as noted

Sample Designation (Well #) Sampling Date	MW-13 10/28/15	MW-13 12/28/15
Field Parameters		
Groundwater Elevation (ft. MSL)	-27.10	-27.16
Specific Conductance (umhos/cm)	491	524
pH (units)	7.18	7.19
Temperature (°F)	66.0	65.4
Turbidity (NTU)	6.5	13.8
Dissolved Oxygen (mg/l)	0.10	0.17
Oxidation-Reduction Potential (mV)	-117	-145
Volatile Organic Compounds (ug/l)		
Acetone	**1.5 J,F**	**0.87 J,F**
Benzene	<0.04	< 0.01
2-Butanone	**0.12 J,F**	< 0.06
Chloroform	**0.24**	**0.22**
Chloromethane	<0.04	**0.05 J,F**
1,4-Dichlorobenzene	<0.04	< 0.01
Dichlorodiflouromethane (Freon 12)	<0.04	< 0.01
1,1-Dichloroethane	<0.04	< 0.03
cis-1,2-Dichloroethene	<0.04	< 0.02
Methylene Chloride	<0.04	< 0.02
4-Methyl-2-Pentanone	**0.04 J**	< 0.04
Naphthalene	**0.04 J**	**0.03 J**
Tetrachloroethene	<0.04	< 0.01
Trichloroethene	<0.04	< 0.01
Vinyl Chloride	<0.04	< 0.01
Other standard VOCs	**0.10 J,F**	**0.07 J,F,B**
Total standard VOCs	0.24	0.22
Chlorodiflouromethane (Freon 22)**	<0.04	<0.05
Dichloroflouromethane (Freon 21)**	<0.08	<0.03
Other Monitoring Parameters		
Calcium	37.2	34.8
Magnesium	22.1	21.5
Potassium	6.0	6.1
Sodium	30.8	38.2
Bicarbonate (as CaCO3)	178	185
Carbonate	<5	---
Chloride	52.8	57.7
Nitrate as N	2.1	0.4
Sulfate	6.6	7.3
Total Dissolved Solids	321	378
Total Organic Carbon	5.91	---
Metals, Dissolved (ug/l)		
Arsenic	2.9	3.9
Cadmium	0.2 J	ND
Chromium	0.6 J	ND
Copper	0.5 J	ND
Iron	721.0	745
Lead	<0.2	ND
Manganese	570	585
Nickel	0.8 J	1
Selenium	0.6 J	ND
Silver	<0.1	ND
Zinc	5	ND

Notes: CL = Concentration Limit, J = trace value (below PQL), F = detected in field blank, B = detected in method blank

** This compound is not normally measured by any EPA method but has been added to the regular compound list at DWMR request due to repeated detections as a Tentatively Identified Compound (TIC).

Table 3-4
Elk Grove Landfill Corrective Action Wells
Quarterly VOC Monitoring Results, MW-6 and MW-7R
Units: mg/l, except as noted

Sample Designation (Well #)	*CL*	MW-6	MW-7R
Sampling Date		7/29/15	7/22/15
Field Parameters			
Groundwater Elevation (ft. MSL)	---	-26.64	-26.63
Specific Conductance (umhos/cm)	*358*	**761**	**628**
pH (units)	*6.0-7.6*	7.13	7.10
Temperature (°F)	---	70.3	68.7
Turbidity (NTU)	---	0.42	0.66
Dissolved Oxygen (mg/l)	---	0.9	1.46
Oxidation-Reduction Potential (mV)	---	16	-1
Volatile Organic Compounds (ug/L)			
Acetone	*10*	<0.04	<0.04
Benzene	*0.5*	<0.04	<0.04
2-Butanone	*10*	<0.04	<0.04
Chloroform	*0.5*	<0.04	<0.04
Chloromethane	*0.5*	**0.50 J,F**	**0.19 J,F**
1,4-Dichlorobenzene	*0.5*	<0.04	**0.06 J**
Dichlorodiflouromethane (Freon 12)	*1.0*	<0.04	**0.33**
1,1-Dichloroethane	*0.5*	<0.04	**0.05 J**
cis-1,2-Dichloroethene	*0.5*	**0.07**	**0.43**
Methylene Chloride	*0.5*	<0.04	**0.28**
Tetrachloroethene	*0.06*	**0.24**	**0.23**
Toluene	*0.5*	<0.04	<0.04
Trichloroethene	*0.5*	**0.09**	**0.10**
Trichlorofluoromethane	*0.5*	<0.04	<0.04
Vinyl Chloride	*0.05*	<0.04	<0.04
Other standard VOCs	*0.5*	**0.04 J**	**0.06 J**
Total standard VOCs		0.40	1.37
Chlorodiflouromethane (F22)**		**2.30**	**2.30**
Dichloroflouromethane (F21)**		**0.12 J**	**0.56**

Notes: CL = Concentration Limit, J = trace value (below PQL), F = detected in field blank, B = detected in method blank

** This compound is not normally measured by any EPA method but has been added to the regular compound list at DWMR request due to repeated detections as a Tentatively Identified Compound (TIC).

Table 3-5
Elk Grove Landfill
COC Monitoring Results - Ground Water
Units: ug/l, unless noted

Sample Designation (Well #) Sampling Date	*CL*	MW-1 10/28/15	MW-2 10/20/15	MW-3 10/21/15	MW-4 10/20/15	MW-6 10/22/15	MW-7R 10/20/15
Metals							
Aluminum	*100*	4.9	<5	<5	<5	<5	<5
Antimony	*10*	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Arsenic	*6*	**8.1**	1.8	1.5	<0.2	1.7	1
Barium	*109*	76	**122**	**203**	81	**155**	**130**
Beryllium	*3*	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	*10*	0.2	0.1	0.1	<0.1	0.2	0.2
Chromium	*20*	0.3	2	2.3	6.8	1.6	6.4
Cobalt	*NA*	0.5	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	*230*	0.2	<0.2	7.5	<0.2	0.3	0.2
Iron	*100*	**857**	1.9	<2.3	3.7	12.2	6.1
Lead	*100*	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Manganese	*50*	**1120**	7.7	**118**	2.2	14.5	<0.1
Mercury	*0.2*	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	*20*	0.3	<0.1	0.7	<0.1	0.2	<0.1
Selenium	*5*	0.5	0.4	0.3	<0.3	0.3	0.4
Silver	*10*	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Thallium	*10*	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Tin	*50*	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium	*50*	0.2	17.6	10.3	14.2	14.8	16.1
Zinc	*160*	9.3	0.8	6.3	<0.1	8.5	1.8
EPA 8260 Volatile Organic Compounds							
1,1-Dichloroethane	0.5	ND	0.28	ND	ND	ND	ND
cis-1,2-Dichloroethene	0.5	ND	ND	ND	ND	ND	**0.53**
Tetrachloroethene (PCE)	0.06	ND	ND	ND	ND	ND	ND
Trichloroethene (TCE)	0.5	ND	ND	ND	ND	0.37	0.23
All Other EPA 8260 Compounds		ND	ND	ND	ND	ND	ND
Tentatively Identified Compounds [1]		5.5	7	9.6	17	1.3	6.1
Other TICs		ND	ND	ND	ND	1.3 [3]	2.3 [3]
EPA 8270 Semivolatile Organic Compounds		ND	ND	ND	ND	ND	ND
Tentatively Identified Compounds [2]		33	ND	ND	10	ND	ND
Other TICs		ND	ND	ND	ND	ND	ND
EPA 8081 & 8082 Pesticides/PCBs		ND	ND	ND	ND	ND	ND
EPA 8151 Herbicides		ND	ND	ND	ND	ND	ND
EPA 8141 Organophosphorous Pesticides		ND	ND	ND	ND	ND	ND
Other Parameters (mg/l)							
Cyanide	*NA*	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Sulfides	*NA*	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Organic Carbon	*NA*	4.72	6.36	9.25	ND	4.53	6.64

ND = Not Detected
TIC = Tentatively Identified Compound
CL = Concentration Limit
[1] Isopropyl alcohol and/or trimethyl silanol (also detected in field blanks)
[2] Common fatty acids
[3] Subject to retest in 2016

Table 3-5
Elk Grove Landfill
COC Monitoring Results - Ground Water
Units: ug/l, unless noted

Sample Designation (Well #) Sampling Date	*CL*	MW-8 10/19/15	MW-9 10/19/15	MW-10 10/19/15	MW-11 10/20/15	MW-12 10/21/15	MW-13 10/28/15
Metals							
Aluminum	*100*	10.4	<5	<5	<5	<5	<5
Antimony	*10*	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Arsenic	*6*	3	2.2	<0.2	<0.2	1.5	2.9
Barium	*109*	31.9	50.8	65.6	80	69.5	**124**
Beryllium	*3*	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	*10*	<0.1	6.2	<0.1	<0.1	0.1	0.2
Chromium	*20*	8.3	<0.1	<0.1	<0.1	0.7	0.6
Cobalt	*NA*	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	*230*	<0.2	<0.2	<0.2	<0.2	<0.2	0.5
Iron	*100*	8.7	2.7	4.1	6.5	<2.3	**721**
Lead	*100*	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Manganese	*50*	<0.1	<0.1	<0.1	<0.1	<0.1	**570**
Mercury	*0.2*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	*20*	<0.1	<0.1	<0.1	<0.1	<0.1	0.8
Selenium	*5*	<0.3	<0.3	<0.3	<0.3	0.3	0.6
Silver	*10*	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Thallium	*10*	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Tin	*50*	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium	*50*	19.9	25.8	18.2	16.6	18.1	4.4
Zinc	*160*	2	7.2	<0.1	<0.1	6.3	5
EPA 8260 Volatile Organic Compounds							
1,1-Dichloroethane	0.5	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	0.5	ND	ND	ND	ND	ND	ND
Tetrachloroethene (PCE)	0.06	ND	ND	ND	ND	ND	ND
Trichloroethene (TCE)	0.5	ND	ND	ND	ND	ND	ND
All Other EPA 8260 Compounds		ND	ND	ND	ND	ND	ND
Tentatively Identified Compounds [1]		5	2	1.6	8.5	1.8	3.2
Other TICs		ND	ND	ND	ND	ND	ND
EPA 8270 Semivolatile Organic Compounds		ND	ND	ND	ND	ND	ND
Tentatively Identified Compounds [2]		9.5	33	26	10	11	23
Other TICs		ND	ND	67 [3]	ND	ND	ND
EPA 8081 & 8082 Pesticides/PCBs		ND	ND	ND	ND	ND	ND
EPA 8151 Herbicides		ND	ND	ND	ND	ND	ND
EPA 8141 Organophosphorous Pesticides		ND	ND	ND	ND	ND	ND
Other Parameters (mg/l)							
Cyanide	*NA*	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Sulfides	*NA*	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Organic Carbon	*NA*	2.58	2.8	1.91	2.85	1.65	5.91

ND = Not Detected
TIC = Tentatively Identified Compound
CL = Concentration Limit
[1] Isopropyl alcohol and/or trimethyl silanol (also detected in field blanks)
[2] Common fatty acids
[3] Subject to retest in 2016

Table 3-5
Elk Grove Landfill
COC Monitoring Results - Ground Water
Units: ug/l, unless noted

Sample Designation (Well #) Sampling Date	*CL*	EW-1 10/28/15	EW-4 10/21/15	EW-5 10/29/15	EW-6 10/19/15
Metals					
Aluminum	*100*	<5	<5	<5	<5
Antimony	*10*	<0.3	<0.3	<0.3	<0.3
Arsenic	*6*	2.1	1.8	1.9	3.8
Barium	*109*	74.1	**141**	83.8	86.1
Beryllium	*3*	<0.1	<0.1	<0.1	<0.1
Cadmium	*10*	0.2	0.1	0.2	<0.1
Chromium	*20*	3.2	1.3	0.9	<0.1
Cobalt	*NA*	<0.1	<0.1	<0.1	<0.1
Copper	*230*	2	0.4	0.6	<0.2
Iron	*100*	11.8	<2.3	<2.3	<2.3
Lead	*100*	<0.2	<0.2	<0.2	<0.2
Manganese	*50*	21.6	<0.1	<0.1	<0.1
Mercury	*0.2*	<0.05	<0.05	<0.05	<0.05
Nickel	*20*	0.4	<0.1	0.6	<0.1
Selenium	*5*	0.5	<0.3	0.4	<0.3
Silver	*10*	<0.1	<0.1	<0.1	<0.1
Thallium	*10*	<0.4	<0.4	<0.4	<0.4
Tin	*50*	<0.01	<0.01	<0.01	<0.01
Vanadium	*50*	16.9	16.2	17.8	19.8
Zinc	*160*	6.5	5.2	14.1	2
EPA 8260 Volatile Organic Compounds					
1,1-Dichloroethane	0.5	ND	ND	ND	ND
cis-1,2-Dichloroethene	0.5	ND	ND	ND	ND
Tetrachloroethene (PCE)	0.06	ND	ND	ND	ND
Trichloroethene (TCE)	0.5	ND	ND	ND	ND
All Other EPA 8260 Compounds		ND	ND	ND	ND
Tentatively Identified Compounds [1]		5.1	1.4	ND	2.5
Other TICs		ND	ND	ND	ND
EPA 8270 Semivolatile Organic Compounds		ND	ND	ND	ND
Tentatively Identified Compounds [2]		12	22	19	30
Other TICs		ND	62 [3]	11 [3]	ND
EPA 8081 & 8082 Pesticides/PCBs		ND	ND	ND	ND
EPA 8151 Herbicides		ND	ND	ND	ND
EPA 8141 Organophosphorous Pesticides		ND	ND	ND	ND
Other Parameters (mg/l)					
Cyanide	*NA*	<0.005	<0.005	<0.005	<0.005
Sulfides	*NA*	<0.01	<0.01	<0.01	<0.01
Total Organic Carbon	*NA*	8.27	6.18	10.4	2.87

ND = Not Detected
TIC = Tentatively Identified Compound
CL = Concentration Limit
[1] Isopropyl alcohol and/or trimethyl silanol (also detected in field blanks)
[2] Common fatty acids
[3] Subject to retest in 2016

Figure 3-1a
Elk Grove Landfill Detection Wells - Total VOCs

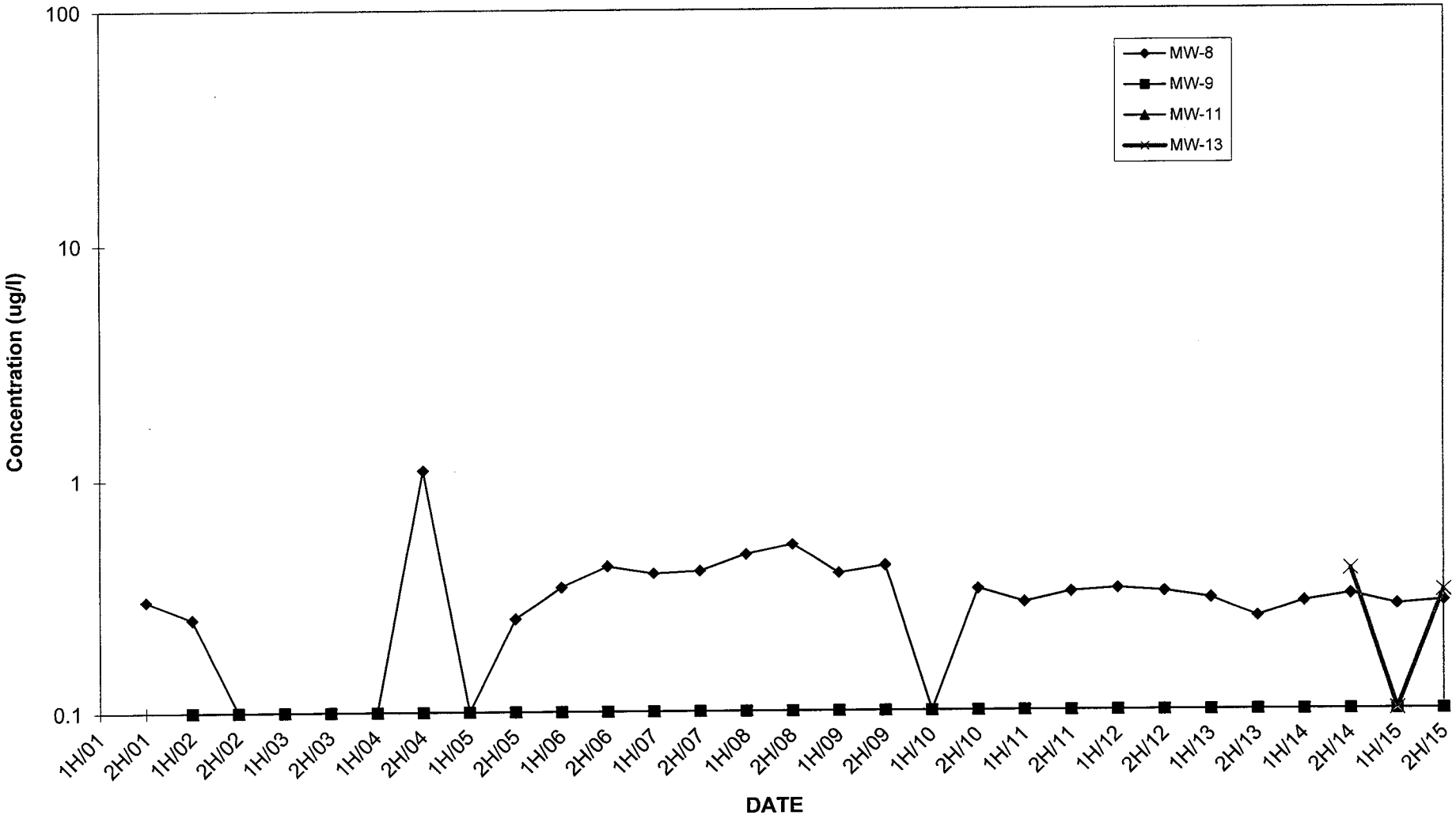


Figure 3-1b
Elk Grove Landfill Detection Wells - Total VOCs

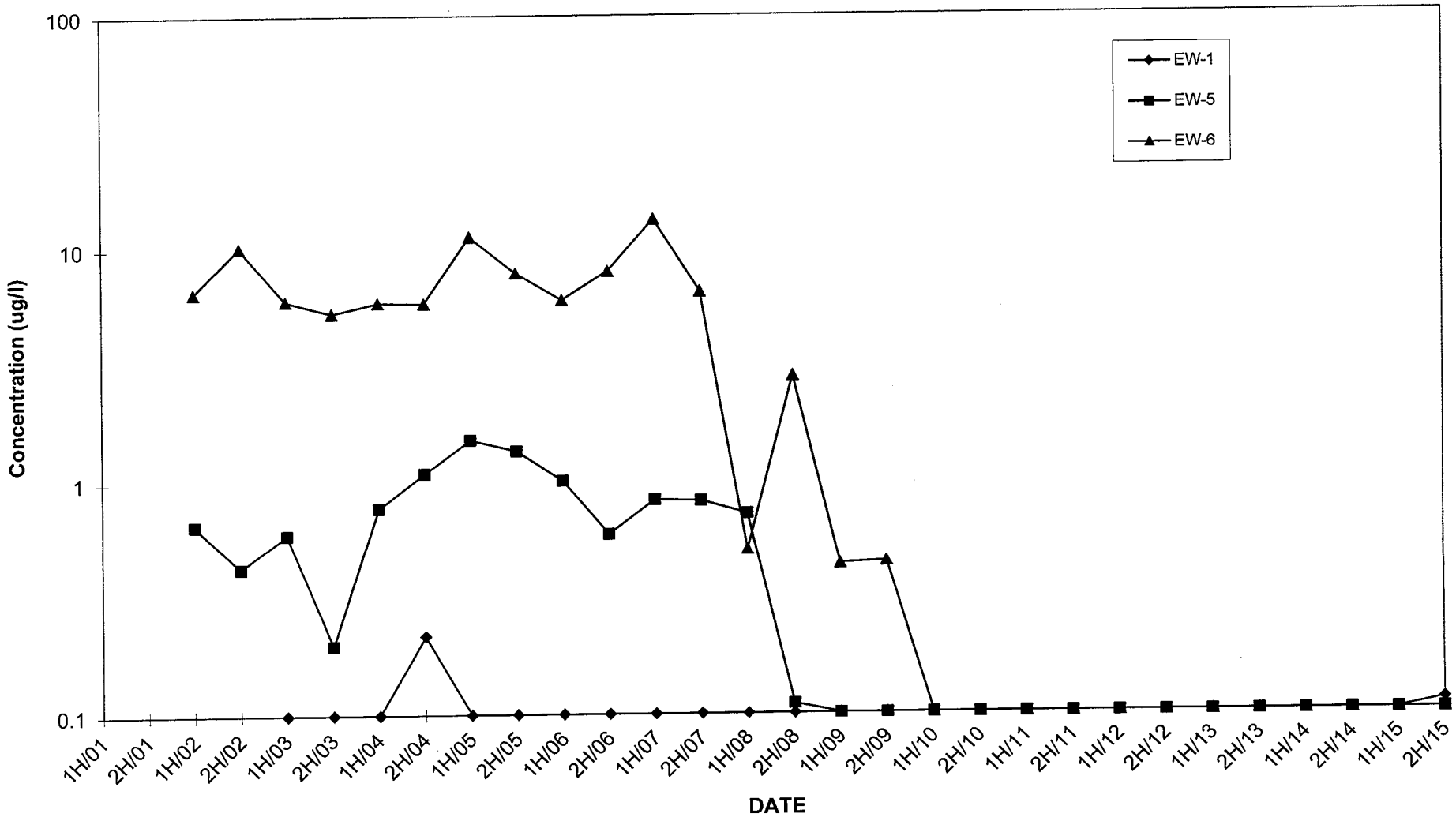


Figure 3-2a
Elk Grove Landfill Corrective Action Wells - Total VOCs

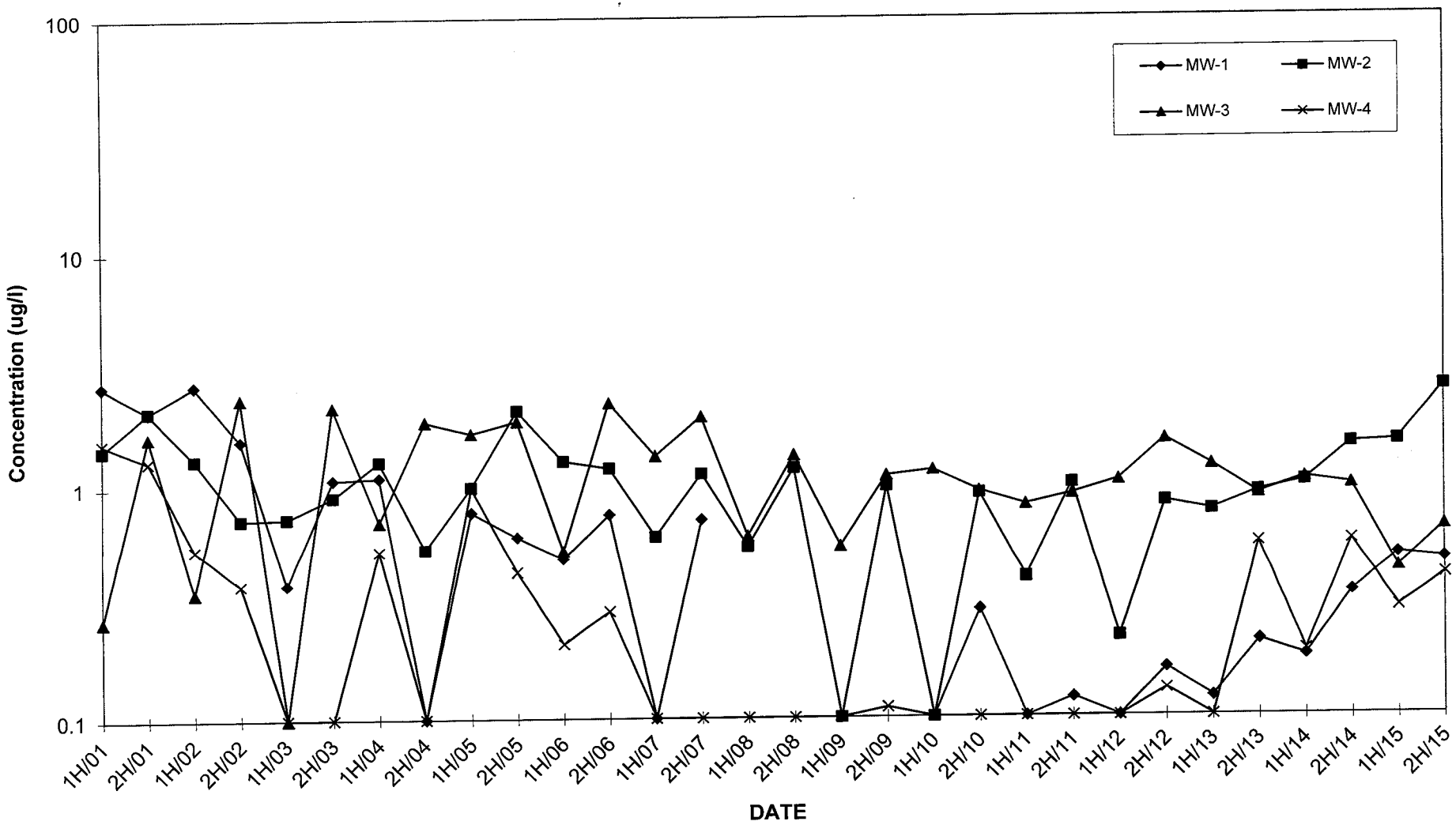
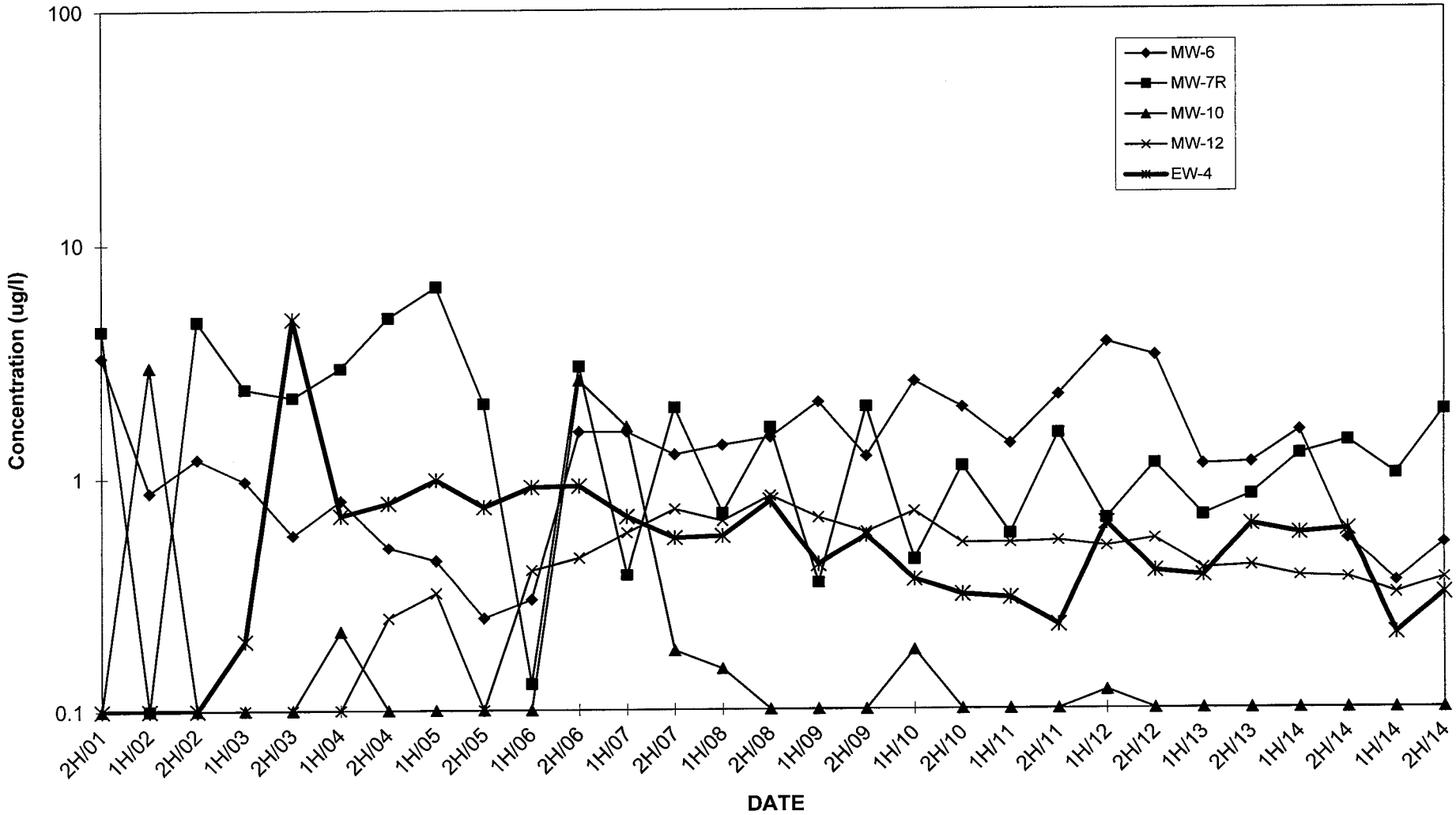


Figure 3-2b
Elk Grove Landfill Corrective Action Wells - Total VOCs



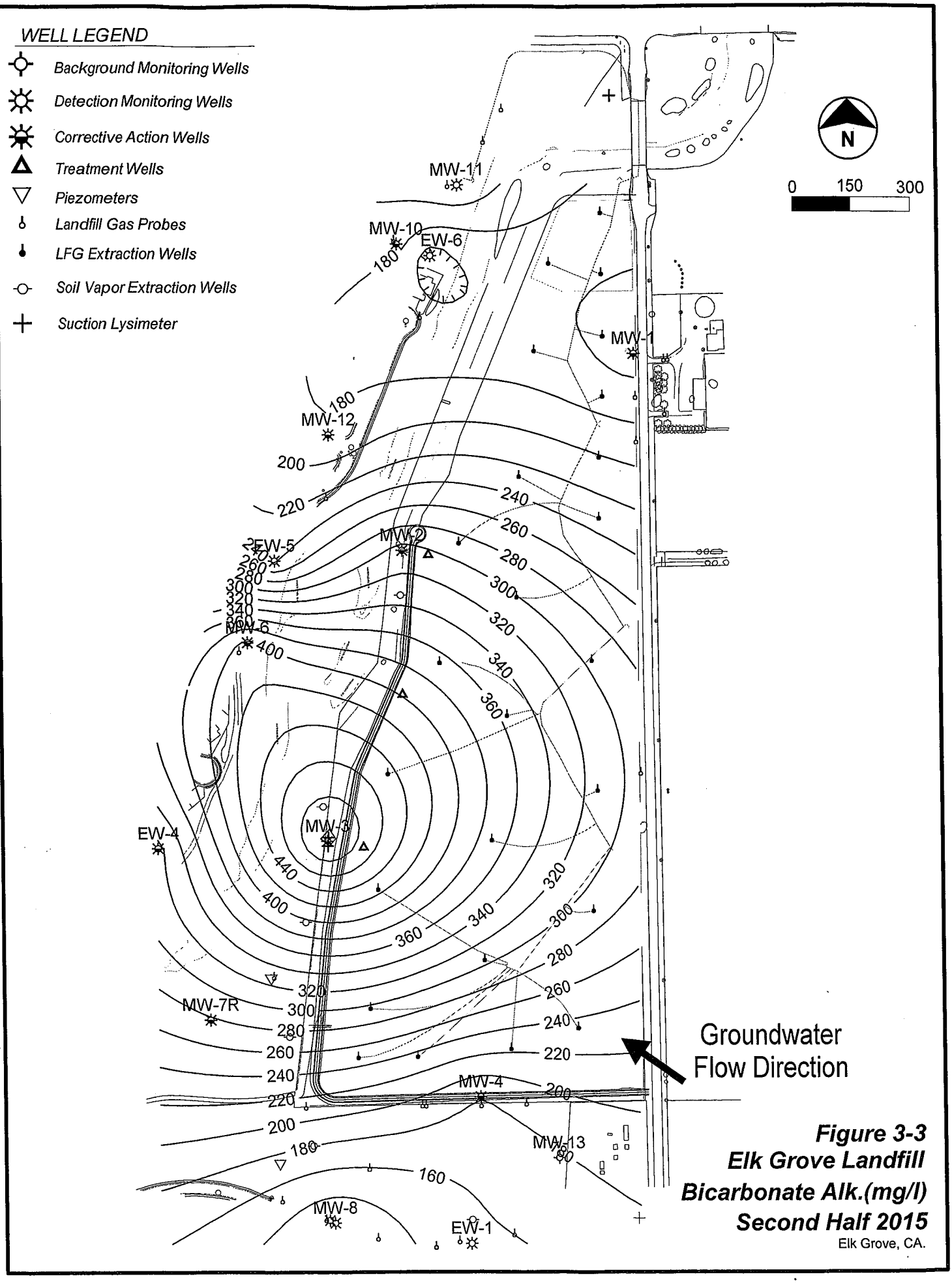


Figure 3-3
Elk Grove Landfill
Bicarbonate Alk.(mg/l)
Second Half 2015
Elk Grove, CA.

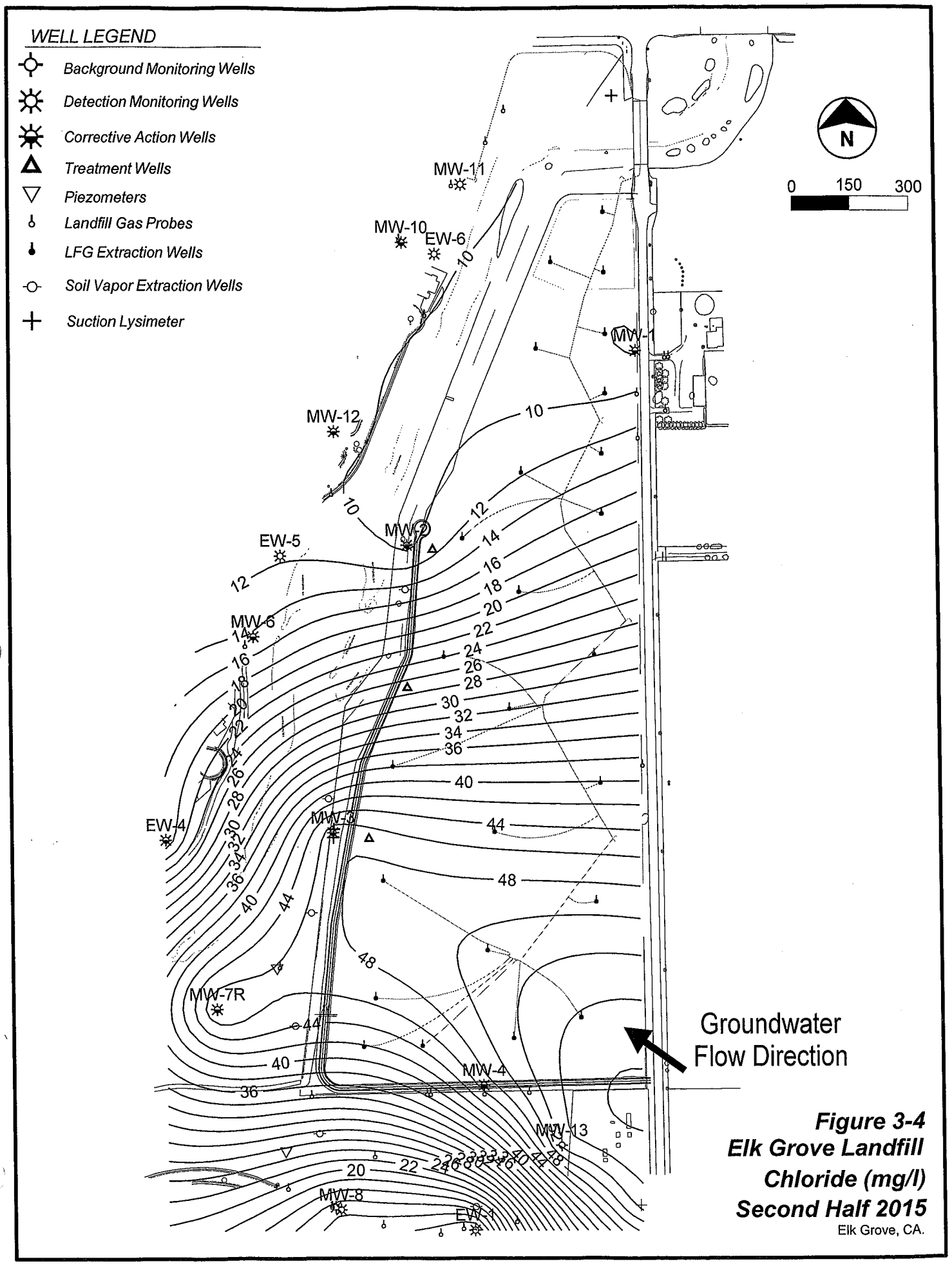


Figure 3-4
Elk Grove Landfill
Chloride (mg/l)
Second Half 2015
Elk Grove, CA.

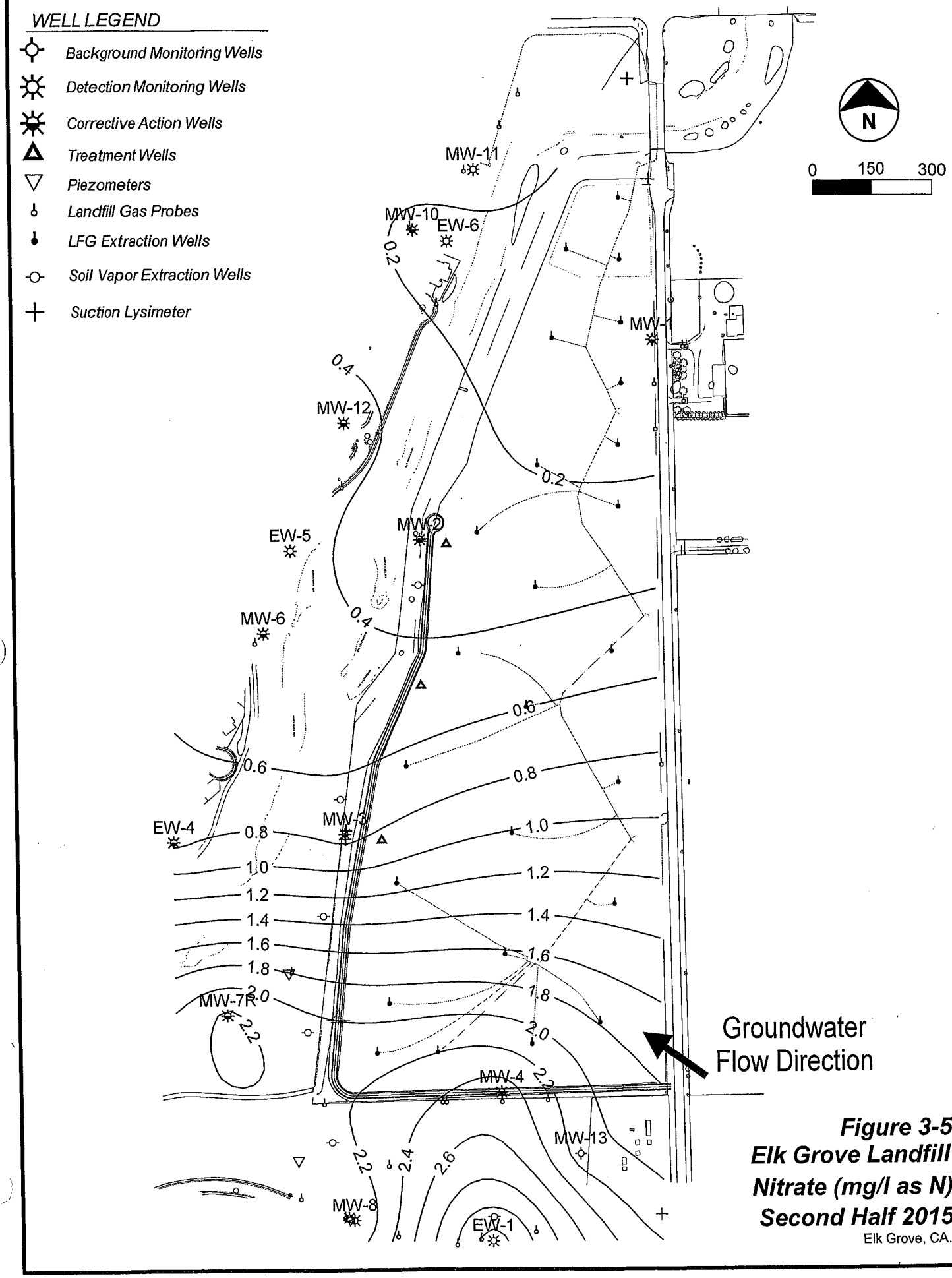


Figure 3-5
Elk Grove Landfill
Nitrate (mg/l as N)
Second Half 2015
Elk Grove, CA.

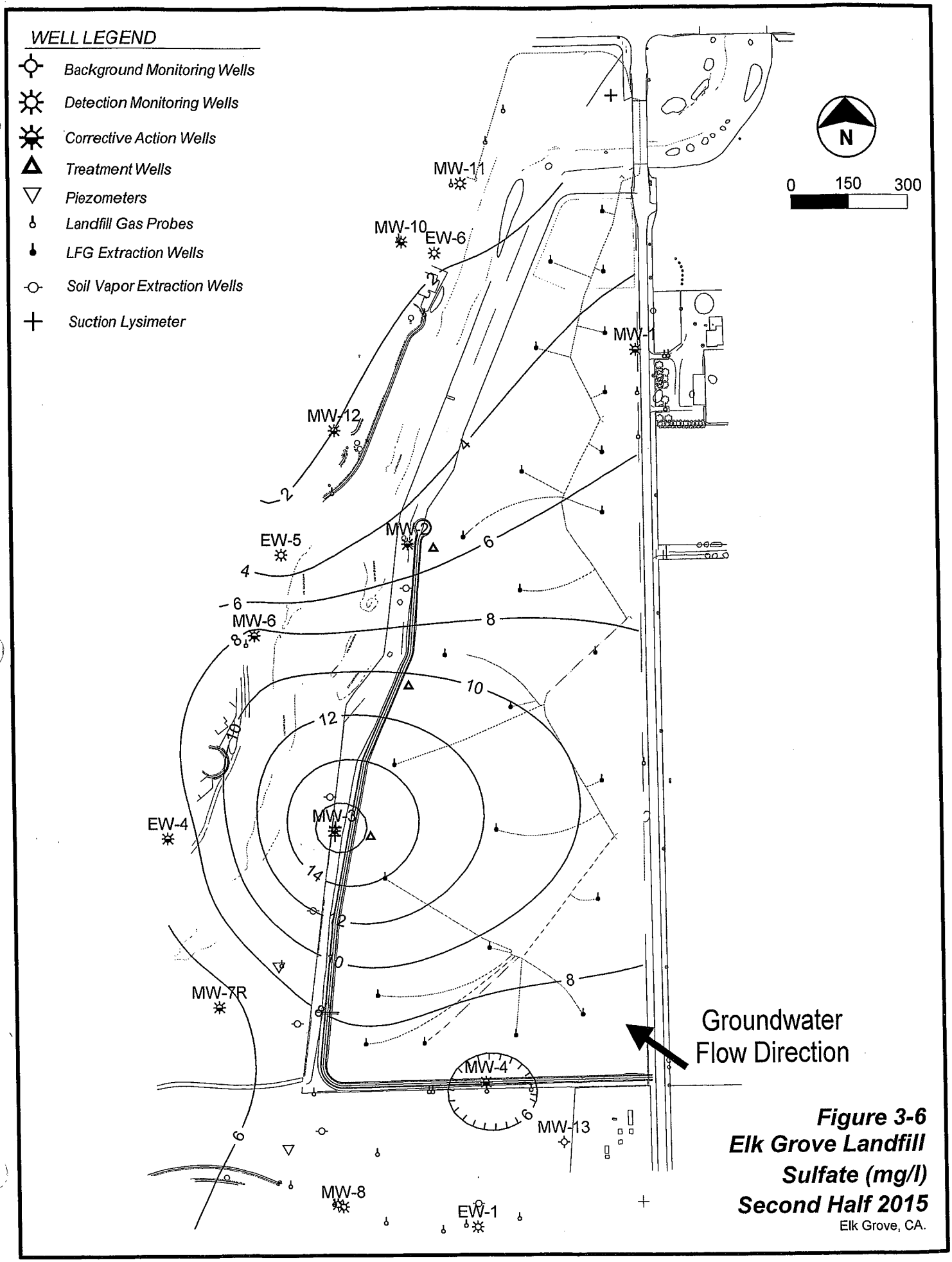


Figure 3-6
Elk Grove Landfill
Sulfate (mg/l)
Second Half 2015
Elk Grove, CA.

Environmental Management Department
Marie Woodin, Interim Director

May 24, 2018

Antonio Ablog
Planning Manager
City of Elk Grove Development Services Department
8401 Laguna Palms Way
Elk Grove, CA 95758

Dear Mr. Ablog:

SUBJECT: APRIL 17, 2018 MEETING SUMMARY RE: ELK GROVE CLOSED LANDFILLS

Authority

The Sacramento County Environmental Management Department (EMD) is certified by the California Department of Resources, Recycling, and Recovery (CalRecycle) to act as the Local Enforcement Agency (LEA) within the cities and County of Sacramento. EMD is authorized by Division 30 of the Public Resources Code (PRC), section 43209, and Title 14 of the California Code of Regulations (14 CCR), sections 18051 and 18084, to enforce solid waste laws and regulations.

Summary

At the LEA's request, a meeting at EMD between the LEA, Elk Grove Development Services, and CalRecycle was scheduled for April 17, 2018, to discuss the closed landfills within the City of Elk Grove. Staff in attendance included Chris Hunley and Will Scheffler with the LEA, Antonio Ablog and Christopher Jordan with the City of Elk Grove, and Will Heung with CalRecycle. LEA staff discussed the various possible concerns that closed landfills may present which include landfill gas (primarily methane) generation and migration, odors and other nuisance conditions, land subsidence, and illegal dumping. Of the four concerns listed, landfill gas generation and migration is of foremost concern due to the asphyxiation and explosion hazards of methane accumulation in structures. As such, 27 CCR 21190(g) requires on-site structures within 1,000 feet of the disposal area boundary to incorporate specific design and construction features to prevent gas migration inside, unless an exemption has been issued. However, this requirement does not include structures within 1,000 feet of the disposal area boundary that are located on a separate property parcel. Notwithstanding the previous comment, the LEA and CalRecycle strongly recommend that 21190(g) requirements should be applied to any structure within 1,000 feet of a disposal area boundary even if it is not on the landfill's property. Several local jurisdictions, including the City of Sacramento and the City of Rancho Cordova, have incorporated 21190(g) requirements in a Specific Plan or building code.

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Summary, continued

The three closed landfills within the City of Elk Grove are Dixon Pit Landfill, located at 8973 Elk Grove – Florin Road, Obie's Dump, located at 8437 Sheldon Road, and Elk Grove Landfill, located at the corner of Waterman and Bond Roads. A map highlighting the 1,000 foot buffer zones around each of the landfill's disposal areas was provided to Elk Grove staff during the meeting (see attachment).

Dixon Pit Landfill operated as a Construction and Demolition (C&D) debris landfill prior to its closure in 1999. During its operation, the previous owner and operator illegally accepted and disposed of prohibited waste, including green waste. As such, the landfill actively generates landfill gas that is collected by the landfill's gas extraction system and monitored by the landfill property's network of perimeter gas monitoring probes. However, the landfill has history of methane concentrations detected at the perimeter monitoring probes of over 5% by volume in air, most recently from August 29, 2017, to December 29, 2017. As a result of this violation the current owner and operator was required to complete remediation measures, including constructing additional gas extraction wells and perimeter gas monitoring probe. As of yet, Dixon Pit Landfill does not have a consistent history of compliance and, coupled with the ongoing landfill gas generation and relatively unknown nature of landfill's contents, LEA and CalRecycle staff strongly recommend that any proposed structures on properties within a 1,000 feet of the landfill's disposal area incorporate 21190(g).

Obie's Dump was an unpermitted disposal site where hazardous materials were illegally dumped. The hazardous materials were subsequently removed under oversight by a Voluntary Cleanup Agreement (VCA) with the Department of Toxic Substances Control (DTSC). However, pursuant to DTSC's letter to the property owners on January 24, 2013, DTSC terminated the VCA prior to its completion due to a lack of payment. As a result, the site is listed on DTSC's EnvirStor database as "Inactive – Needs Evaluation". DTSC should be consulted prior to any change or development of the property. A copy of the aforementioned letter has been attached.

Elk Grove Landfill operated from 1969 to 1978 as a municipal waste landfill. The landfill is currently owned and maintained by the Sacramento County Department of Waste Management and Recycling. In the past decade, the landfill has not had any violations issued by the LEA. The landfill is also under Waste Discharge Requirements Order No. R5-2013-0134 with the Central Valley Regional Water Quality Control Board (CVRWQCB) concerning groundwater protection.

LEA and CalRecycle staff appreciates the time and consideration you and your staff have provided to meet and discuss the three closed landfills in the City of Elk Grove. The LEA looks forward to working with you and your staff in the future.

Contact If you have any questions regarding this letter, please contact Will Scheffler at (916) 875-8651.

Sincerely,

Will Scheffler, REHS
Environmental Compliance Specialist III

LJ:WS:tk

Attachments: Elk Grove Landfills Map
January 24, 2013 DTSC Letter to Obie's Dump

c: Christopher Jordan, City of Elk Grove
Will Heung, CalRecycle

W:\DATA\SCHEFFLER\LEA\SOLID WASTE\MEETING WITH ELK GROVE PLANNING_041718\LEA ELK GROVE MEETING SUMMARY LETTER.DOCX

Title	Date	Category	Document Type
Meeting Summary: Elk Grove Closed Landfills	5/24/2018	Closure	Closure Planning Document
Approval of Design Plans For Final Cover	8/29/2014	Correspon	Closure Correspondence
Notice Tentative Updated Waste Discharge Requirements	7/25/2013	Correspon	Permit Correspondence
LEA Periodic 10/22/2010 Elk Grove Disposal Site 34-AA-0004	10/22/2010	Inspection	LEA Periodic Inspection
LEA Periodic 09/02/2010 Elk Grove Disposal Site 34-AA-0004	9/2/2010	Inspection	LEA Periodic Inspection
LEA Periodic 06/14/2010 Elk Grove Disposal Site 34-AA-0004	6/14/2010	Inspection	LEA Periodic Inspection
LEA Periodic 03/19/2010 Elk Grove Disposal Site 34-AA-0004	3/19/2010	Inspection	LEA Periodic Inspection
LEA Periodic 12/31/2009 Elk Grove Disposal Site 34-AA-0004	12/31/2009	Inspection	LEA Periodic Inspection
LEA Periodic 08/17/2009 Elk Grove Disposal Site 34-AA-0004	8/17/2009	Inspection	LEA Periodic Inspection
LEA Periodic 05/19/2009 Elk Grove Disposal Site 34-AA-0004	5/19/2009	Inspection	LEA Periodic Inspection
LEA Periodic 03/18/2009 Elk Grove Disposal Site 34-AA-0004	4/15/2009	Inspection	LEA Periodic Inspection
LEA Periodic 12/10/2008 Elk Grove Disposal Site 34-AA-0004	2/10/2009	Inspection	LEA Periodic Inspection
LEA Periodic 09/11/2008 Elk Grove Disposal Site 34-AA-0004	10/23/2008	Inspection	LEA Periodic Inspection
LEA Periodic 06/03/2008 Elk Grove Disposal Site 34-AA-0004	7/11/2008	Inspection	LEA Periodic Inspection
LEA Periodic 03/13/2008 Elk Grove Disposal Site 34-AA-0004	4/15/2008	Inspection	LEA Periodic Inspection
LEA Periodic 12/28/2007 Elk Grove Disposal Site 34-AA-0004	1/15/2008	Inspection	LEA Periodic Inspection
LEA Periodic 09/17/2007 Elk Grove Disposal Site 34-AA-0004	11/9/2007	Inspection	LEA Periodic Inspection
LEA Periodic 06/26/2007 Elk Grove Disposal Site 34-AA-0004	7/12/2007	Inspection	LEA Periodic Inspection
LEA Periodic 02/06/2007 Elk Grove Disposal Site 34-AA-0004	2/20/2007	Inspection	LEA Periodic Inspection
LEA Periodic 11/16/2006 Elk Grove Disposal Site 34-AA-0004	12/19/2006	Inspection	LEA Periodic Inspection
LEA Periodic 09/25/2006 Elk Grove Disposal Site 34-AA-0004	10/17/2006	Inspection	LEA Periodic Inspection
Request for Amendment of Postclosure Land Use	8/8/2005	Correspon	Closure Correspondence
Request for Amendment Post Closure	11/26/2001	Correspon	Closure Correspondence
Alternative Certification	10/1/1995	Correspon	Closure Correspondence
Contract Specifications for Cl	11/1/1991	Closure	Closure Planning Document
Construction Documents	8/16/1991	Closure	Closure Planning Document
Elk Grove Disposal Site - Status of Closure	3/26/1987	Correspon	Permit Correspondence
SWF Permit	11/30/1977	Correspon	Permit Correspondence

Department of Waste
Management & Recycling
Doug Sloan, Director

County of Sacramento

January 16, 2019

Mr. Brad Shelton
Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670-6114

SUBJECT: ELK GROVE LANDFILL – PFAS RESULTS REPORT

Dear Mr. Shelton:

This "PFAS Results Report for the Elk Grove Landfill" was prepared to meet the requirements of the Water Code Section 13267 Order WQ 2019-0006-DWQ.

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Sincerely,

Mike Koza

Mike Koza
Senior Civil Engineer

Attachment: PFAS Results Report for the Elk Grove Landfill

10863 Gold Center Drive • Rancho Cordova, California 95670 • phone (916) 875-6789 • fax (916) 854-9212
www.saccounty.net • www.sacgreenteam.com

PERFLUOROALKYL AND POLYFLUOROALKYL SUBSTANCES RESULTS REPORT

ELK GROVE LANDFILL
SACRAMENTO COUNTY, CALIFORNIA

Prepared for

Regional Water Quality Control Board, Central Valley Region

January 2020

Prepared by

Sacramento County Public Works and Infrastructure Agency
Department of Waste Management and Recycling
10863 Gold Center Drive
Rancho Cordova, California 95670

Perfluoroalkyl and Polyfluoroalkyl Substances Results Report
Elk Grove Landfill
Sacramento County, California

The material and data in this report were prepared under the supervision and direction of the undersigned.

Sacramento County

Mike Koza
Senior Civil Engineer

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1 Elk grove Class III Facility Site Overview

2 Site Map and PFAS Sampling Location

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Appendix A Eurofins PFAS Sampling Practices

Appendix B Field Data

Appendix C Certified Analytical Reports and Chain-of-Custody Records

1 INTRODUCTION

The Elk Grove Landfill is a closed 37-acre class III solid waste disposal site that last received waste in 1978 and final closure in 1992. Elk Grove Landfill is bounded by Laguna Creek to the north and west, Waterman Road to the east, and a park and cemetery to the south. There is a horse trail and an embankment between the landfill and the creek. Additionally, the site overlies the South American River groundwater sub-basin, which is bounded on the west by the Sacramento River, on the north by the American River, on the south by the Cosumnes and Mokelumne Rivers, and on the east by the Sierra Nevada Range. Regional recharge to the aquifer systems occurs along active river and stream channels where there are extensive sand and gravel deposits. This includes along the American, Cosumnes, and Sacramento Rivers. Other sources of recharge include deep percolation of precipitation, irrigation water, and water from small streams. The direction of groundwater flow in generally ranges from northwest to southwest at an average hydraulic gradient of approximately 0.0005 to 0.001.

This "Perfluoroalkyl and Polyfluroalkyl Substances Results Report for Elk Grove Landfill" was prepared to meet the requirements of the Regional Water Quality Control Board's (RWQCB's) Order WQ-2019-0006-DWQ dated March 20, 2019 that requested Elk Grove Landfill be investigated for the presence of perfluoroalkyl and polyfluoroalkyl substances (collectively referred to herein as PFASs). Sacramento County Department of Waste Management and Recycling (DWMR) prepared the Workplan for Monitoring and Analysis of PFAS dated May 7, 2019 (Workplan). The RWQCB reviewed the Workplan and provided approval on August 27, 2019.

2 SAMPLING AND ANALYSIS

2.1 Sampling Locations

In accordance with the Workplan, samples were collected from the point of compliance monitoring well MW-2 and a field blank. As indicated in the Workplan, if there were confirmed detections of PFAS constituents in the point of compliance well sample, one upgradient well will also be sampled. Due to detections in the point of compliance well sample, one retest sample from MW-2 was collected in addition to one sample from the upgradient background monitoring well MW-13 and one field blank. A facility site overview is shown in Figure 1. Monitoring well and sampling locations as well as the fourth quarter 2019 groundwater contours and gradient are shown in Figure 2. The local groundwater gradient is also shown as contours of equal groundwater elevation.

2.2 Schedule

Samples were collected in conjunction with the second half 2019 monitoring events at Elk Grove Landfill. The first sampling event was conducted on September 9, 2019 before any second half monitoring well samples or depth to water measurements were collected at Elk Grove Landfill. The scope of this sampling event included a water sample at MW-2 and a field blank. The second sampling event conducted on December 5, 2019 at Elk Grove included collecting one sample at MW-13, one retest sample at MW-2, and one field blank.

2.3 Sample Collection and Procedures

Samples were collected in accordance with the Workplan as well as the Per- and Polyfluoroaklyl Substances (PFAS) Sampling Guidance and Drinking Water Sample Collection for PFAS Sampling Guidance prepared by the State Water Resources Control Board (SWRCB). Although DWMR is not collecting drinking water samples, the PFAS Drinking Water Sampling Guidance is used and followed as an extra precautionary measure. Eurofins Lancaster Laboratories Environmental, LLC (Eurofins) also provided PFAS Sampling Practices prior to sampling which was referenced during the sampling process. The "Eurofins PFAS Sampling Practices" is included as Appendix A.

Wide mouth 250-milliliter polypropylene bottles fitted with polypropylene screw caps were provided and certified by Eurofins. Sample containers did not contain preservatives.

In accordance to the SWRCB PFAS Sampling Guidance and prior to sample collection, hands were well washed and clean powderless nitrile (not latex) gloves put on before collecting samples or handling of any sampling equipment and materials. The wells were purged until the temperature was stabilized for a minimum of 15 minutes in accordance with the Workplan. Eurofins provided laboratory verified PFAS-free water and two field blank samples were collected on site.

The groundwater samples were collected using a dedicated bladder pump located in the monitoring well. Approximately 2.64 gallons were purged from each monitoring well prior to sampling using

the dedicated bladder pump associated with the well. Field Data Sheets for each sampling event can be found in Appendix B.

2.4 Laboratory Analysis

DWMR submitted the samples to Sacramento Regional County Sewer District (SRCSD) who subcontracted with Eurofins Lancaster Laboratories Environmental, LLC (Eurofins) of Lancaster, Pennsylvania. Eurofins is ELAP certified (No. 2792). The samples were kept on wet ice until the samples were dropped off at SRCSD. The samples were analyzed by Eurofins for the 23 required PFAS compounds listed in Table 1 as summarized in the RWQCB correspondence by Environmental Protection Agency (EPA) Method 537 modified to meet Department of Defense (DOD) QSM 5.1 Table B-15. Quality Control Summaries and Chain of Custody forms for the samples can be found in the analytical reports located in Appendix C.

3 RESULTS AND CONCLUSION

3.1 Results

When the Workplan were prepared, DWMR proposed using the 2016 EPA established Health Advisory Levels of 70 nanograms per liter (ng/L) for Perfluorooctanoic acid (PFOA) and Perfluorooctane Sulfonate (PFOS) as comparison criteria for analytical results, where applicable. However, in August 2019, the Office of Environmental Health Hazard Assessment (OEHHA) recommended Notification Levels (NLs) for PFOA and PFOS to be set at much lower levels at which they can be reliably detected in drinking water using currently available and appropriate technologies and delegated the task of preparing Notification Levels to the Division of Drinking Water (DDW). The DDW established NLs at 6.5 ng/L for PFOS and 5.1 ng/L for PFOA. DWMR will use the August 2019 NLs as comparison criteria. There were no detections in the field blank samples collected and several detections of PFAS compounds in each monitoring well. The analytical results are shown in Table 1 and discussed below. The analytical reports are included as Appendix C for reference.

Monitoring Well MW-2

Analysis of the initial sample collected from MW-2 showed that of the 23 PFAS compounds analyzed, three compounds were detected above the Method Detection Limit (MDL) and below the Limit of Quantitation (LOQ). Pefluoroheptanoic acid (PFHpA), perfluorohexanoic acid (PFHxA), and perfluoropentanoic acid (PFPeA) were detected at trace concentrations (i.e. J-flagged by the laboratory) of 0.47 ng/L, 0.74 ng/L, and 0.52 ng/L, respectively. None of the three compounds detected have a NL set by DDW.

Analysis of the retest sample from MW-2 showed only two compounds that were detected above the MDL and below the LOQ. PFHxA and PFPeA were detected at trace concentrations (i.e. J-flagged by the laboratory) of 0.66 ng/L and 0.55 ng/L, respectively. Both compounds detected in the retest sample were present in the initial sample collected from MW-2.

Monitoring Well MW-13

Analysis of the sample collected from the background monitoring well MW-13 showed that 10 of the 23 PFAS compounds analyzed were detected above the MDL. Four of the compounds, Perfluorobutanesulfonic acid (PFBS), Perfluorodecanoic acid (PDDA), Perfluorononanoic acid (PFNA), and PFOS, were detected above the MDL and below the LOQ ranging between 0.77 ng/L and 1.6 ng/L. Of the four compounds, only PFOS has a NL and the concentration detected did not exceed the NL of 6.5 ng/L.

The remaining six constituents were detected above the LOQ. Detected compounds include 4:2-Fluorotelomersulfonic acid (4:2 FTS), Perfluorobutanoic acid (PFBA), PFOA, PFHpA, PFHxA, and PFPeA, which ranged between 1.8 ng/L and 10 ng/L. Of the six compounds, only PFOA has a NL and the concentration detected did not exceed its respective NL of 5.1 ng/L.

3.2 Conclusion

Based on the results of the PFAS sampling and having no concentrations exceed the NLs, there does not appear to be any significant PFAS contamination present at Elk Grove Landfill. The possibility that any landfill-related PFAS contamination exists is also subject to uncertainty. DWMR believes that the trace amounts of PFAS compounds detected in the point of compliance well result from upgradient background contamination as shown with the background well sampled. Groundwater contours prepared based on the fourth quarter 2019 groundwater elevations are shown on Figure 2 for reference. DWMR would be happy to discuss these results further as needed to explain the justification that these incidental detections are not landfill PFAS impacts. Based on the approved workplan, no additional testing appears to be required.

TABLES

TABLE 1 - PFAS Results
Elk Grove Landfill

Chemical Name	Results (ng/L)								
	MW-2			MW-2 - Retest			MW-13		
	9/19/2019 11:45			12/5/2019 12:00			12/05/2019 11:00		
	Result	MDL	LOQ	Result	MDL	LOQ	Result	MDL	LOQ
4:2-Fluorotelomersulfonic acid	< 0.39	0.39	1.6	< 0.39	0.39	1.6	**10**	0.41	1.6
6:2-Fluorotelomersulfonic acid	< 1.6	1.6	3.9	*< 1.6*	1.6	3.9	< 1.6	1.6	4.1
8:2-Fluorotelomersulfonic acid	< 0.78	0.78	2.4	*< 0.79*	0.79	2.4	< 0.82	0.82	2.5
N-ethyl perfluorooctanesulfonamidoacetic acid.	< 0.39	0.39	2.4	*< 0.39*	0.39	2.4	< 0.41	0.41	2.5
N-methyl perfluorooctanesulfonamidoacetic acid	< 0.47	0.47	1.6	*< 0.47*	0.47	1.6	< 0.49	0.49	1.6
Perfluorobutanesulfonic acid	< 0.39	0.39	1.6	*< 0.39*	0.39	1.6	0.77 J	0.41	1.6
Perfluorobutanoic acid	< 1.6	1.6	3.9	< 1.6	1.6	3.9	**4.4**	1.6	4.1
Perfluorodecanesulfonic acid	< 0.39	0.39	1.6	< 0.39	0.39	1.6	< 0.41	0.41	1.6
Perfluorodecanoic acid	< 0.39	0.39	1.6	< 0.39	0.39	1.6	0.95 J	0.41	1.6
Perfluorododecanoic acid	< 0.39	0.39	1.6	< 0.39	0.39	1.6	< 0.41	0.41	1.6
Perfluoroheptanesulfonic acid	< 0.39	0.39	1.6	< 0.39	0.39	1.6	< 0.41	0.41	1.6
Perfluoroheptanoic acid	0.47 J	0.39	1.6	< 0.39	0.39	1.6	**1.8**	0.41	1.6
Perfluorohexanesulfonic acid	< 0.39	0.39	1.6	< 0.39	0.39	1.6	< 0.41	0.41	1.6
Perfluorohexanoic acid	0.74 J	0.39	1.6	0.66 J	0.39	1.6	**2.8**	0.41	1.6
Perfluorononanoic acid	< 0.39	0.39	1.6	< 0.39	0.39	1.6	1.5 J	0.41	1.6
Perfluorooctanesulfonamide	< 0.39	0.39	1.6	< 0.39	0.39	1.6	< 0.41	0.41	1.6
Perfluorooctanesulfonic acid	< 0.39	0.39	1.6	< 0.39	0.39	1.6	1.6 J	0.41	1.6
Perfluorooctanoic acid	< 0.39	0.39	1.6	< 0.39	0.39	1.6	**2.4**	0.41	1.6
Perfluoropentanesulfonate	< 0.39	0.39	1.6	< 0.39	0.39	1.6	< 0.41	0.41	1.6
Perfluoropentanoic acid	0.52 J	0.39	1.6	0.55 J	0.39	1.6	**2.8**	0.41	1.6
Perfluorotetradecanoic acid	< 0.39	0.39	1.6	< 0.39	0.39	1.6	< 0.41	0.41	1.6
Perfluorotridecanoic acid	< 0.39	0.39	1.6	< 0.39	0.39	1.6	< 0.41	0.41	1.6
Perfluoroundecanoic acid	< 0.39	0.39	1.6	< 0.39	0.39	1.6	< 0.41	0.41	1.6

Notes:

J - Estimated Quantity

Bold - Detected above the Reporting Limit

ng/L - nanograms per liter

MDL - Method Detection Limit

LOQ - Limit of Quantitation

FIGURES

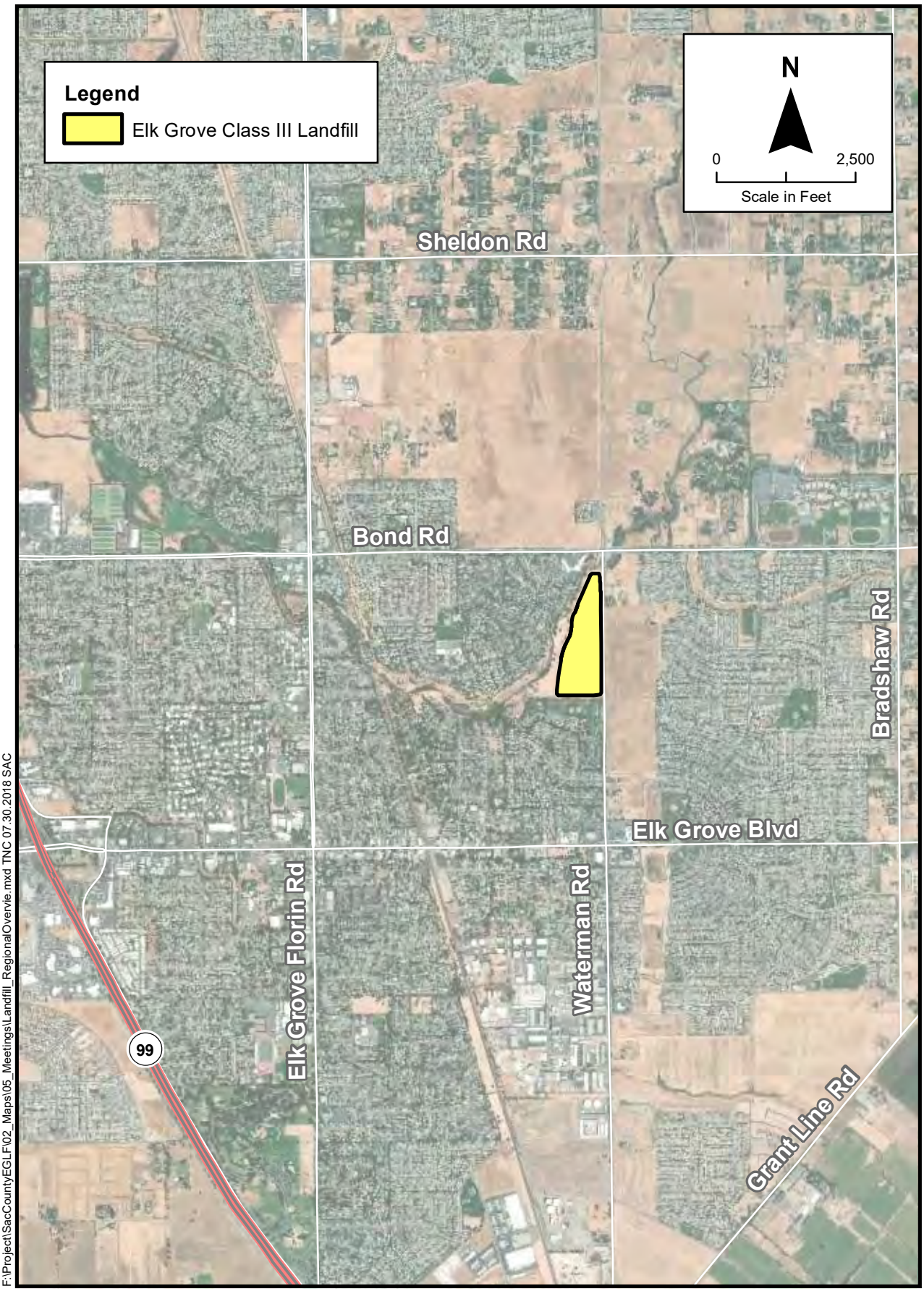
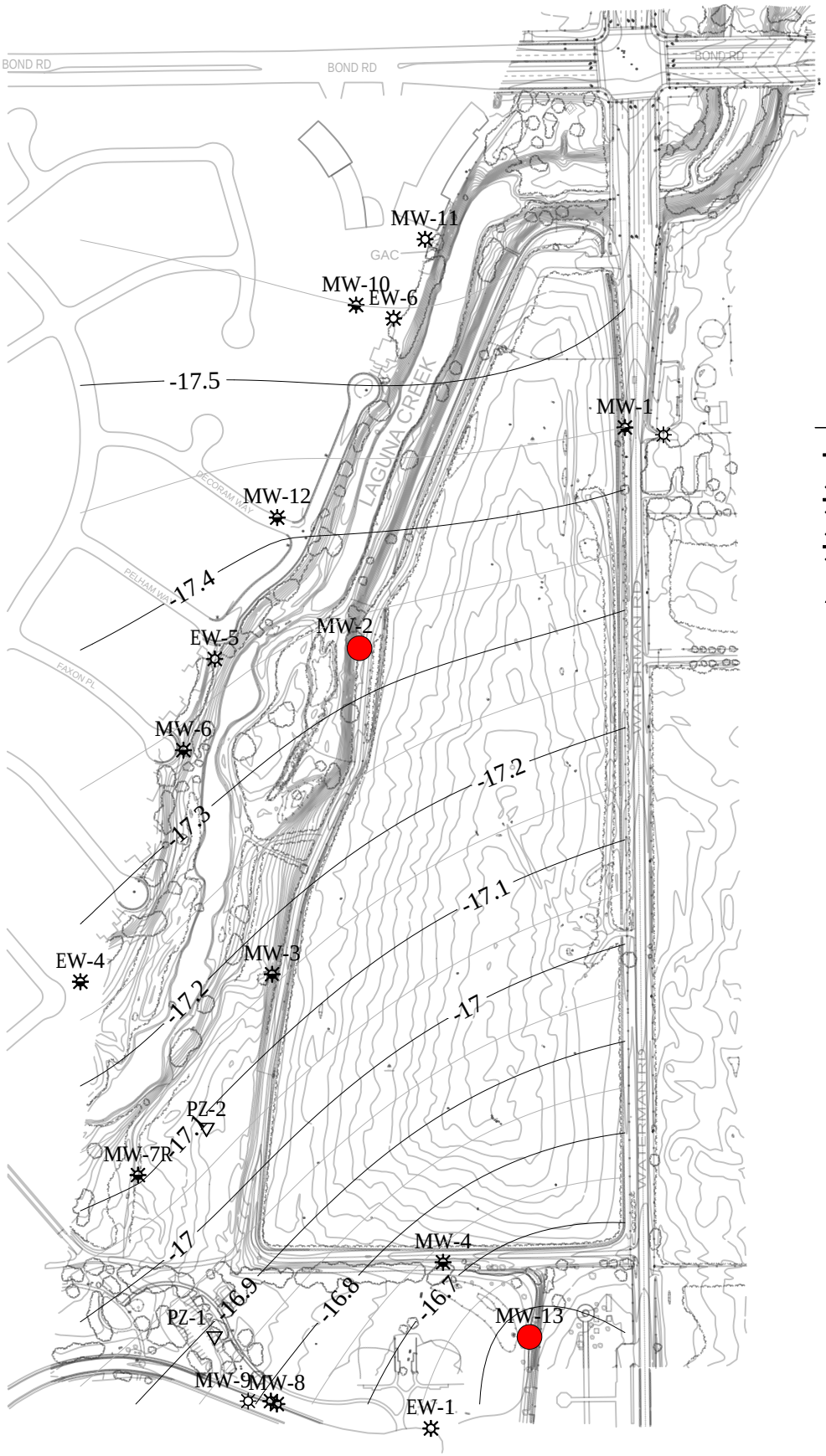


Figure 1. Elk Grove Class III Landfill Facility Sacramento County



N

ELK GROVE LANDFILL

WELL LEGEND

- *Background Monitoring Wells*
- *Detection Monitoring Wells*
- *Corrective Action Wells*
- *Treatment Wells*
- *Piezometers*
- *Landfill Gas Probes*
- *LFG Extraction Wells*
- *Soil Vapor Extraction Wells*
- *Suction Lysimeter*
- *PFAS Sampling Locations*

0ft 300ft 600ft 900ft 1200ft 1500ft

Figure 2
Elk Grove Landfill Site Map
PFAS Sampling Locations
Elk Grove, CA

APPENDIX A
EUROFINS PFAS SAMPLING PRACTICES

eurofins | Environment Testing

PFAS SAMPLING PROTOCOL (effective January 1, 2019)

Before You Go:

- Schedule PFAS sampling at the beginning of the work day, to avoid possible contamination sources
- Clothing for the day must have been previously washed a minimum of 5 times (i.e. no new clothing)
  - **NO** fabric softener
  - **NO** waterproof, water-repellent, fire-repellant or stain-resistant clothing or footwear
- Day of sampling
  - Shower only with PFAS-free soap and shampoo
  - Brush your teeth that morning with fluoride-free toothpaste only; **NO** mouthwash or dental floss
  - **NO** use of lotions, moisturizers, deodorant cosmetics, makeup sunscreen or insect repellents

Prior to Sampling:

- Do not handle any packaged food or drinks, aluminum foil, adhesive labels, etc. at or around sampling site
- Bottles must be pre-labeled before arrival at the sampling site; mark labels with a ball-point pen only, **NO** markers
- **NO** waterproof logbooks or plastic clipboards; untreated paper and aluminum clipboards only

Sampling and Sample Handling (per sampling point):

- Remove the aerator from the sample point (if applicable) and flush the sample tap for 3-5 minutes prior to sampling, or until the water temperature stabilizes
- Don disposable, coating-free coveralls then wash hands thoroughly with PFAS-free water and soap
- Put on disposable, nitrile gloves; take extra caution not to touch any surface prior to sample collection
- Sample directly into the provided preserved, HDPE bottle, seal and bag immediately; store and transport PFAS sample bottles and blanks in a clean, dedicated cooler between bags of PFAS-free, fresh, bagged ice; **NO** chemical ice packs
- Sample field blank concurrent with sample collection - pour preserved, PFAS-free water into empty HDPE bottle, pre-labeled as a field blank; transfer to cooler as with the sample
- If other sampling is to be performed, **ALWAYS** collect PFAS samples first

APPENDIX B
FIELD DATA

WATER MONITORING SAMPLING FIELD SHEET

Location: ELK GROVE Date: 9-19-19

Personnel Present: R. VAJAPA

	Site # MW-2								FIELDBLANK			
	Start											
Time	1145								1155			
Specific Conductance (umhos/cm)												
pH												
Temperature (deg. C)												
Turbidity (NTU)												
Dissolved O_2 (ppm)												
ORP (mV)												
Sulfides (mg/l)												
Pumping Water Depth (ft)												
Port Elev. (ft. MSL)												
Static Water Depth Before Pumping (ft) = l												
Calculated Static Water Elev. (ft. MSL)												
Well Volume (gal)												
Well Depth (ft)												
Volume Removed (gal)												
Well Condition												
Comments	*SAMPLE COLLECTED AFTER 20 MINS. OF PURGING,											

Dedicated equipment was used for well purging and sampling. For a description of this equipment and other pertinent well information, see the water sampling and analysis plan.

WATER MONITORING SAMPLING FIELD SHEET

Location: ELK GROVE (PFAS) Date: 12-5-19

Personnel Present: R. LAJAMA

	Site # MW-13								MW-2			
	Start											
Time	1100								1200			
Specific Conductance (umhos/cm)												
pH												
Temperature (deg. C)												
Turbidity (NTU)												
Dissolved O_2 (ppm)												
ORP (mV)												
Sulfides (mg/l)												
Pumping Water Depth (ft)												
Port Elev. (ft. MSL)												
Static Water Depth Before Pumping (ft) = l												
Calculated Static Water Elev. (ft. MSL)												
Well Volume (gal)												
Well Depth (ft)												
Volume Removed (gal)												
Well Condition												
Comments	* FIELD BLANK TAKEN @ 1140. * PFAS SAMPLE								* PFAS SAMPLE			

Dedicated equipment was used for well purging and sampling. For a description of this equipment and other pertinent well information, see the water sampling and analysis plan.

APPENDIX C
CERTIFIED ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY RECORDS

eurofins | Lancaster Laboratories Environmental

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Sacramento Regional County
8521 Laguna Station Road
Elk Grove CA 95758

Report Date: October 16, 2019 13:58

Project: Elk Grove Landfill PFAS Sampling

Account #: 44794
Group Number: 2066200
PO Number: 127493
State of Sample Origin: CA

Electronic Copy To Sacramento Regional County Attn: Celeste Patena

Respectfully Submitted,

Elizabeth M. Bauer
Project Manager

(717) 556-7290

To view our laboratory's current scopes of accreditation please go to https://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/ . Historical copies may be requested through your project manager.

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

SAMPLE INFORMATION

Client Sample Description	Sample Collection Date/Time	ELLE#
MW-2 1909240066	09/19/2019 11:45	1161043
FieldBlank1909240067	09/19/2019 11:55	1161044

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Sample Description: **MW-2 1909240066**
Elk Grove Landfill PFAS Sampling

Project Name: **Elk Grove Landfill PFAS Sampling**

Submittal Date/Time: 09/26/2019 10:36
Collection Date/Time: 09/19/2019 11:45

Sacramento Regional County
ELLE Sample #: GW 1161043
ELLE Group #: 2066200
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous	**EPA 537 mod QSM 5.1 table B-15**		**ng/l**	**ng/l**	**ng/l**	
14434	4:2-Fluorotelomersulfonic acid	757124-72-4	N.D.	0.39	1.6	1
14434	6:2-Fluorotelomersulfonic acid	27619-97-2	N.D.	1.6	3.9	1
14434	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	0.78	2.4	1
14434	NEtFOSAA	2991-50-6	N.D.	0.39	2.4	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14434	NMeFOSAA	2355-31-9	N.D.	0.47	1.6	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14434	Perfluorobutanesulfonic acid	375-73-5	N.D.	0.39	1.6	1
14434	Perfluorobutanoic acid	375-22-4	N.D.	1.6	3.9	1
14434	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.39	1.6	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.39	1.6	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.39	1.6	1
14434	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.39	1.6	1
14434	Perfluoroheptanoic acid	375-85-9	0.47 J	0.39	1.6	1
14434	Perfluorohexanesulfonic acid	355-46-4	N.D.	0.39	1.6	1
14434	Perfluorohexanoic acid	307-24-4	0.74 J	0.39	1.6	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.39	1.6	1
14434	Perfluorooctanesulfonamide	754-91-6	N.D.	0.39	1.6	1
14434	Perfluorooctanesulfonic acid	1763-23-1	N.D.	0.39	1.6	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.39	1.6	1
14434	Perfluoropentanesulfonate	2706-91-4	N.D.	0.39	1.6	1
14434	Perfluoropentanoic acid	2706-90-3	0.52 J	0.39	1.6	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.39	1.6	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.39	1.6	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.39	1.6	1

The recovery for extraction standard(s) is outside of the QC acceptance limits in the associated method blank as noted on the QC Summary. Also, the recovery for extraction standards and target analyte(s) is outside of the QC acceptance limits in the Laboratory Control Spike(s) as noted on the QC Summary.
The following action was taken:
The sample was re-extracted outside of the method holding time and the recovery for extraction standards was again outside of the QC acceptance limits in the Laboratory Control Spike(s).

The recovery for extraction standards is outside of the QC acceptance limits as noted on the QC Summary.

Sample Comments

CA ELAP Lab Certification No. 2792

*=This limit was used in the evaluation of the final result

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description: **MW-2 1909240066**
Elk Grove Landfill PFAS Sampling

Project Name: **Elk Grove Landfill PFAS Sampling**

Submittal Date/Time: 09/26/2019 10:36
Collection Date/Time: 09/19/2019 11:45

Sacramento Regional County
ELLE Sample #: GW 1161043
ELLE Group #: 2066200
Matrix: Groundwater

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	List of 23 PFAS	EPA 537 mod QSM 5.1 table B-15	1	19275004	10/04/2019 23:04	Devon M Whooley	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	19275004	10/02/2019 07:00	Pamela Rothharpt	1

*=This limit was used in the evaluation of the final result

Sample Description: **FieldBlank1909240067**
Elk Grove Landfill PFAS Sampling

Project Name: **Elk Grove Landfill PFAS Sampling**

Submittal Date/Time: 09/26/2019 10:36
Collection Date/Time: 09/19/2019 11:55

Sacramento Regional County
ELLE Sample #: GW 1161044
ELLE Group #: 2066200
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous	**EPA 537 mod QSM 5.1 table B-15**		**ng/l**	**ng/l**	**ng/l**	
14434	4:2-Fluorotelomersulfonic acid	757124-72-4	N.D.	0.40	1.6	1
14434	6:2-Fluorotelomersulfonic acid	27619-97-2	N.D.	1.6	4.0	1
14434	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	0.80	2.4	1
14434	NEtFOSAA	2991-50-6	N.D.	0.40	2.4	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14434	NMeFOSAA	2355-31-9	N.D.	0.48	1.6	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14434	Perfluorobutanesulfonic acid	375-73-5	N.D.	0.40	1.6	1
14434	Perfluorobutanoic acid	375-22-4	N.D.	1.6	4.0	1
14434	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.40	1.6	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.40	1.6	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.40	1.6	1
14434	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.40	1.6	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.40	1.6	1
14434	Perfluorohexanesulfonic acid	355-46-4	N.D.	0.40	1.6	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.40	1.6	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.40	1.6	1
14434	Perfluorooctanesulfonamide	754-91-6	N.D.	0.40	1.6	1
14434	Perfluorooctanesulfonic acid	1763-23-1	N.D.	0.40	1.6	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.40	1.6	1
14434	Perfluoropentanesulfonate	2706-91-4	N.D.	0.40	1.6	1
14434	Perfluoropentanoic acid	2706-90-3	N.D.	0.40	1.6	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.40	1.6	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.40	1.6	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.40	1.6	1

The recovery for extraction standard(s) is outside of the QC acceptance limits in the associated method blank as noted on the QC Summary. Also, the recovery for extraction standards and target analyte(s) is outside of the QC acceptance limits in the Laboratory Control Spike(s) as noted on the QC Summary.
The following action was taken:
The sample was re-extracted outside of the method holding time and the recovery for extraction standards was again outside of the QC acceptance limits in the Laboratory Control Spike(s).

Sample Comments

CA ELAP Lab Certification No. 2792

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor

*=This limit was used in the evaluation of the final result

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Sample Description: **FieldBlank1909240067**
Elk Grove Landfill PFAS Sampling

Project Name: **Elk Grove Landfill PFAS Sampling**

Submittal Date/Time: 09/26/2019 10:36
Collection Date/Time: 09/19/2019 11:55

Sacramento Regional County
ELLE Sample #: GW 1161044
ELLE Group #: 2066200
Matrix: Groundwater

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	List of 23 PFAS	EPA 537 mod QSM 5.1 table B-15	1	19275004	10/04/2019 23:13	Devon M Whooley	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	19275004	10/02/2019 07:00	Pamela Rothharpt	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: Sacramento Regional County
Reported: 10/16/2019 13:58

Group Number: 2066200

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL**	LOQ
	ng/l	ng/l	ng/l
Batch number: 19275004	Sample number(s): 1161043-1161044		
4:2-Fluorotelomersulfonic acid	N.D.	0.50	2.0
6:2-Fluorotelomersulfonic acid	N.D.	2.0	5.0
8:2-Fluorotelomersulfonic acid	N.D.	1.0	3.0
NEtFOSAA	N.D.	0.50	3.0
NMeFOSAA	N.D.	0.60	2.0
Perfluorobutanesulfonic acid	N.D.	0.50	2.0
Perfluorobutanoic acid	N.D.	2.0	5.0
Perfluorodecanesulfonic acid	N.D.	0.50	2.0
Perfluorodecanoic acid	N.D.	0.50	2.0
Perfluorododecanoic acid	N.D.	0.50	2.0
Perfluoroheptanesulfonic acid	N.D.	0.50	2.0
Perfluoroheptanoic acid	N.D.	0.50	2.0
Perfluorohexanesulfonic acid	N.D.	0.50	2.0
Perfluorohexanoic acid	N.D.	0.50	2.0
Perfluorononanoic acid	N.D.	0.50	2.0
Perfluorooctanesulfonamide	N.D.	0.50	2.0
Perfluorooctanesulfonic acid	N.D.	0.50	2.0
Perfluorooctanoic acid	N.D.	0.50	2.0
Perfluoropentanesulfonate	N.D.	0.50	2.0
Perfluoropentanoic acid	N.D.	0.50	2.0
Perfluorotetradecanoic acid	N.D.	0.50	2.0
Perfluorotridecanoic acid	N.D.	0.50	2.0
Perfluoroundecanoic acid	N.D.	0.50	2.0

LCS/LCSD

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 19275004	Sample number(s): 1161043-1161044								
4:2-Fluorotelomersulfonic acid	23.92	22	23.92	21.3	92	89	64-134	3	30
6:2-Fluorotelomersulfonic acid	24.28	22.5	24.28	21.54	93	89	51-155	4	30
8:2-Fluorotelomersulfonic acid	24.52	20.29	24.52	22.25	83	91	62-133	9	30
NEtFOSAA	25.6	23.06	25.6	24.39	90	95	59-145	6	30
NMeFOSAA	25.6	24.06	25.6	24.92	94	97	53-136	3	30
Perfluorobutanesulfonic acid	22.64	17.74	22.64	18.05	78*	80*	81-133	2	30

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Sacramento Regional County
Reported: 10/16/2019 13:58

Group Number: 2066200

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Perfluorobutanoic acid	25.6	19.13	25.6	19.73	75*	77*	84-135	3	30
Perfluorodecanesulfonic acid	24.64	15.5	24.64	19.46	63*	79	69-124	23	30
Perfluorodecanoic acid	25.6	19.48	25.6	22.02	76*	86	78-137	12	30
Perfluorododecanoic acid	25.6	23.32	25.6	20.04	91	78	75-139	15	30
Perfluoroheptanesulfonic acid	24.36	19.9	24.36	20.04	82	82	80-129	1	30
Perfluoroheptanoic acid	25.6	21.16	25.6	20.72	83	81	80-140	2	30
Perfluorohexanesulfonic acid	24.2	18.65	24.2	19.05	77	79	71-131	2	30
Perfluorohexanoic acid	25.6	22	25.6	21.28	86	83	80-137	3	30
Perfluorononanoic acid	25.6	18.56	25.6	19.34	73	76	73-140	4	30
Perfluorooctanesulfonamide	25.6	22.71	25.6	23.06	89	90	73-121	2	30
Perfluorooctanesulfonic acid	24.48	18.17	24.48	17.56	74	72	54-139	3	30
Perfluorooctanoic acid	25.6	20	25.6	18.96	78*	74*	83-138	5	30
Perfluoropentanesulfonate	24	21.66	24	22.12	90	92	82-132	2	30
Perfluoropentanoic acid	25.6	20.49	25.6	20.2	80	79	75-138	1	30
Perfluorotetradecanoic acid	25.6	21.63	25.6	22.42	85	88	79-134	4	30
Perfluorotridecanoic acid	25.6	15.52	25.6	16.89	61*	66*	67-144	8	30
Perfluoroundecanoic acid	25.6	20.9	25.6	19.35	82	76	70-134	8	30

Labeled Isotope Quality Control

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: List of 23 PFAS
Batch number: 19275004

	13C4-PFBA	13C5-PFPeA	13C3-PFBS	13C2-4:2-FTS	13C5-PFHxA	13C3-PFHxS
1161043	108	105	99	112	109	111
1161044	98	94	92	103	97	105
Blank	99	96	90	101	102	104
LCS	101	99	90	97	97	100
LCSD	98	98	84	98	98	95
Limits:	50-150	50-150	50-150	50-150	50-150	50-150

	13C4-PFHpA	13C2-6:2-FTS	13C8-PFOA	13C8-PFOS	13C9-PFNA	13C6-PFDA
1161043	106	108	111	102	95	98
1161044	94	108	99	93	87	97
Blank	96	100	100	92	86	91
LCS	96	93	100	88	87	95
LCSD	97	97	98	100	93	93

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Sacramento Regional County
Reported: 10/16/2019 13:58

Group Number: 2066200

Labeled Isotope Quality Control (continued)

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: List of 23 PFAS
Batch number: 19275004

Limits:	50-150	50-150	50-150	50-150	50-150	50-150
	13C2-8:2-FTS	d3-NMeFOSAA	13C7-PFUnDA	d5-NEtFOSAA	13C2-PFDoDA	13C2-PFTeDA
1161043	103	95	95	82	85	40*
1161044	100	105	97	99	98	70
Blank	93	70	75	57	59	27*
LCS	101	79	79	69	66	37*
LCSD	99	103	91	99	92	69
Limits:	50-150	50-150	50-150	50-150	50-150	50-150

	13C8-PFOSA
1161043	94
1161044	84
Blank	72
LCS	87
LCSD	93
Limits:	50-150

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Environmental Analysis Request/Chain of Custody

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Acct. # 44794 Group # 2066200 Sample # 1161043-44

Client:	Celeste Patena		
Project Name/#:	Elk Grove Landfill PFAS Sampling	Site ID #:	
Project Manager:	Celeste Patena	PRS #:	127493
Sampler:	Ruel Lajara	PWSID #:	
Phone #:		Quote #:	
State where sample(s) were collected:	CA		

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Sediment	Water: Potable	Ground	NPDES	Surface	Other: groungwater	Total # of Containers	Analyses Requested: PFAS EPA 537 Modified[E]	Remarks
MW-2 1909240066	9/19/19	1145	x								GW	2	x	Report sub-RL values
FieldBlank 1909240067	9/19/19	1155	x								GW	2	x	Report sub-RL values
														see attached list

Preservation Codes: H = HCl; T = Thiosulfate; N = HNO_3; B = NaOH; S = H_2SO_4; P = H_3PO_4; O = Other

For Lab Use Only: SF #: _____ SCR #: _____

Turnaround Time Requested (TAT) (please check): Standard ☑ Rush ☐

(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☐ Phone ☐

E-mail Address: patenac@sacsewer.com

Phone: 916-875-9032

Data Package Options (please check if required)

Type I (Validation/non-CLP) ☐ MA MCP ☐

Type III (Reduced non-CLP) ☐ CT RCP ☐

Type IV (CLP SOW) ☐ TX TRRP-13 ☐

Type VI (Raw Data Only) ☐

EDD Required? Yes ☑ No ☐ If yes, format: _____

Relinquished by:	Date	Time	Received by:	Date	Time
Celeste Patena	9/25/19	1500			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	9/26/19	1036

Relinquished by Commercial Carrier:

UPS _____ FedEx _____ Other _____

Temperature upon receipt 2.1 °C

KEY SITE MANAGER QUESTIONNAIRE

Environmental Site Assessment
Key Site Manager Environmental Questionnaire

This questionnaire has been completed for the address:	APN: 127-0150-001, -002, AND -009 (Waterman), Elk Grove, CA

To the best of your knowledge, do any of the following documents or situations exist, or have you been made aware of them in the past (add brief explanation and/or circle or underline as necessary):

Question (1)	Past Environmental Assessments - Phase I, Phase II, etc.?					
	Yes		No	✔	Unknown	
If yes, please describe:						
Question (2)	Environmental Regulatory Permits (wastewater, hazardous materials, etc.)?					
Current	Yes		No	✔	Unknown	
Former	Yes		No	✔	Unknown	
If yes, please describe:						
Question (3)	Underground storage tanks at the Property?					
Current	Yes		No	✔	Unknown	
Former	Yes		No	✔	Unknown	
If yes, please describe:						
Question (4)	Has the Property been used for an industrial use?					
Current	Yes		No	✔	Unknown	
Former	Yes		No	✔	Unknown	
If yes, please describe:						
Question (5)	Has the Property been used in one of the following ways: gasoline station, motor repair facility, commercial printing facility, dry-cleaners, photo developing laboratory, junkyard, or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?					
Current	Yes		No	✔	Unknown	
Former	Yes		No	✔	Unknown	
If yes, please describe:						

Question (6)	Has the Neighboring (Adjoining) Properties been used in one of the following ways: industrial purposes, a gasoline station, motor repair facility, commercial printing facility, dry-cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?					
Current	Yes		No	✔	Unknown	
Former	Yes		No	✔	Unknown	
If yes, please describe:						
Question (7)	Are there automotive or industrial batteries in significant quantities, or pesticides, paints, or other chemicals in individual containers of greater than five gallons in volume or fifty gallons in the aggregate, stored on or used at the Property or within the facility?					
Current	Yes		No	✔	Unknown	
Former	Yes		No	✔	Unknown	
If yes, please describe:						
Question (8)	Has Fill Dirt been brought onto the Property which originated from a contaminated site, or which is of an unknown origin?					
	Yes		No	✔	Unknown	
If yes, please describe:						
Question (9)	Are there any Clarifiers/Interceptors, Pits, Ponds, Surface Impoundments or Lagoons located on the Property in connection with waste treatment or waste disposal?					
Current	Yes		No	✔	Unknown	
Former	Yes		No	✔	Unknown	
If yes, please describe:						
Question (10)	Are there any Incinerators, Injection Wells, Transfer Stations, Waste Recycling, Waste Treatment, or Land Disposal Areas located on the Property in connection with waste treatment or waste disposal?					
Current	Yes		No	✔	Unknown	
Former	Yes		No	✔	Unknown	
If yes, please describe:						

Question (11)	Is there any petroleum product or chemical spills or stained soil on the Property?					
Current	Yes		No	✔	Unknown	
Former	Yes		No	✔	Unknown	
If yes, please describe:						
Question (12)	Are there any registered or unregistered aboveground or underground storage tanks located on the Property?					
Current	Yes		No	✔	Unknown	
Former	Yes		No	✔	Unknown	
If yes, please describe:						
Question (13)	Is the Property served by a private well or non-public water system, or does the Property utilize a septic system					
Current	Yes		No	✔	Unknown	
Former	Yes		No	✔	Unknown	
If yes, please describe:						
Question (14)	Does the Owner or Occupant of the Property have any knowledge of Environmental Cleanup Liens, Deed Restrictions, Use Restrictions, Institutional Controls, Activity and Use Limitations or any other government notification or restriction relating to past or current violations of environmental laws (or contamination) with respect to the Property or Property facility?					
	Yes		No	✔	Unknown	
If yes, please describe:						
Question (15)	Does the Owner or Occupant of the Property have any knowledge of any Environmental Site Assessment of the Property or facility that indicated the presence of Hazardous Substances, chemicals or Petroleum Products on, or contamination of, the Property or recommended further assessment of the Property?					
	Yes		No	✔	Unknown	
If yes, please describe:						

Question (16)	Do the Property Owner, Buyer, or their agent(s) (as applicable) have any information/knowledge that the Property is being sold, transferred, valued or refinanced at a reduced price due to current, past or suspected environmental issues either at the Property or an Adjoining Property?					
	Yes		No	✔	Unknown	
If yes, please describe:						
Question (17)	Does the Property discharge wastewater or process water (other than storm water), directly to a ditch or stream on or adjoining the Property?					
Current	Yes		No	✔	Unknown	
Former	Yes		No	✔	Unknown	
If yes, please describe:						
Question (18)	To the best of your knowledge, have any Hazardous Substances, chemicals or Petroleum Products, unidentified waste materials, tires, automotive or industrial batteries or any other waste materials been dumped above grade, buried, or burned on the Property?					
	Yes		No	✔	Unknown	
If yes, please describe:						
Question (19)	Has the Owner or Operator of the Property been required to submit or file to any agency a Chemical Contingency Plan, Emergency and Hazardous Chemical Inventory Form, Toxic Chemical Release Form, SARA Title III - Emergency Planning and Community Right-to-Know Act inventory, SARA Title III - Extremely Hazardous Substances inventory, or report under the Emergency Response Notification System?					
Current	Yes		No	✔	Unknown	
Former	Yes		No	✔	Unknown	
If yes, please describe:						
Question (20)	Has the Owner or Operator of the Property been required to submit, file, or maintain Material Safety Data Sheets (MSDS) or a written Hazard Communication Program?					
Current	Yes		No	✔	Unknown	
Former	Yes		No	✔	Unknown	
If yes, please describe:						

Question (21)	Based on your knowledge and experience related to the property (or similar properties or usages), are you aware of any obvious indicators of, or likely presence of, current or past spills or releases at the Property?					
Current	Yes		No	✔	Unknown	
Former	Yes		No	✔	Unknown	
If yes, please describe:						
Question (22)	Do you have any specialized knowledge or experience related to 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	✔	Unknown	
If yes, please describe:						
Question (23)	Are you aware of any environmental issues on nearby properties or in the neighborhood that may affect the Property?					
	Yes		No	✔	Unknown	
If yes, please describe:						

Name of Service Providers

Natural Gas	none
Electricity	none
Water	none
Sewer	none
Propane	none
Fuel Oil	none
Waste Disposal/ Recycling	none

Site History

Year property was developed with current building(s):	n/a
Square footage of structure(s) onsite:	n/a
Year current owner acquired the property (if applicable):	2021
Main business onsite prior to existing ones (if any):	n/a
Historical use of land prior to the existing development:	open space

Adjoining Properties

North	Name / Address	City of Elk Grove			
	Current Use	open space			
	Former Use				
Toxic Chemicals or Petroleum Products Evident?		Yes		No	✔
East	Name / Address				
	Current Use	City easement			
	Former Use	open space			
Toxic Chemicals or Petroleum Products Evident?		Yes		No	✔
South	Name / Address				
	Current Use	10 acre residential home			
	Former Use	10 acre residential home			
Toxic Chemicals or Petroleum Products Evident?		Yes		No	✔
West	Name / Address	City of Elk Grove			
	Current Use	cemetary			
	Former Use	cemetary			
Toxic Chemicals or Petroleum Products Evident?		Yes		No	✔
If 'yes', describe HAZMAT and/or wastes (e.g., type quantity, etc.)					

Signatures

"The undersigned owner(s) and/or operator(s) acknowledge(s) and agree(s) that intentionally falsifying or concealing any material fact with regard to the subject matter of this Environmental Questionnaire may, in addition to other penalties, result in prosecution under applicable law including 18 U.S.C. section 1001."

This questionnaire was answered by:

Name	Bryan Wilson						
Signature							
Title	Principle						
Firm	Summer Flats						
Date	6/7/2024						
Via	Email		In Person	✔	Phone		Fax	
Are you the current owner?	Yes	✔	No				
If 'no', describe relationship:							

This questionnaire was provided by:

Name	Travis Stansbery						
Signature							
Title	Environmental Professional						
Firm	Pinnacle Environmental, Inc.						
Date	6/14/23						
Via	Email	✔	In Person		Phone		Fax	

(Note: This Questionnaire is based on the American Society of Testing and Materials Transaction Screen E1528-14 and Phase I ESA E1527-13)

Return to:

Name	Travis Stansbery	Phone	(949)302-4403
Email	tstansbery@pei-env.com	Fax	(925)673-5507

MISCELLANEOUS

KEY SITE MANAGER SUPPLIED INFORMATION

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Appendix H

Drainage Study for

Summer Flats

Prepared for:

City of Elk Grove

April 24, 2023
REVISED March 5, 2024

Prepared by:

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
3301 C Street, Bldg 100-B
Sacramento, CA 95816
Tel: 916.341.7760
Fax: 916.341.7767

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Figure 3: Hydrologic Soil Groups and Land Use
Figure 4: Pre-Project Model Schematic
Figure 5: Preliminary Grading & Drainage Exhibit
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APPENDICES

Appendix A: Pre-Project Hydrology and Hydraulics Parameters and Results
Appendix B: Post-Project Hydrology and Hydraulics Parameters and Results
Appendix C: Proposed Storm Drain Geometry and Modeling Results
Appendix D: Digital Files
Appendix E: Water Quality Calculations

EXHIBITS

Exhibit A: Memorandum: Summer Flats – Low Impact Development Approach/Solution

INTRODUCTION

The Summer Flats Project (Project) is a proposed development in the city of Elk Grove (City) located immediately east of Waterman Road and north of East Park Drive, approximately ¼ mile north of Elk Grove Boulevard. The property encompasses a total of 27.6 acres. The Project proposes to construct 120 residential lots on approximately 11.9 acres immediately adjacent to Waterman Road. The residual land on the easterly half of the site (14.7 acres) is planned as open space but will include a detention basin, necessary to provide stormwater-quality treatment and flood control storage.

BACKGROUND

The Project is bordered to the west by Waterman Road, to the east by the existing East Park developments, to the south by undeveloped parcels, and to the north by open space land owned by Cosumnes Community Services District. The existing condition of the Project area is undeveloped. **Figure 1** (attached) shows the location of the Project.

The Pre-Project runoff condition for the Project site consists of undeveloped open space land uses. The Project site generally drains from north to south towards East Park Drive to an existing 24-inch culvert that conveys the flows under the roadway to an existing detention basin located immediately south of East Park Drive. The existing detention basin drains south to a trunkline flowing west under Elk Grove Boulevard and then south under Waterman Road. Flows from additional existing developed areas combine and are then directed west through an existing 84-inch-diameter pipe, ultimately discharging to a tributary of Elk Grove Creek just south of Russell Park.

Hydrologic and hydraulic analyses for the existing developed area were unavailable at the time of this study.

PURPOSE

One purpose of this drainage study (Study) is to establish Pre-Project hydrologic and hydraulic modeling to represent existing conditions for all flows draining to the three existing detention basins that ultimately drain to Waterman Road. Post-Project hydrologic and hydraulic modeling will then be developed to evaluate and confirm the sizing of on-site drainage facilities to be constructed in the Project. The Study will document the assumptions and results of the hydrologic and hydraulic analyses in order to prove that the proposed drainage facilities will mitigate any impacts created by the Project for 100-year storm conditions. All proposed design features are intended to meet applicable City design standards.

DATUM AND PROJECTION

All elevations reported in this Study reference 1988 North American Vertical Datum (NAVD 88). The horizontal data references the North American Datum of 1983 (NAD 83) California State Plane Zone II (US feet) projected coordinate system.

PRE-PROJECT CONDITIONS

Surveys

Two Pre-Project site surveys were conducted at this location by Wood Rodgers, Inc. (Wood Rodgers) survey staff. An aerial survey gathered on-site topographic data using LiDAR collection on January 22, 2022. Off-site field measurements of storm drain infrastructure located south of the Project were gathered on December 15, 2022.

Topography

The site generally slopes from the northwest corner to the southeast corner of the site with elevations ranging from approximately 64 feet to 52 feet. The on-site LiDAR was used to define Pre-Project overland conveyance and storage properties. 1/3-arc second terrain data, published on February 6, 2022 by the US Geological Survey (USGS) and obtained online at https://apps.nationalmap.gov/downloader/, was used to help define off-site drainage conditions in combination with field measurements cited above. The survey data is shown on **Figure 2**.

Soils

Soil classifications for the Project site were obtained from the published Natural Resources Conservation Service (NRCS) soil survey (the website portal can be accessed at https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. The Project on-site soil consists of Hydrologic Soil Group D soils. Off-site subcatchments are comprised of Hydrologic Soil Groups C and D. See **Figure 3** for a summary map of the soils affecting the Project area.

Hydrology

The hydrologic analysis for this Project was conducted using XPSWMM (version 2021.1) utilizing Sacramento County Hydrology standards. Subcatchment and longest flow path delineations were conducted using geographic information systems (GIS) terrain processing tools based on both the USGS and the on-site LiDAR data. The longest flow path measurements were used to calculate the travel time component method to estimate lag time. Overland flow times were established using the standard XPSWMM residential overland flow time (nine minutes) or computed using the open space lag time equation. Where applicable, gutter flow time parameters and existing storm drain pipe flow parameters (including length, slope, and pipe diameter) were estimated from aerial imagery and/or record drawings.

The GIS-delineated sheds were validated with Record Drawing information to confirm subcatchment delineation. Subcatchment delineation and longest flow paths can be seen in Figure 2. Land use data was obtained from the City of Elk Grove General Plan. Land Use and Hydrologic Soil Group data was used to define subcatchment hydrologic parameters (as shown in Figure 3). Precipitation input for defining the 100-year event was obtained from the Sacramento County Hydrology within XPSWMM. A summary of the numerical hydrologic input parameters and individual subcatchment results is provided in **Appendix A** (attached). Digital copies of the XPSWMM model and subcatchment map background data have been included in **Appendix D**.

Hydraulics

The evaluation of the Pre-Project drainage system was performed using XPSWMM v2021.1. The XPSWMM software provides the flexibility to model the effect of dual conveyance through conduits and overland (streets) while dynamically accounting for storage and attenuation due to the existing and proposed detention basins. The Pre-Project hydraulics model for this Project was created to represent baseline conditions. The model elements included the storm drain trunklines located under Waterman Road and Elk Grove Boulevard. These inflows drain into the three detention basins located within an area that lies to the west of Black Swan Lane, to the south of Elk Grove Boulevard and west of Jeanne and Jerry Strong Park, to the north of Elk Grove Boulevard. All detention basins ultimately drain to an 84-inch outfall pipe that drains west from Waterman Road as depicted in Figure 1. Record Drawings and survey data were combined to approximate existing storm drain locations and invert elevations. For Record Drawings that reference a vertical datum other than NAVD 88, a conversion factor was calculated by comparing elevations that were reported in the Wood Rodgers site survey conducted on December 15, 2022, with a common point also referenced on the record drawing plan set. Record Drawing elevations were converted to NAVD 88 for peripheral facilities in the model at limited locations.

Lateral inlets were combined to only model major inflows for off-site trunklines and detention basins. The Pre-Project model schematic can be seen in **Figure 4**. Off-site trunklines were modeled as multilinks in XPSWMM to represent pipe and street conveyance where nodes were surcharging and streetflow would occur. Existing road cross sections were input into the model as the "natural" section option to allow for irregular street geometry. Section geometry was estimated based on street width and typical urban street sections.

A table of pipe dimensions, peak flows, and peak water surface elevations for the 100-year 24-hour storm are provided in Appendix A. A digital copy of the Pre-Project XPSWMM model has been included in Appendix D. The resulting maximum water surface elevations at key system locations are summarized below in **Table 1**.

Table 1 – Summary of 100-Year Pre-Project Water Surface Elevations at Key Locations (ft)		
Location Description	**Node ID**	**Max WSE (ft)**
Outfall pipe of North Existing Detention Basin	Node34	50.0
Elk Grove Blvd and Waterman Road	N_WR_3	49.0
Waterman Road north of Kliever Way	N_WR_4	48.9

POST-PROJECT CONDITIONS

The Post-Project Preliminary Grading and Drainage Exhibit can be seen in **Figure 5**.

Land Use

The proposed land use for the Project site consists of eight to ten Residential Dwelling Units per acre and the proposed detention basin. Sacramento County land use codes were applied within XPSWMM based on the proposed dwelling units per acre. **Table 2**summarizes the total area of land use classes within the subcatchments that were modified in Post-Project conditions. The "95% Highways/ Parking" classification includes a portion of existing Waterman Road.

Table 2 – Summary of Proposed Conditions Land Use		
Land Use Code	**Land Use Description**	**Total Area (Acres)**
LDR/RD-12	Residential 8-10 DU/acre	11.9
OS/O	Open Space	14.7
-	Major Right-of-Way	1.0
	Total	27.6

Hydrology

On-site subcatchment boundaries, parameters, and travel times were estimated to reflect the development and preliminary grading of the Project site in Post-Project conditions. **Figure 6** shows the on-site proposed conditions subcatchments as well as any remnant/adjacent existing subcatchments that drain to proposed infrastructure based on proposed grading. All on-site soils are hydrologic soil group type D.

Runoff hydrographs for the Post-Project subcatchments were calculated using the XPSWMM Sacramento County hydrology. In addition to using the lag estimates for assessing the attenuation that occurs within lumped urban watersheds, Sacramento County hydrology standards also allow

for a storm frequency factor to be applied to hydrologic estimates in order to account for street flooding when flows exceed pipe capacities. Once these lumped sheds reach the hydraulic network, further routing is handled under hydraulics. Proposed conditions hydrological parameters and peak runoff results are presented in **Appendix B**, and digital copies of the XPSWMM models (hydrologic input and results) have been included as part of Appendix D.

Hydraulics

Runoff hydrographs generated by XPSWMM Runoff nodes for each subcatchment were applied at the appropriate system inlet location and then hydraulically routed through the Project site in order to optimize pipe sizing and detention basin volume. Given that the Project is not designed yet, the conduit elements of the model have been represented in schematic fashion, while approximated using measurements from the current site layout relative to the existing system.

The on-site drainage system will adhere to the following City and County Standards:

1. Manning's n = 0.015
2. Inlet and manhole spacing
3. 100-year water surface elevation in the proposed detention basin and provides a minimum of two (2) feet of freeboard

Runoff from the proposed residential development is routed via curbed and guttered streets to an underground storm drain system. This system consists of conduits that range in size from 12 inches to 30 inches in diameter, and drain by gravity into the proposed detention basin. See *Detention Basin* below for a full description of the planned layout of the detention basin.

Low Impact Development (LID) and Water Quality

The Project will be required to provide Low Impact Development measures in accordance with the current version of the Stormwater Quality Design Manual (SQDM) for the Sacramento Region. Based on the proposed development characteristics, 28,000 square feet of bioretention soils can be installed to meet the required 100 points, as calculated using the spreadsheet found in Appendix D of the SQDM and modified based on the meeting discussion on December 15, 2023, and the follow up memorandum provided as an attachment labeled Exhibit A. Wood Rodgers proposes to construct the LID measures within a benched area portion of the proposed detention basin, and constructed so that it is similar to approved drainage facilities in the City of Rancho Cordova. A cross section of the proposed detention basin and LID features is provided on Figure 5 and in Exhibit A. In meeting with LID requirements, a residual stormwater treatment volume was also calculated using the Sacramento County spreadsheet for Residential Sites Low Impact Development Credits and Treatment Best Management Practices (BMP) Sizing Calculations. The stormwater quality event outlet was sized to drain the water quality volume within 48 hours. 0.37

acre-feet (ac-ft) of water quality volume will be stored within the basin, in combination with the 100-year flood detention volume. See Figure 5 for the location of amended soils. See **Appendix E** for the LID worksheet. For modeling purposes, the water quality volume is present in the proposed detention basin as an initial depth before the 100-year storm event begins.

Hydromodification

The Project is located within a watershed area where hydromodification requirements are applicable, as shown on Figure 5-2 of the SQDM. The Project is located near the upstream end of its watershed, and it is planned to mitigate all impacts, including hydromodification, through detention storage and controlled outlet discharge configurations. A preliminary SAHM model has been developed based on the preliminary drainage facilities layout in this Study.

The preliminary SAHM model includes a Pre-Project scenario that represents the on-site project area. The land use basin representing the Pre-Project on-site area is the point of compliance for the Pre-Project scenario.

The mitigated scenario includes the proposed development, amended soils, and detention basin. The detention basin includes the proposed orifice/outlet structure described below. The point of compliance for the mitigated scenario is the trapezoidal pond representing the detention storage.

When comparing the points of compliance from Pre-Project and mitigated scenarios, the proposed development "Passes" all flow scenarios. The SAHM model is included in Appendix D.

Detention Basin

See **Table 3**below for Proposed Detention Basin Characteristics and subsequent paragraphs explaining the design characteristics.

Table 3 – Proposed Detention Basin Characteristics

Characteristic	Value
Bottom Area	26,000 square feet
Bench Area	28,000 square feet
Top Area	74,000 square feet
Invert Elevation	47.3 feet
Bench Elevation	48.5 feet
Top Elevation	53.0 feet
Total Contained Depth	5.7 feet
Side Slope	4:1

In addition to the proposed detention basin, a new 24-inch drainpipe will be installed under East Park Drive to directly connect the proposed detention basin with the existing detention basin located to the south. A new outlet structure will be installed where the new 24-inch pipe connects to the existing detention basin. A flap gate is also proposed to prevent backflow from the existing detention basin into the proposed detention basin in order to isolate storage and water quality features between developments.

The orifice/outlet structure for the proposed detention basin will have two outlets: one outlet for smaller stormwater quality events and one outlet for larger storm events. Both orifices ultimately will discharge to the proposed 24-inch pipe that crosses under East Park Drive. The water quality event outlet will be a 6-inch orifice with the invert set at 47.3 feet at the bottom of the basin. The water quality outlet, in conjunction with infiltration, will drain the detention basin within 48 hours. For the purposes of defining the capacity requirement of the basin in the 100-year event, no detention basin infiltration was allowed in the full Post-Project model simulation.

The outlet for storm events larger than the water quality event is a 24-inch orifice set to the top of the water quality volume at 47.91 feet. To ensure storm events larger than the 100-year 24-hour event will preferentially drain out the 24-inch connection, the top spill crest of the outlet/orifice will be set to 50.0 feet.

Summary of Results

The proposed detention basin has been designed to provide adequate storage capacity and freeboard to store runoff for storm events up to and including the 100-year 24-hour event. The top-of-bank in the detention basin is at elevation 53 feet, with street and pad grades above 56 feet. The peak stages at the detention basin are shown below in **Table 4**.

Table 4 – Summary of Detention Basin Results

Storm Event	Peak Stage at Detention Basin (ft)	Peak Flow into Detention Basin (cfs)	Peak Flow out of Detention Basin (cfs)
100-year, 24-hour	49.4	28.4	7.6

A tabulated summary for the on-site drainage system for a 100-year 24-hour simulation has been included in **Appendix C**, and a figure displaying the details of the on-site drainage network is provided as **Figure 6**. Digital copies of all XPSWMM input and output files for stormwater quality treatment and flood mitigation scenarios have been included in Appendix D. **Table 5** (below) provides a summary of the Post-Project water surface elevations at key locations, with a comparison to Pre-Project water surface elevations cited under Table 1.

Table 5 – Summary of Pre- and Post-Project 100-Year Water Surface Elevations at Key Locations (ft)			
Location Description	**Node ID**	**Pre-Project Max WSE (ft)**	**Post-Project Max WSE (ft)**
Outfall Pipe of North Existing Detention Basin	Node34	50.0	49.2
Elk Grove Boulevard and Waterman Road	N_WR_3	49.0	48.7
Waterman Road north of Kliever Way	N_WR_4	48.9	48.7

CONCLUSIONS

The Summer Flats project is comprised of approximately 11.9 acres of development consisting primarily of 60%-impervious single-family homes with streets.

The Project, as it is currently designed, conforms to currently-published City of Elk Grove and Sacramento County design requirements, and the proposed design will reduce runoff from the Project site to below Pre-Project conditions. Stormwater quality treatment objectives as required by Elk Grove under the SQDM are met with the use of a detention basin and the use of a designed outlet. The proposed detention basin will infiltrate some runoff due to the amended soils under low flow event conditions, but infiltration was not applied within the basin for the 100-year 24-hour storm event.

REFERENCES

The following references were utilized to obtain hydrologic and hydraulic parameter settings for modeling performed under this Study. The numerical details of each chosen parameter are not explicitly called out in the text of this report in order to keep the discussion focused on modeling concepts and results.

1. Coalition of the County of Sacramento and the Cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova and Sacramento (2018). *Stormwater Quality Design Manual for the Sacramento Region, July 2018.* Sacramento, CA
2. City of Elk Grove Department of Public Works (2020). *Section 9: Storm Drainage Design, May 2020.* Elk Grove, CA.
3. Sacramento County Department of Water Resources (1996). *Volume 2, Sacramento City/County Drainage Manual.* Sacramento, CA

FIGURE 1

LOCATION MAP

SUMMER FLATS DRAINAGE STUDY

SACRAMENTO COUNTY, CA

MARCH 2023

Legend

- Project Boundary
- Existing Detention Basin
- Existing Trunkline

Note: The existing trunkline shown continues up and downstream of the extent shown.

0 1,000 2,000 4,000

Feet

NORTH

WOOD RODGERS

City of Elk Grove, County of Sacramento, California State Parks, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/ NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA

FIGURE 2

EXISTING TERRAIN AND SUBCATCHMENTS DELINEATION

SUMMER FLATS DRAINAGE STUDY

SACRAMENTO COUNTY, CA

FEBRUARY 2023

Legend

- Offsite Contour
- Onsite Contour
- Subcatchment Delineation

N_OF_1
N_OF_2
N_OF_3
N_OF_4
N_OF_5
N_WR_1_1
N_ON_1
N_ON_3
N_WR_1
N_EGB_1_1
N_CW_1
N_WR_2
N_CW_4
N_CW_2
N_WR_3
N_EGB_1
N_EGB_2
N_EGB_3
N_WR_4
N_WR_4_1
N_WR_4_4
N_WR_5
N_WR_4_2
N_WR_4_3
N_WR_6

0 250 500 1,000
Feet

NORTH

WOOD RODGERS

Maxar

FIGURE 3

HYDROLOGIC SOIL GROUPS AND LAND USE

SUMMER FLATS DRAINAGE STUDY

SACRAMENTO COUNTY, CA

FEBRUARY 2023

Legend

- Subcatchment Delineation

Hydrologic Soild Group

- C
- D

City of Elk Grove General Plan

- Community Commercial
- Estate Residential
- Estate Residential 1 acre
- Light Industrial
- Low Density Residential
- Parks and Open Space
- Public Services
- Resource Management and Conservation

0 250 500 1,000

Feet

NORTH

WOOD RODGERS

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FIGURE 4

PRE-PROJECT MODEL SCHEMATIC

SUMMER FLATS DRAINAGE STUDY

SACRAMENTO COUNTY, CA

FEBRUARY 2023

Legend

- Storage
- Outfall
- Node

Link Type

- Pipe
- Trapezoidal Channel
- Orifice

0 250 500 1,000

Feet

NORTH

WOOD RODGERS

Maxar, Microsoft, Esri Community Maps Contributors, City of Elk Grove, County of Sacramento, California State Parks, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA

PRELIMINARY GRADING & DRAINAGE EXHIBIT

SUMMER FLATS

CITY OF ELK GROVE, CALIFORNIA

MARCH 2024

SCALE: 1" = 50'

HILLTOP CEMETERY

WATERMAN ROAD

RANCHO DRIVE

BRAIRTOWN COURT

HAMBLEY CIRCLE

EAST PARK DRIVE

PROPOSED BASIN
FINAL CONFIGURATION PER DRAINAGE STUDY AND DETAILED WITH IMPROVEMENT PLANS

FUTURE ACCESS RAMPS LOCATIONS APPROXIMATE. DESIGN TO FINALIZED WITH IMPROVEMENT PLANS.

DRAINAGE TO OUTFALL TO EXISTING BASIN. FINAL DESIGN PER DRAINAGE STUDY AND DETAILED WITH IMPROVEMENT PLANS.

LEGEND

P=100.0	PAD GRADE
102.0 HP	STREET GRADE
24"D	STORM DRAIN PIPE & SIZE
	STORM DRAIN MANHOLE WITH DRAIN INLETS
	RETAINING WALL
	SOUNDWALL
TOP / TOE	SLOPE BANK
100	PROPOSED CONTOUR
	LOT BOUNDARY
	OVERLAND FLOW

NOTES

1. ELEVATIONS BASED ON THE NATIONAL AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

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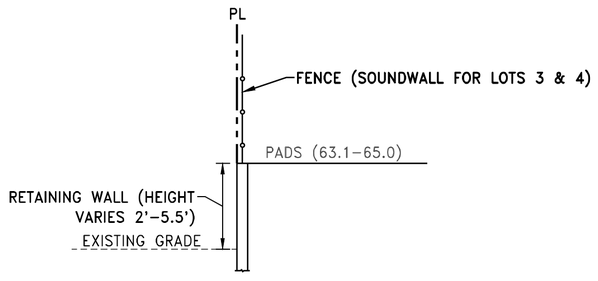
J:\4000-s\4167_SummerFlats\SummerFlats OA\Planning\Civil_Entitlements\Exhibits\EXH-PRELIM-GRADING-SF-OA.dwg 3/11/2024 3:14 PM Abby Miramontes

PRELIMINARY GRADING SECTIONS EXHIBIT (SHEET 2 OF 2)

SUMMER FLATS

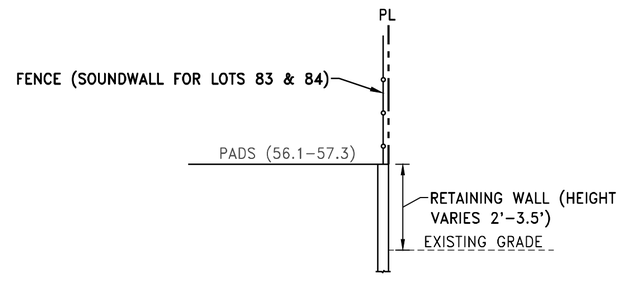
CITY OF ELK GROVE, CALIFORNIA

MARCH 2023



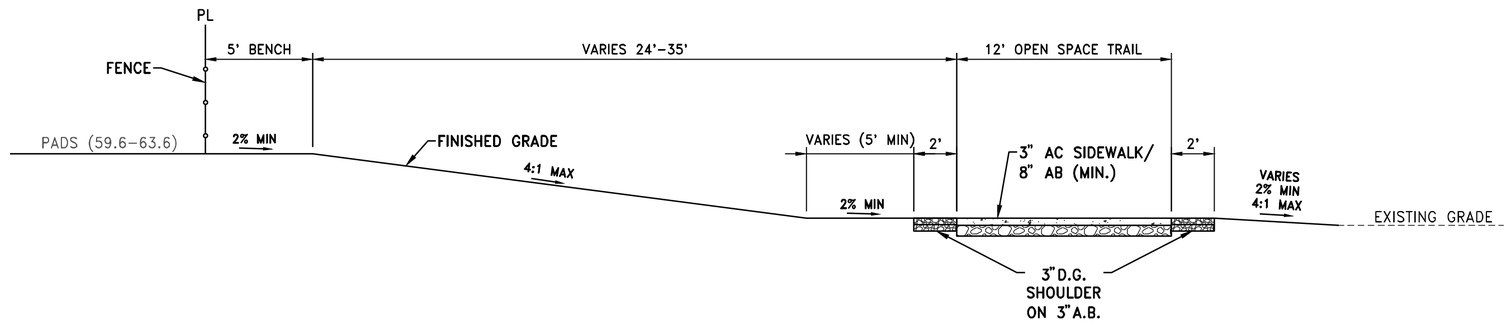
A NORTH BOUNDARY CONDITION

SCALE: NOT TO SCALE



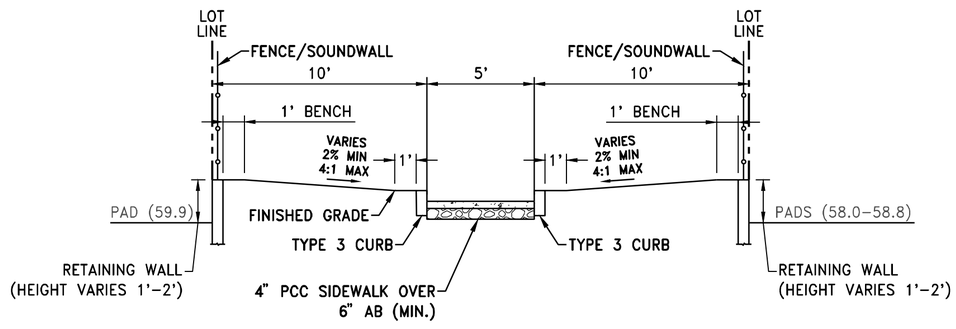
B SOUTH BOUNDARY CONDITION

SCALE: NOT TO SCALE



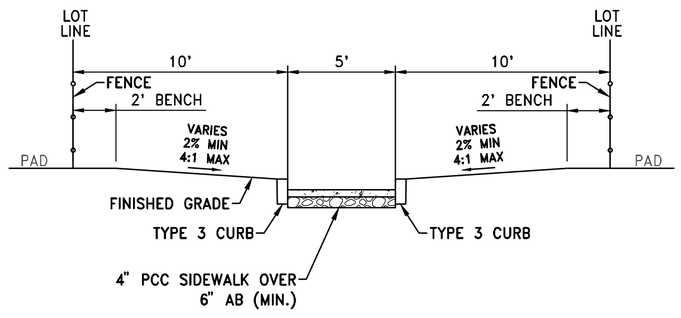
C EAST BOUNDARY CONDITION AND OPEN SPACE TRAIL

SCALE: NOT TO SCALE



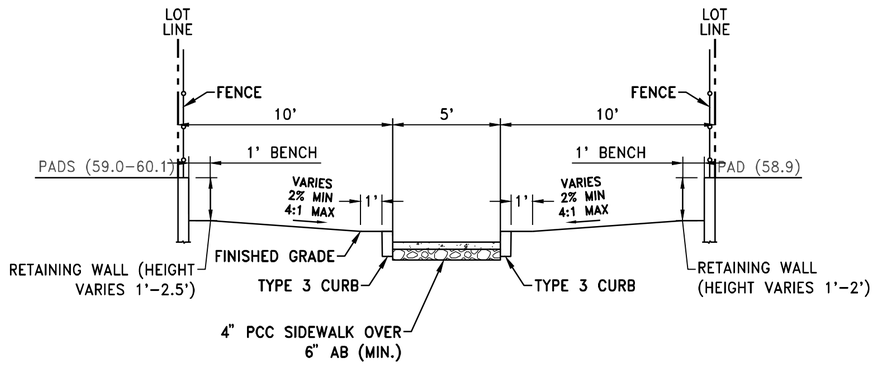
D PASEO - WITH RETAINING WALL (LOT G)

SCALE: NOT TO SCALE



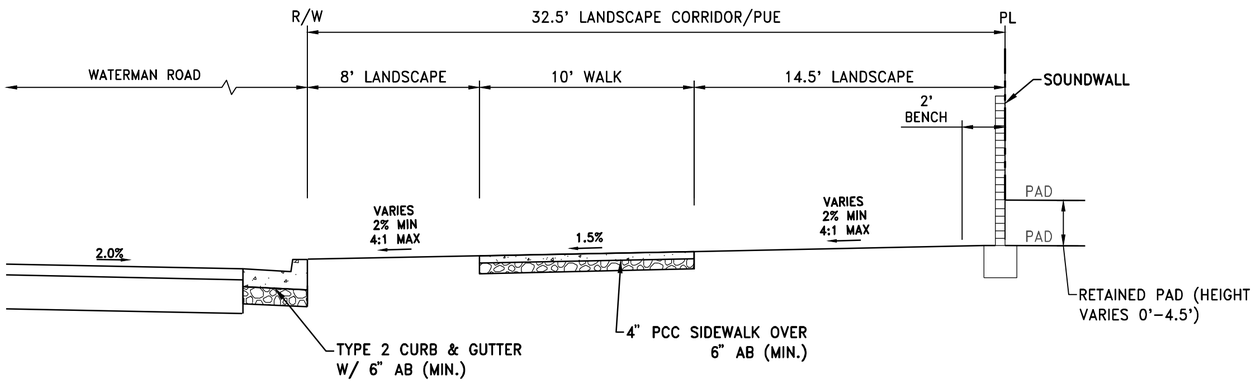
E PASEO - (LOTS K & G)

SCALE: NOT TO SCALE



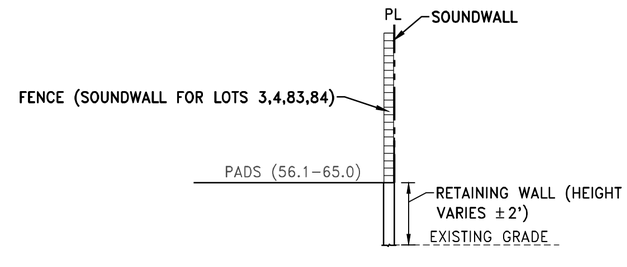
F PASEO - WITH RETAINING WALL (LOT K)

SCALE: NOT TO SCALE



G WATERMAN ROAD FRONTAGE

SCALE: NOT TO SCALE



H NORTH AND SOUTH BOUNDARY CONDITIONS

SCALE: NOT TO SCALE

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FIGURE 6

POST-PROJECT SUBCATCHMENT DELINEATION

SUMMER FLATS DRAINAGE STUDY

SACRAMENTO COUNTY, CA

MARCH 2023

Legend

- Proosed Node

Proposed Pipes

- 12" diameter
- 15" diameter
- 18" diameter
- 24" diameter
- 30" diameter
- Unchanged Links

Name

- Subcatchment Delineation
- Modified Subcatchment Delineation

Proposed Detention Basin

0 100 200 400

Feet

NORTH

WOOD RODGERS

Maxar, Microsoft, Esri Community Maps Contributors, City of Elk Grove, County of Sacramento, California State Parks, © OpenStreetMap, Microsoft, TomTom, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA

PROJECT: 4167 SUMMER FLATS
LOCATION: ELK GROVE, CA
SUBJECT: APPENDIX A: PRE-PROJECT HYDROLOGY AND HYDRAULICS PARAMETERS AND RESULTS
METHOD: XPSWMM 2020.1

Node Name	Hydrology				Hydraulics		
	Tributary Area	Computed Lag Time	Peak Flow	Total Runoff Volume	Invert Elevation	Ground Elevation	Max WSE
	(acres)	(min)	(cfs)	(ac-ft)	(ft)	(ft)	(ft)
N_CW_1	0.3	5.0	1.1	0.1	46.0	53.0	53.5
N_CW_2	6.5	12.6	16.2	2.2	45.2	50.6	50.1
N_CW_3	0.0	0.0	0.0	0.0	44.9	52.7	53.5
N_CW_4	3.2	26.2	5.3	1.0	43.9	51.7	53.5
N_EGB_1	5.7	29.0	8.6	1.2	43.6	51.2	50.1
N_EGB_1_1	8.7	24.8	14.7	2.5	49.1	52.1	50.3
N_EGB_2	0.8	5.0	3.0	0.3	43.7	52.4	49.8
N_EGB_2_1	0.0	0.0	0.0	0.0	47.0	53.7	51.9
N_EGB_3	6.9	9.5	19.9	2.4	43.4	52.3	49.4
N_EGB_4	0.0	0.0	0.0	0.0	43.2	52.3	49.1
N_OF_1	8.5	13.6	20.0	2.0	54.5	56.0	55.3
N_OF_2	21.9	14.9	48.9	4.9	53.0	54.6	55.3
N_OF_3	93.2	34.0	130.6	27.1	46.4	52.8	50.1
N_OF_4	10.2	25.7	16.5	2.2	46.3	51.7	50.1
N_OF_5	75.7	5.0	280.2	22.4	50.0	56.7	57.1
N_ON_1	25.9	14.9	58.0	6.0	49.4	55.9	53.1
N_ON_2	0.0	0.0	0.0	0.0	53.0	58.0	55.3
N_ON_3	5.6	33.1	7.8	1.3	52.4	53.8	53.3
N_WR_1	1.5	11.7	3.9	0.5	46.3	54.0	49.0
N_WR_1_1	1.6	10.0	4.5	0.6	61.4	63.1	62.6
N_WR_2	0.8	16.0	1.8	0.3	43.7	53.4	49.0
N_WR_3	4.0	7.8	12.4	1.4	43.0	53.5	49.0
N_WR_4	3.9	7.3	12.6	1.4	41.4	51.2	48.9
N_WR_4_1	5.9	22.2	10.4	1.2	42.5	53.0	50.1
N_WR_4_2	17.2	22.6	30.8	5.0	44.2	51.8	50.1
N_WR_4_3	79.1	15.4	175.2	22.0	45.4	54.8	50.4
N_WR_4_4	108.8	55.7	112.2	32.1	44.2	53.1	50.1
N_WR_5	11.7	17.7	24.0	3.4	42.4	54.8	48.9
N_WR_6	4.5	9.3	13.0	1.4	43.8	55.4	48.9
Node34	0.0	0.0	0.0	0.0	43.6	51.2	50.0
Node35	0.0	0.0	0.0	0.0	42.8	53.0	49.9
O_1	0.0	0.0	0.0	0.0	40.1	50.6	47.1

PROJECT: 4167 SUMMER FLATS
LOCATION: ELK GROVE, CA
SUBJECT: APPENDIX B: POST-PROJECT HYDROLOGY AND HYDRAULICS PARAMETERS AND RESULTS
METHOD: XPSWMM 2021.1

Node Name	Hydrology				Hydraulics		
	Tributary Area	Computed Lag Time	Peak Flow	Total Runoff Volume	Invert Elevation	Ground Elevation	Max WSE
	(acres)	(min)	(cfs)	(ac-ft)	(ft)	(ft)	(ft)
N_CW_1	0.3	5.0	1.1	0.1	46.0	53.0	53.0
N_CW_2	6.5	12.6	16.2	2.2	45.2	50.6	54.3
N_CW_3	6.5	0.0	0.0	0.0	44.9	52.7	53.4
N_CW_4	3.2	26.2	5.3	1.0	43.9	51.7	53.4
N_EGB_1	5.7	29.0	8.6	1.2	43.6	51.2	49.5
N_EGB_1_1	8.7	24.8	14.7	2.5	49.1	52.1	50.2
N_EGB_2	0.8	5.0	3.0	0.3	43.7	52.4	49.1
N_EGB_2_1	0.0	0.0	0.0	0.0	47.0	53.7	50.7
N_EGB_3	6.9	9.5	19.9	2.4	43.4	52.3	49.1
N_EGB_4	0.0	0.0	0.0	0.0	43.2	52.3	48.7
N_OF_1	8.5	13.6	20.0	2.0	54.5	56.0	55.3
N_OF_2	21.9	14.9	48.9	4.9	53.0	54.6	55.3
N_OF_3	93.2	34.0	130.6	27.1	46.4	52.8	49.4
N_OF_4	10.2	25.7	16.5	2.2	46.3	51.7	49.5
N_OF_5	75.7	5.0	280.2	22.4	50.0	56.7	51.6
N_ON_1	13.0	14.9	29.1	3.0	49.4	55.9	52.1
N_ON_2	0.0	0.0	0.0	0.0	53.0	58.0	55.3
N_ON_3	2.7	33.1	3.8	0.7	52.4	53.8	52.9
N_Pro_O	3.0	12.6	7.3	0.7	47.3	53.9	49.4
N_Pro_Off2	0.3	9.5	0.9	0.1	51.7	55.2	54.0
N_Pro1	1.9	9.7	5.4	0.6	48.6	53.9	51.2
N_Pro2	4.0	11.0	9.7	1.2	48.8	53.9	54.0
N_Pro3	0.0	0.0	0.0	0.0	50.7	56.9	56.3
N_Pro3_1	0.8	10.9	2.2	0.3	57.5	60.5	58.1
N_Pro3_2	3.4	11.1	9.0	1.1	50.7	56.9	56.9
N_Pro4	0.3	9.6	0.9	0.1	54.0	60.1	59.9
N_Pro5	1.3	9.3	3.7	0.4	54.5	60.1	60.1
N_Pro5_1	0.3	9.6	0.9	0.1	61.0	64.0	61.4
N_WR_1	1.5	11.7	3.9	0.5	46.3	54.0	48.7
N_WR_1_1	1.6	10.0	4.5	0.6	61.4	63.1	62.5
N_WR_1_2	0.0	0.0	0.0	0.0	51.8	57.5	56.9
N_WR_1_3	0.0	0.0	0.0	0.0	49.5	55.5	54.0
N_WR_2	0.8	16.0	1.8	0.3	43.7	53.4	48.7
N_WR_3	4.0	7.8	12.4	1.4	43.0	53.5	48.7
N_WR_4	3.9	7.3	12.6	1.4	41.4	51.2	48.7
N_WR_4_1	5.9	22.2	10.4	1.2	42.5	53.0	49.7
N_WR_4_2	17.2	22.6	30.8	5.0	44.2	51.8	49.7
N_WR_4_3	79.1	15.4	175.2	22.0	45.4	54.8	50.1
N_WR_4_4	108.8	55.7	112.2	32.1	44.2	53.1	49.7
N_WR_5	11.7	17.7	24.0	3.4	42.4	54.8	48.7
N_WR_6	4.5	9.3	13.0	1.4	43.8	55.4	48.7
Node34	0.0	0.0	0.0	0.0	43.6	51.2	49.2
Node35	0.0	0.0	0.0	0.0	42.8	53.0	49.5
Node61	0.0	0.0	0.0	0.0	47.3	53.9	49.4
Node62	0.5	10.4	1.4	0.2	52.5	57.5	56.9
O_1	0.0	0.0	0.0	0.0	40.1	50.6	47.1

PROJECT: 4167 SUMMER FLATS
LOCATION: ELK GROVE, CA
SUBJECT: APPENDIX C: PROPOSED STORM DRAIN GEOMETRY AND MODEL RESULTS
METHOD: XPSWMM 2021.1

Pipe Name	Link Name	Upstream Node Name	Downstream Node Name	Watershed Area	Diameter	Upstream Invert Elevation	Downstream Invert Elevation	Conduit Length	Conduit Slope	Manning's Roughness	100-Year Peak Flow	Full Capacity of Conduit	100-Year Peak Velocity	Full Flow Velocity Based on Full Flow Capactiy	Upstream Rim Elevation	Upstream HGL Elevation	Downstream HGL Elevation	Upstream EGL Elevation	Downstream EGL Elevation
				(ac)	(in)	(ft)	(ft)	(ft)	(ft/ft)	(n)	(cfs)	(cfs)	(ft/sec)	(ft/sec)	(ft)	(ft)	(ft)	(ft)	(ft)
C_Pro5_1	C_Pro5_1	N_Pro5_1	N_Pro5	0.30	12	61.00	54.75	366.8	0.0170	0.015	0.8	4.0	3.6	5.1	64.0	61.4	60.1	61.4	60.2
C_Pro5	C_Pro5	N_Pro5	N_Pro4	1.30	15	54.60	54.00	51.2	0.0117	0.015	4.2	6.1	4.6	4.9	60.1	60.1	59.9	60.2	60.0
C_Pro4	C_Pro4	N_Pro4	N_Pro3_2	0.30	15	54.00	50.95	419.5	0.0073	0.015	4.8	4.8	3.8	3.9	60.1	59.9	56.9	60.0	57.2
C_Pro3_2	C_Pro3_2	N_Pro3_2	N_Pro3	3.40	18	50.70	50.68	19.8	0.0010	0.015	13.4	2.4	7.4	1.3	56.9	56.9	56.3	57.2	57.2
C_Pro3_1	C_Pro3_1	N_Pro3_1	N_Pro3	0.80	12	57.50	50.68	168.8	0.0404	0.015	2.1	6.2	10.1	7.9	60.5	58.1	56.3	58.1	57.2
C_Pro3	C_Pro3	N_Pro3	N_Pro2	0.00	24	50.68	48.77	402.8	0.0047	0.015	15.3	13.5	4.8	4.3	56.9	56.3	54.0	57.2	54.3
C_Pro2	C_Pro2	N_Pro2	N_Pro1	4.00	24	48.77	48.61	201.5	0.0008	0.015	23.6	5.5	7.4	1.8	53.9	54.0	51.2	54.3	52.0
C_Pro_1	C_Pro_1	N_Pro1	N_Pro_O	1.90	30	48.61	48.50	119.4	0.0009	0.015	28.4	10.8	5.9	2.2	53.9	51.2	49.4	52.0	50.9
C_Pro_O	C_Pro_O	Node61	N_EGB_1	0.00	24	47.30	46.70	300.0	0.0020	0.015	7.6	8.8	3.0	2.8	53.9	49.4	49.5	49.4	49.9
C_Pro_Off1	C_Pro_Off1	Node62	N_WR_1_2	0.50	12	52.50	51.75	25.0	0.0300	0.015	1.3	4.9	3.4	6.2	57.5	56.9	56.9	56.9	57.1
C_Pro_Off2	C_Pro_Off2	N_Pro_Off2	N_WR_1_3	0.30	12	51.70	49.50	25.0	0.0880	0.015	0.8	8.4	13.3	10.6	55.2	54.0	54.0	54.0	54.2

APPENDIX E

ATTACHMENT 1

Appendix D-1: Residential Sites: Low Impact Development (LID) Credits and Treatment BMP Sizing Calculations

Name of Drainage Shed: Summer Flats
Location of project: Sacramento

Fill in Blue Highlighted boxes

Step 1 - Open Space and Pervious Area Credits

Is your project within the drainage area of a common drainage plan that includes open space? If not, skip to 1 b.

1 a. Common Drainage Plan Area	0	acres	A_{CDP}	
Common Drainage Plan Open Space (Off-project)	0	acres	A_{OS}	see area example below
a. Natural storage reservoirs and drainage corridors	0	acres		
b. Buffer zones for natural water bodies	0	acres		
c. Natural areas including existing trees, other vegetation, and soil	0	acres		
d. Common landscape area/park	0	acres		
e. Regional Flood Control/Drainage basins	0	acres		
1 b. Project Drainage Shed Area (Total)	28	acres	A	
Project-Specific Open Space (In-project, communal)**	15.70	acres	A_{PSOS}	see area example below
a. Natural storage reservoirs and drainage corridors	0.00	acres		
b. Buffer zones for natural water bodies	0.00	acres		
c. Natural areas including existing trees, other vegetation, and soil	13.70	acres		
d. Landscape area/park	0.00	acres		
e. Flood Control/Drainage basins	2.00	acres		

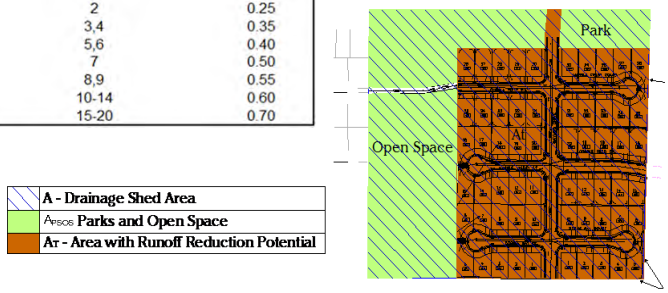
** Doesn't include impervious areas within individual lots and surrounding individual units. That is accounted for below using Form D-1a in Step 2.

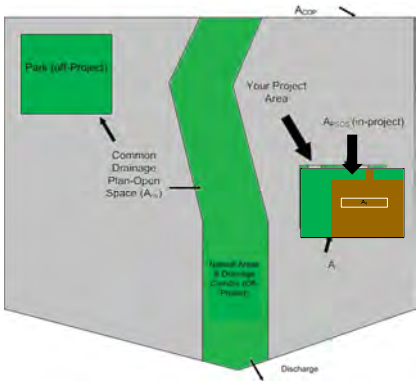
Area with Runoff Reduction Potential	$A - A_{PSOS}$ =	11.90	acres	A_T
Number of Units in A_T		124		
Number of units per acre in A_T	DU/A_T =	11		DUA
Assumed Initial Impervious Fraction of A_T (determined using Table D-1a)		0.6		I

Open Space & Pervious Area LID Credit (Step 1)
$(A_{OS}/A_{CDP}+A_{PSOS}/A)x100$ = 57 pts

Table D-1a

Dwelling units per acre	Imperviousness
1	0.17
2	0.25
3,4	0.35
5,6	0.40
7	0.50
8,9	0.55
10-14	0.60
15-20	0.70





Step 2 - Runoff Reduction Credits

Runoff Reduction Measures		Effective Area Managed (A_C)	
Disconnected Roof Drains (see Fact Sheet)	use Form D-1a for credits →	0.00	acres
Disconnected Pavement (see Fact Sheet)	use Form D-1b for credits →	0.00	acres
Interceptor Trees (see Fact Sheet)	use Form D-1c for credits →	0.00	acres
Alternative Driveway Design (see Fact Sheet)	use Form D-1d for credits →	0.00	acres
Total Effective Area Managed (Credit Area)	A_C	0.00	acres EAM

Runoff Reduction Credit (Step 2) $(A_C / A_T)*100$ = 0 pts

Form D-1a: Disconnected Roof Drains Worksheet

See Fact Sheet for more information regarding Disconnected Roof Drain credit guidelines

Effective Area Managed (A_C)

1. Determine efficiency Multiplier

Runoff is directed to a dispersal trench or dry well (Type A and B soils only)		1.00
Runoff is directed across landscaping, determine setback		
25 ft +	Use multiplier of	1.00
≥ 20 and < 25 ft	Use multiplier of	0.90
≥ 15 and < 20 ft	Use multiplier of	0.70
≥ 10 and < 15 ft	Use multiplier of	0.45
≥ 5 and < 10 ft	Use multiplier of	0.25

Efficiency Multiplier → [ ] Box J1

2. Determine percentage of roof drains disconnected → [ ] Box J2

3. Select project density in dwelling units per acre:

1	Use reduction factor of	0.08
2	Use reduction factor of	0.13
3,4	Use reduction factor of	0.19
5,6	Use reduction factor of	0.23
7	Use reduction factor of	0.29
8,9	Use reduction factor of	0.33
10-14	Use reduction factor of	0.37
15-20	Use reduction factor of	0.44

Reduction Factor → [0.37] Box J3

4. Determine Area Managed

Multiply Box J3 by A_T, and enter the result in Box J4 [4.4] acres Box J4

5. Multiply Boxes J1, J2 and J4, and enter 60% of the Result in Box J [0.0] acres Box J

This is the amount of area credit to enter into the "Disconnected Roof Drains" Box of Form D-1

Form D-1b: Disconnected Pavement Worksheet

See Fact Sheet for more information regarding NDC Pavement credit guidelines

Effective Area Managed (A_C)

Divided Sidewalks

1. Determine percentage of units with divided Sidewalks [ ] Box K1

Multiply Box K1, A_T, and 0.04 and enter 60% of the result in Box K [0.00] acres Box K

This is the amount of area credit to enter into the "Disconnected Pavement" Box of Form D-1

Form D-1c: Interceptor Tree Worksheet

See Fact Sheet for more information regarding Interceptor Tree credit guidelines

Effective Area Managed (A_C)

New Evergreen Trees

1. Enter number of new evergreen trees that qualify as Interceptor Trees in Box L1. [ ] trees Box L1

2. Multiply Box L1 by 200 and enter result in Box L2 [0] sq. ft. Box L2

New Deciduous Trees

3. Enter number of new deciduous trees that qualify as Interceptor Trees in Box L3. [ ] trees Box L3

4. Multiply Box L3 by 100 and enter result in Box L4 [0] sq. ft. Box L4

Existing Tree Canopy

5. Enter square footage of existing tree canopy that qualifies as Existing Tree canopy in Box L5. [ ] sq. ft. Box L5

6. Multiply Box L5 by 0.5 and enter the result in Box L6 [0] sq. ft. Box L6

Total Interceptor Tree Credits

Add Boxes L2, L4, and L6 and enter it into Box L7 [0] sq. ft. Box L7

Divide Box L7 by 43,560 and multiply by 20% to get effective area managed and enter the result in Box L8 [0.00] acres Box L8

This is the amount of area credit to enter into the "Interceptor Trees" Box of Form D-1

Form D-1d: Alternative Driveway Design

See Fact Sheet for more information regarding Alternative Driveway Design credit guidelines

1. Select type of driveway

Pervious Driveway:	Multiplier:
Cobblestone Block F	0.40
Pervious Concrete/A	0.60
Modular Block Porous Pavement Porous Gravel	0.75
Not Directly-connected	1.00

Box M1

2. Determine percentage of units with Alternative Driveways: Box M2

4. Multiply Boxes M1, M2, A_T and 0.04, and enter the result in Box M
This is the amount of area credit to enter into the "Alternative Driveway Design" Box of Form D-1: 0.00 acres

Step 3 - Runoff Management Credits

Capture and Use Credits

Impervious Area Managed by Rain barrels, Cisterns, and automatically-emptied systems
(see Fact Sheet) enter gallons, for simple rain barrels: 0.00 acres

Automated-Control Capture and Use System
(see Fact Sheet, then enter impervious area managed by the system): 0.00 acres

Bioretention/Infiltration Credits

Impervious Area Managed by Bioretention BMPs
(see Fact Sheet)
Bioretention Area: 7,500 sq ft
Subdrain Elevation: 6 inches
Ponding Depth, inches: 12.0 inches
2.57 acres

Impervious Area Managed by Infiltration BMPs
(see Fact Sheet)
Drawdown Time, hrs: drawdown_hrs_inf
Soil Infiltration Rate, in/hr: soil_inf_rate
Sizing Option 1: Capture Volume, acre-ft: capture_vol_inf: 0.00 acres
Sizing Option 2: Infiltration BMP surface area, sq ft: soil_surface_area: 0.00 acres
Basin or trench? Basin; approximate BMP depth: 0.00 ft

Impervious Area Managed by Amended Soil or Mulch Beds
(see Fact Sheet) Mulched Infiltration Area, sq ft: - mulch_area: 0.00 acres

Total Effective Area Managed by Capture-and-Use/Bioretention/Infiltration BMPs: 2.57 A_{LIDc}

Runoff Management Credit (Step 3) A_{LIDC}/A_T*200 = 43.2 pts

Total LID Credits (Step 1+2+3) LID compliant, check for treatment sizing in Step 4: 100.0

Does project require hydromodification management? If yes, proceed to using SacHM.

Adjusted Area for Flow-Based, Non-LID Treatment $A_T - A_C - A_{LIDC}$ = 9.33 A_{AT}

Adjusted Impervious Fraction of A for Volume-Based, Non-LID Treatment $(A_T*I-A_C-A_{LIDC}) / A$ = 0.166 I_A

Further treatment is required, see choose flow-based or volume-based sizing in Step 4

Step 4a Treatment - Flow-Based (Rational Method)

Form D-1e

Calculate treatment flow (cfs): Flow = Runoff Coefficient x Rainfall Intensity x Adjusted Treatment Area

Determine C Factor using Table D-1b: 0.50 C

Determine i using Table D-1c (Rainfall Intensity): 0.18 i

A_{AT} from Step 2: 9.33 A_{AT}

Flow = C * i * A_{AT}: 0.84 cfs

TABLE D-1b

Development Type	Runoff Coefficient (Rational), C
Single-family areas	0.50
Multi-units, detached	0.60
Apartment dwelling areas	0.70
Multi-units, attached	0.75
User Specified	0.00

Table D-1c

Rainfall Intensity		
Roseville	i = 0.20	in/hr
Sacramento	i = 0.18	in/hr
Folsom	i = 0.20	in/hr

Step 4b Treatment - Volume-Based (ASCE-WEF)

Calculate water quality volume (Acre-Feet):	WQV = Area x Maximized Detention Volume (P_0)			
Obtain A from Step 1	27.60	A	48 hrs	Specified Draw Down time
Obtain P_0: Maximized Detention Volume from figures E-1 to E-4 in Appendix E of this manual using I_A from Step 2.	0.16	P_0		
Calculate treatment volume (acre-ft): **Treatment volume = A x (P_0 / 12)**	0.37	Acre-Feet		

v06232012

EXHIBIT A

WOOD RODGERS

January 24, 2024

TO: Su Mishra, City of Elk Grove
Ron Faulk, City of Elk Grove

FROM: Michael C. Nowlan, PE, CFM, Wood Rodgers, Inc.

SUBJECT: Summer Flats – Low Impact Development Approach/Solution

This memorandum is a follow-up to our phone conversation on December 15, 2023, and provides documentation of the details for configuring a low-maintenance detention basin facility to serve the proposed Summer Flats project (Project). The Project is located in the City of Elk Grove (City), 0.25 mile north of Elk Grove Boulevard and immediately east of Waterman Road. Our discussion focused on the creation of a benched area to be located within the detention basin to enhance infiltration. This area would be constructed with an underlying gravel layer and perforated pipe (underdrain) in order to keep the area from becoming saturated for long periods of time and allowing normal surface maintenance to occur using standard practices. This proposal is being put forward to meet the City's requirements for Low Impact Development (LID) as outlined in the Sacramento Region Stormwater Quality Design Manual (SQDM).

As we discussed during the meeting, the proposed LID concept describes using a portion of the detention basin area covered with low-maintenance non-irrigated vegetation. The vegetation would be established by using a seed selection chosen by the City, requiring one annual mowing operation to knock down the new growth after each wet/winter season. The area would be very flat and open, and it could be mowed using whatever mowing equipment the City has available.

With respect to the LID feature being proposed, Wood Rodgers, Inc. (Wood Rodgers) has been consulting with Ms. Dalia Fadl at the City of Rancho Cordova for a thorough review of the details and interpretations of the design standards for bioretention as compared to the amended soil features in the SQDM. It is Wood Rodgers' understanding that the proposed Project would be best characterized as a bioretention feature, with some allowances made for a shallower soil depth. Given the basin inlet and outlet constraints, as well as the proposed use of an underdrain, the feature will be configured much more like a bioretention planter than like compost-amended soils and, therefore, should reference the design guidelines for bioretention planters.

According to the SQDM, a bioretention feature is comprised of a gravel/rock layer covered by an engineered soil matrix (typically 18 inches thick), and then covered by a top soil layer (typically six (6) inches thick). Depending upon the infiltrative capacity of the underlying soils, the gravel layer can be outfitted with a perforated pipe to assist in draining the water that has passed through the soil to the downstream drainage system.

The proposed size of the Summer Flats detention area is limited by the existing terrain and the elevations of the downstream receiving waters (existing detention basin in Jeanne and Jerry Strong Park). With these vertical constraints, the achievable soil thicknesses are less than typical thicknesses. According to Ms. Fadl, the SQDM calculates points based on assumed (typical) thicknesses; however, the same points can be assigned to different configurations using the same volume of the engineered soil layer. For instance, if 1,000 square feet (surface area) of bioretention with 18 inches of engineered soil thickness is required to comply with LID, an equivalent soil volume achieved with 2,000 square feet of surface area covered by nine (9) inches of soil thickness is also acceptable. It is Wood Rodgers' understanding that the topsoil layer is not part of the equivalent volume assessment and can also be constructed with a minimum thickness of three (3) inches.

In our Draft Drainage Study for Summer Flats (April 2023), Wood Rodgers proposed that a benched area of 28,000 square feet of amended soil to meet the requirements for generating 100 LID points. Constructing a bioretention feature with a surface area of 7,500 square feet using typical thicknesses also achieves 100 LID points. A copy of the revised calculation spreadsheet is attached (see **Attachment 1**). Adjusting the bioretention soil profile to the site constraints allows for an engineered soil thickness of five (5) inches covered by three (3) inches of topsoil. The required bioretention engineered soil volume is 11,250 cubic feet (7,500 square feet x 18 inches), necessitating an area of 27,000 square feet covered by a five-inch soil thickness to achieve the same soil volume. Please review **Figure 1** (attached) for more details on the proposed configuration. The residual water quality treatment volume is the same using both amended soils and equivalent bioretention, and the overall basin ground surface is unchanged; therefore, the flood modeling that was previously provided as part of the Draft Drainage Study in April 2023 should be still valid.

Wood Rodgers is confident that the provided configuration is consistent with our discussion on December 15, 2023, and that the LID requirements are now sufficiently determined to finalize the Drainage Study for Summer Flats.

Attachments

ATTACHMENT 1

Appendix D-1: Residential Sites: Low Impact Development (LID) Credits and Treatment BMP Sizing Calculations

Name of Drainage Shed: Summer Flats
Location of project: Sacramento

Fill in Blue Highlighted boxes

Step 1 - Open Space and Pervious Area Credits

Is your project within the drainage area of a common drainage plan that includes open space? If not, skip to 1 b.

1 a. Common Drainage Plan Area	0	acres	A_{CDP}	
Common Drainage Plan Open Space (Off-project)	0	acres	A_{OS}	see area example below
a. Natural storage reservoirs and drainage corridors	0	acres		
b. Buffer zones for natural water bodies	0	acres		
c. Natural areas including existing trees, other vegetation, and soil	0	acres		
d. Common landscape area/park	0	acres		
e. Regional Flood Control/Drainage basins	0	acres		
1 b. Project Drainage Shed Area (Total)	28	acres	A	
Project-Specific Open Space (In-project, communal)**	15.70	acres	A_{PSOS}	see area example below
a. Natural storage reservoirs and drainage corridors	0.00	acres		
b. Buffer zones for natural water bodies	0.00	acres		
c. Natural areas including existing trees, other vegetation, and soil	13.70	acres		
d. Landscape area/park	0.00	acres		
e. Flood Control/Drainage basins	2.00	acres		

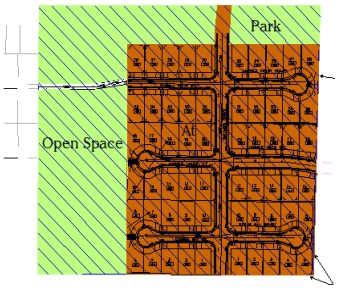
** Doesn't include impervious areas within individual lots and surrounding individual units. That is accounted for below using Form D-1a in Step 2.

Area with Runoff Reduction Potential	$A - A_{PSOS}$ =	11.90	acres	A_T
Number of Units in A_T		124		
Number of units per acre in A_T	DU/A_T =	11		DUA
Assumed Initial Impervious Fraction of A_T (determined using Table D-1a)		0.6		I

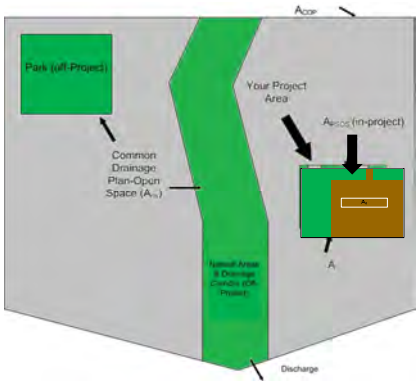
Open Space & Pervious Area LID Credit (Step 1)
$(A_{OS}/A_{CDP}+A_{PSOS}/A)x100$ = 57 pts

Table D-1a

Dwelling units per acre	Imperviousness
1	0.17
2	0.25
3,4	0.35
5,6	0.40
7	0.50
8,9	0.55
10-14	0.60
15-20	0.70



A - Drainage Shed Area
A_{PSOS} Parks and Open Space
A_T - Area with Runoff Reduction Potential



Step 2 - Runoff Reduction Credits

Runoff Reduction Measures		Effective Area Managed (A_C)	
Disconnected Roof Drains (see Fact Sheet)	use Form D-1a for credits →	0.00	acres
Disconnected Pavement (see Fact Sheet)	use Form D-1b for credits →	0.00	acres
Interceptor Trees (see Fact Sheet)	use Form D-1c for credits →	0.00	acres
Alternative Driveway Design (see Fact Sheet)	use Form D-1d for credits →	0.00	acres
Total Effective Area Managed (Credit Area)	A_C	0.00	acres EAM

Runoff Reduction Credit (Step 2) $(A_C / A_T)*100$ = 0 pts

Form D-1a: Disconnected Roof Drains Worksheet

See Fact Sheet for more information regarding Disconnected Roof Drain credit guidelines

Effective Area Managed (A_C)

1. Determine efficiency Multiplier

Runoff is directed to a dispersal trench or dry well (Type A and B soils only)		1.00
Runoff is directed across landscaping, determine setback		
25 ft +	Use multiplier of	1.00
≥ 20 and < 25 ft	Use multiplier of	0.90
≥ 15 and < 20 ft	Use multiplier of	0.70
≥ 10 and < 15 ft	Use multiplier of	0.45
≥ 5 and < 10 ft	Use multiplier of	0.25

Efficiency Multiplier → [ ] Box J1

2. Determine percentage of roof drains disconnected → [ ] Box J2

3. Select project density in dwelling units per acre:

1	Use reduction factor of	0.08
2	Use reduction factor of	0.13
3,4	Use reduction factor of	0.19
5,6	Use reduction factor of	0.23
7	Use reduction factor of	0.29
8,9	Use reduction factor of	0.33
10-14	Use reduction factor of	0.37
15-20	Use reduction factor of	0.44

Reduction Factor → [0.37] Box J3

4. Determine Area Managed

Multiply Box J3 by A_T, and enter the result in Box J4 [4.4] acres Box J4

5. Multiply Boxes J1, J2 and J4, and enter 60% of the Result in Box J [0.0] acres Box J

This is the amount of area credit to enter into the "Disconnected Roof Drains" Box of Form D-1

Form D-1b: Disconnected Pavement Worksheet

See Fact Sheet for more information regarding NDC Pavement credit guidelines

Effective Area Managed (A_C)

Divided Sidewalks

1. Determine percentage of units with divided Sidewalks [ ] Box K1

Multiply Box K1, A_T, and 0.04 and enter 60% of the result in Box K [0.00] acres Box K

This is the amount of area credit to enter into the "Disconnected Pavement" Box of Form D-1

Form D-1c: Interceptor Tree Worksheet

See Fact Sheet for more information regarding Interceptor Tree credit guidelines

Effective Area Managed (A_C)

New Evergreen Trees

1. Enter number of new evergreen trees that qualify as Interceptor Trees in Box L1. [ ] trees Box L1

2. Multiply Box L1 by 200 and enter result in Box L2 [0] sq. ft. Box L2

New Deciduous Trees

3. Enter number of new deciduous trees that qualify as Interceptor Trees in Box L3. [ ] trees Box L3

4. Multiply Box L3 by 100 and enter result in Box L4 [0] sq. ft. Box L4

Existing Tree Canopy

5. Enter square footage of existing tree canopy that qualifies as Existing Tree canopy in Box L5. [ ] sq. ft. Box L5

6. Multiply Box L5 by 0.5 and enter the result in Box L6 [0] sq. ft. Box L6

Total Interceptor Tree Credits

Add Boxes L2, L4, and L6 and enter it into Box L7 [0] sq. ft. Box L7

Divide Box L7 by 43,560 and multiply by 20% to get effective area managed and enter the result in Box L8 [0.00] acres Box L8

This is the amount of area credit to enter into the "Interceptor Trees" Box of Form D-1

Form D-1d: Alternative Driveway Design

See Fact Sheet for more information regarding Alternative Driveway Design credit guidelines

1. Select type of driveway

Pervious Driveway:	Multiplier:
Cobblestone Block F	0.40
Pervious Concrete/A	0.60
Modular Block Porous Pavement Porous Gravel	0.75
Not Directly-connected	1.00

Box M1

2. Determine percentage of units with Alternative Driveways: Box M2

4. Multiply Boxes M1, M2, A_T and 0.04, and enter the result in Box M
This is the amount of area credit to enter into the "Alternative Driveway Design" Box of Form D-1: 0.00 acres

Step 3 - Runoff Management Credits

Capture and Use Credits

Impervious Area Managed by Rain barrels, Cisterns, and automatically-emptied systems
(see Fact Sheet) enter gallons, for simple rain barrels: 0.00 acres

Automated-Control Capture and Use System
(see Fact Sheet, then enter impervious area managed by the system): 0.00 acres

Bioretention/Infiltration Credits

Impervious Area Managed by Bioretention BMPs
(see Fact Sheet)
Bioretention Area: 7,500 sq ft
Subdrain Elevation: 6 inches
Ponding Depth, inches: 12.0 inches
2.57 acres

Impervious Area Managed by Infiltration BMPs
(see Fact Sheet)
Drawdown Time, hrs: drawdown_hrs_inf
Soil Infiltration Rate, in/hr: soil_inf_rate
Sizing Option 1: Capture Volume, acre-ft: capture_vol_inf: 0.00 acres
Sizing Option 2: Infiltration BMP surface area, sq ft: soil_surface_area: 0.00 acres
Basin or trench? Basin; approximate BMP depth: 0.00 ft

Impervious Area Managed by Amended Soil or Mulch Beds
(see Fact Sheet) Mulched Infiltration Area, sq ft: - mulch_area: 0.00 acres

Total Effective Area Managed by Capture-and-Use/Bioretention/Infiltration BMPs: 2.57 A_{LIDc}

Runoff Management Credit (Step 3) A_{LIDC}/A_T*200 = 43.2 pts

Total LID Credits (Step 1+2+3) LID compliant, check for treatment sizing in Step 4: 100.0

Does project require hydromodification management? If yes, proceed to using SacHM.

Adjusted Area for Flow-Based, Non-LID Treatment $A_T - A_C - A_{LIDC}$ = 9.33 A_{AT}

Adjusted Impervious Fraction of A for Volume-Based, Non-LID Treatment $(A_T*I-A_C-A_{LIDC}) / A$ = 0.166 I_A

Further treatment is required, see choose flow-based or volume-based sizing in Step 4

Step 4a Treatment - Flow-Based (Rational Method)

Form D-1e

Calculate treatment flow (cfs): Flow = Runoff Coefficient x Rainfall Intensity x Adjusted Treatment Area

Determine C Factor using Table D-1b: 0.50 C

Determine i using Table D-1c (Rainfall Intensity): 0.18 i

A_{AT} from Step 2: 9.33 A_{AT}

Flow = C * i * A_{AT}: 0.84 cfs

TABLE D-1b

Development Type	Runoff Coefficient (Rational), C
Single-family areas	0.50
Multi-units, detached	0.60
Apartment dwelling areas	0.70
Multi-units, attached	0.75
User Specified	0.00

Table D-1c

Rainfall Intensity		
Roseville	i = 0.20	in/hr
Sacramento	i = 0.18	in/hr
Folsom	i = 0.20	in/hr

Step 4b Treatment - Volume-Based (ASCE-WEF)

Calculate water quality volume (Acre-Feet):	WQV = Area x Maximized Detention Volume (P_0)			
Obtain A from Step 1	27.60	A	48 hrs	Specified Draw Down time
Obtain P_0: Maximized Detention Volume from figures E-1 to E-4 in Appendix E of this manual using I_A from Step 2.	0.16	P_0		
Calculate treatment volume (acre-ft): **Treatment volume = A x (P_0 / 12)**	0.37	Acre-Feet		

v06232012

PRELIMINARY LAYOUT FOR WATER QUALITY BASIN AT

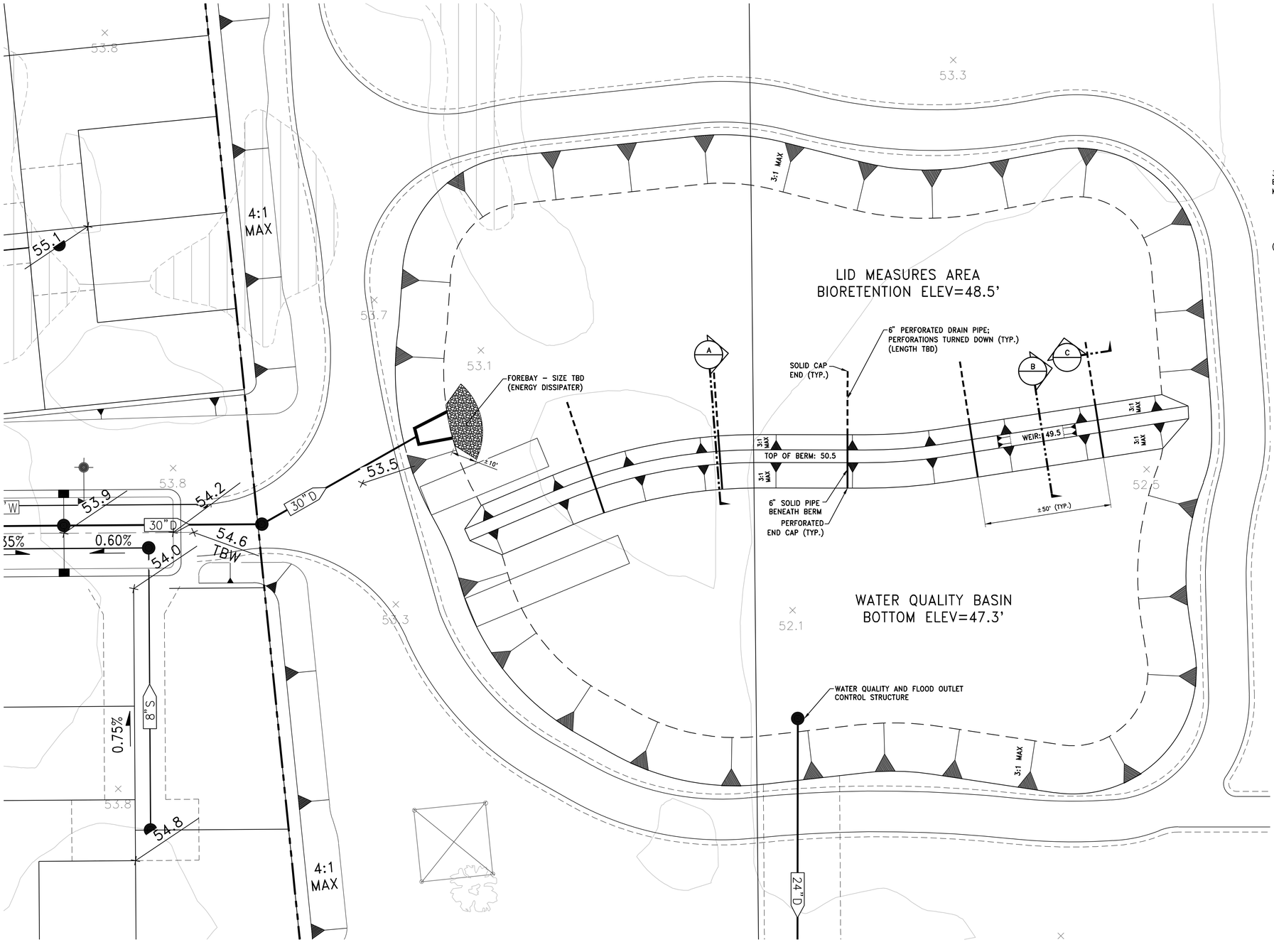
SUMMER FLATS

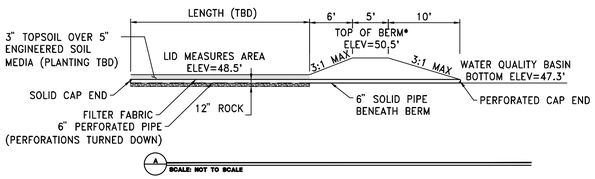
CITY OF ELK GROVE, CALIFORNIA

JANUARY 2024

20' 10' 0 20'

SCALE: 1" = 20'





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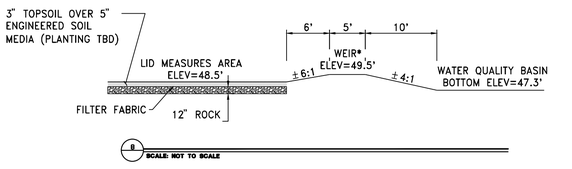

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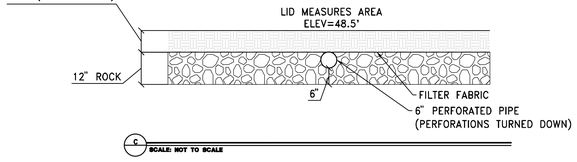

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Appendix I

Environmental Noise Assessment

Summer Flats at Waterman Road

City of Elk Grove, California

May 27, 2025

Project #230515

Prepared for:

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INTRODUCTION

The Summer Flats at Waterman Road project is located in the city of Elk Grove, California. The project would consist of a subdivided single-unit residential community, comprised of 120 residential lots, as well as new internal roadways and frontage improvements, associated utility improvements, 14.7 acres of open space, an open space trail and pedestrian paseo, and new landscaping.

Figure 1 shows the project site plan. **Figure 2** shows an aerial photo of the project site as well as noise measurement locations.

ENVIRONMENTAL SETTING

BACKGROUND INFORMATION ON NOISE

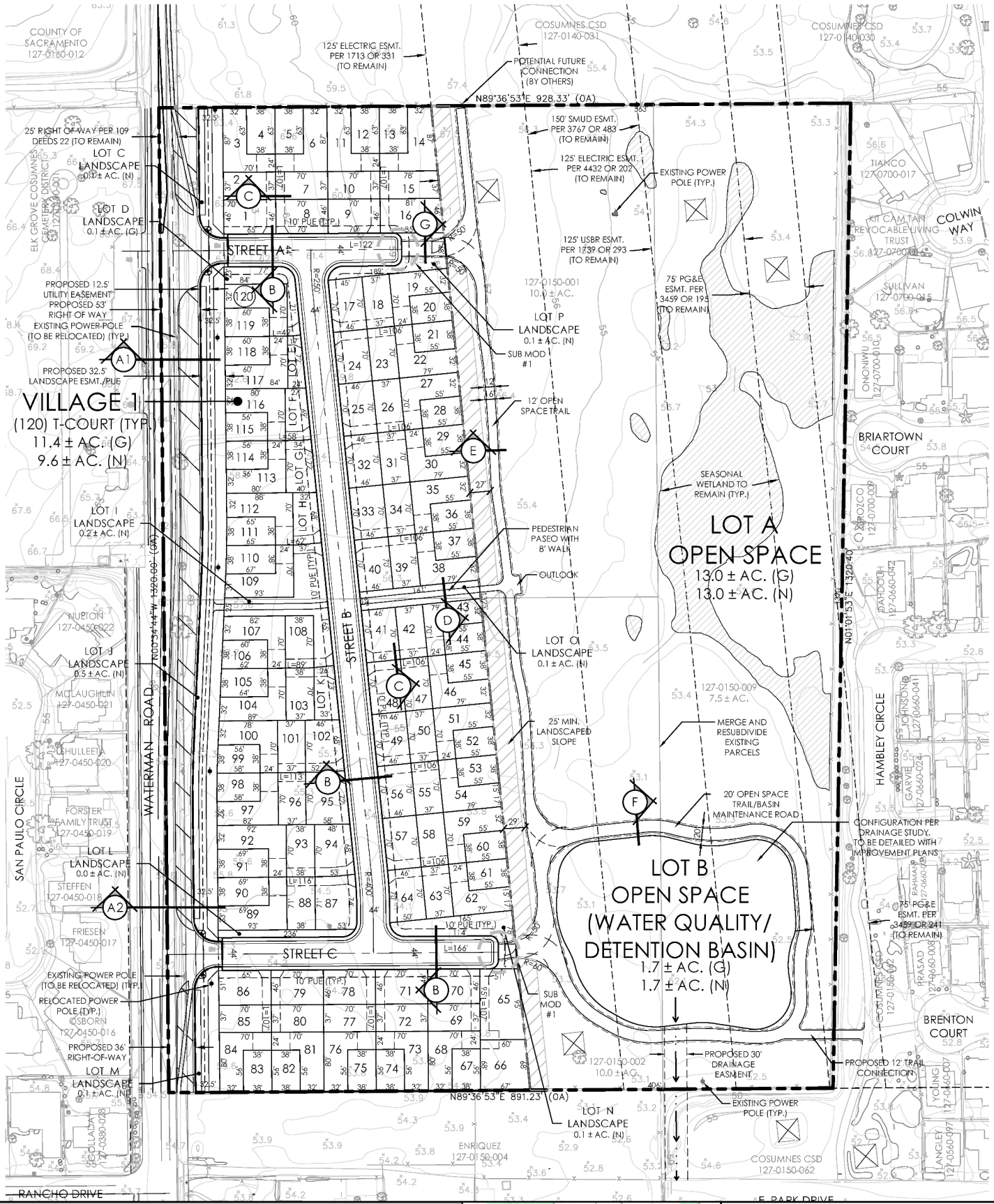
Fundamentals of Acoustics

Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound and is expressed as cycles per second or Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment.



Summer Flats at Waterman Road

City of Elk Grove, California

Figure 1

Project Site Plan

SAXELBY ACOUSTICS
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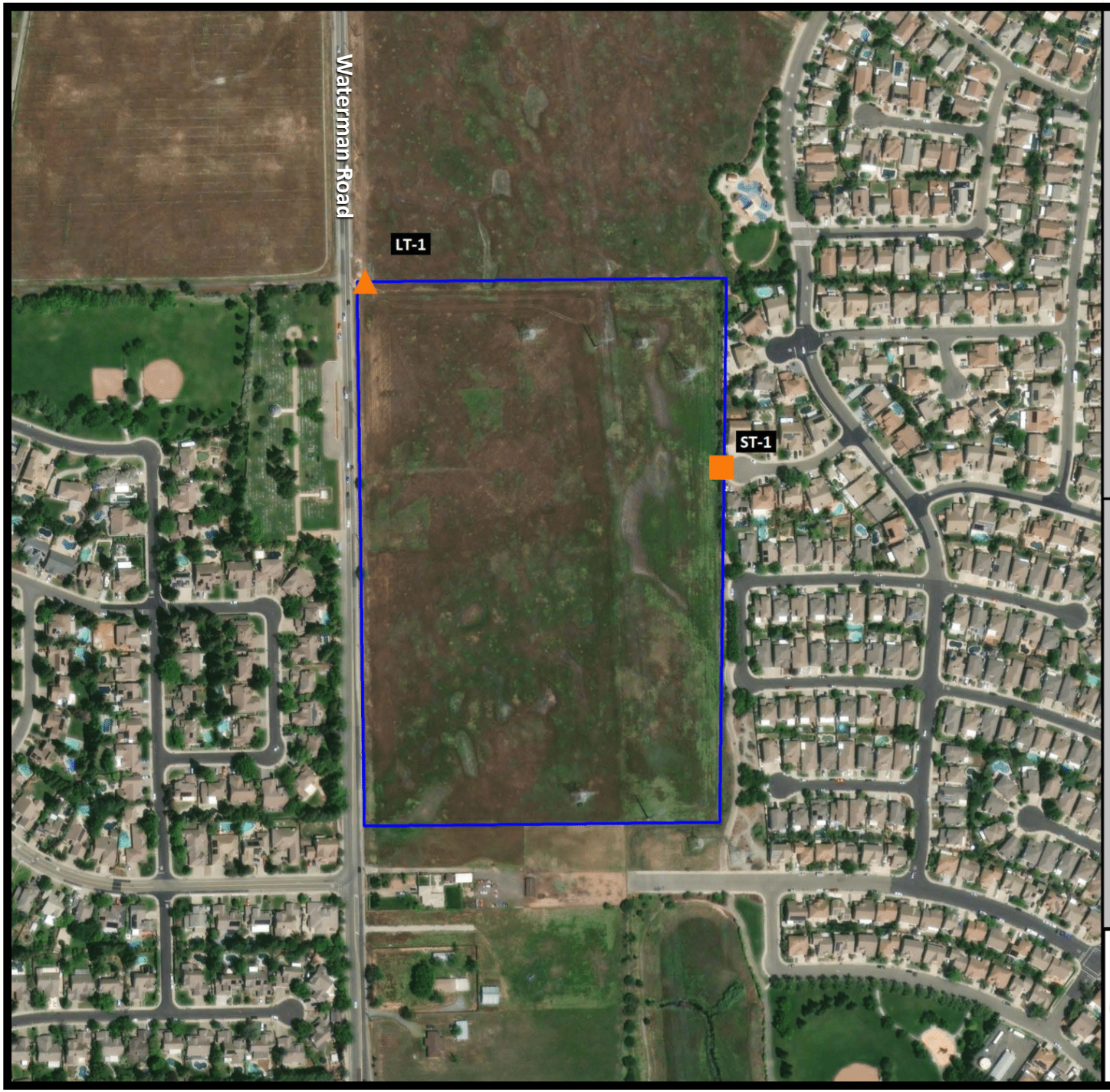

Summer Flats at Waterman Road

City of Elk Grove, California

Figure 2

Noise Measurement Sites

Legend

- Project Site
- Noise Measurement Site - Long Term
- Noise Measurement Site - Short Term

125 ft 375 ft 625 ft

Projection: UTM Zone 10 / WGS84 / meters
Rev. Date: 05/06/2025

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The decibel scale is logarithmic, not linear. In other words, two sound levels 10-dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10-dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound, and twice as loud as a 60-dBA sound.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool is the average, or equivalent, sound level (L_{eq}), which corresponds to a steady-state A-weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptor, L_{dn}, and shows very good correlation with community response to noise.

The day/night average level (DNL or L_{dn}) is based upon the average noise level over a 24-hour day, with a +10-decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Table 1 lists several examples of the noise levels associated with common situations. **Appendix A** provides a summary of acoustical terms used in this report.

TABLE 1: TYPICAL NOISE LEVELS

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	--110--	Rock Band
Jet Fly-over at 300 m (1,000 ft.)	--100--	
Gas Lawn Mower at 1 m (3 ft.)	--90--	
Diesel Truck at 15 m (50 ft.), at 80 km/hr. (50 mph)	--80--	Food Blender at 1 m (3 ft.) Garbage Disposal at 1 m (3 ft.)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft.)	--70--	Vacuum Cleaner at 3 m (10 ft.)
Commercial Area Heavy Traffic at 90 m (300 ft.)	--60--	Normal Speech at 1 m (3 ft.)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

Source: Caltrans, Technical Noise Supplement, Traffic Noise Analysis Protocol. September, 2013.

Effects of Noise on People

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regards to increases in A-weighted noise levels, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1-dBA cannot be perceived;
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- A change in level of at least 5-dBA is required before any noticeable change in human response would be expected; and
- A 10-dBA change is subjectively heard as approximately a doubling in loudness and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6-dB per doubling of distance from the source, depending on environmental conditions (i.e. atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres or a street with moving vehicles, would typically attenuate at a lower rate.

EXISTING NOISE AND VIBRATION ENVIRONMENTS

EXISTING NOISE RECEPTORS

Some land uses are considered more sensitive to noise than others. Land uses often associated with sensitive receptors generally include residences, schools, libraries, hospitals, and passive recreational areas. Sensitive noise receptors may also include threatened or endangered noise-sensitive biological species, although many jurisdictions have not adopted noise standards for wildlife areas. Noise-sensitive land uses are typically given special attention in order to achieve protection from excessive noise.

Sensitivity is a function of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities involved. In the vicinity of the project site, sensitive land uses include existing single-family residences west, east, and south of the proposed project site.

EXISTING GENERAL AMBIENT NOISE LEVELS

The existing noise environment in the project area is primarily defined by traffic on Waterman Road. To quantify the existing ambient noise environment in the project vicinity, Saxelby Acoustics conducted a continuous (24-hr.) noise level measurement at one location on the project site and a short-term noise level measurement at one location. Noise measurement locations are shown on **Figure 2**. A summary of the noise level measurement survey results is provided in **Table 2**. **Appendix B** contains the complete results of the noise monitoring.

The sound level meters were programmed to record the maximum, median, and average noise levels at each site during the survey. The maximum value, denoted L_{max}, represents the highest noise level measured. The average value, denoted L_{eq}, represents the energy average of all of the noise received by the sound level meter microphone during the monitoring period. The median value, denoted L_{50}, represents the sound level exceeded 50 percent of the time during the monitoring period.

Larson Davis Laboratories (LDL) model 820 and 831 precision integrating sound level meters were used for the ambient noise level measurement survey. The meters were calibrated before and after use with a CAL 200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

TABLE 2: SUMMARY OF EXISTING BACKGROUND NOISE MEASUREMENT DATA

Location	Date	L_{dn}	Daytime L_{eq}	Daytime L_{50}	Daytime L_{max}	Nighttime L_{eq}	Nighttime L_{50}	Nighttime L_{max}
LT-1: 50 ft. to CL of Waterman Rd.	5/31/2023	66	64	60	80	58	44	79
ST-1: 900 ft. to CL of Waterman Rd.	5/30/2023	N/A	49	48	56	N/A	N/A	N/A

Notes:

- *All values shown in dBA*
- *Daytime hours: 7:00 a.m. to 10:00 p.m.*
- *Nighttime Hours: 10:00 p.m. to 7:00 a.m.*
- *Source: Saxelby Acoustics 2023*

FUTURE TRAFFIC NOISE ENVIRONMENT AT OFF-SITE RECEPTORS

OFF-SITE TRAFFIC NOISE IMPACT ASSESSMENT METHODOLOGY

To assess noise impacts due to project-related traffic increases on the local roadway network, traffic noise levels are predicted at sensitive receptors for existing and future, project and no-project conditions.

Existing, Near-Term, and Cumulative noise levels due to traffic are calculated using the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108). The model is based upon the Calveno reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site.

The FHWA model was developed to predict hourly L_{eq} values for free-flowing traffic conditions. To predict traffic noise levels in terms of L_{dn}, it is necessary to adjust the input volume to account for the day/night distribution of traffic.

Project trip generation volumes were provided by the project traffic engineer (Fehr & Peers 2025), truck usage and vehicle speeds on the local area roadways were estimated from field observations. The predicted increases in traffic noise levels on the local roadway network for Existing, Near-Term, and Cumulative conditions which would result from the project are provided in terms of L_{dn}.

Traffic noise levels are predicted at the sensitive receptors located at the closest typical setback distance along each project-area roadway segment. In some locations sensitive receptors may not receive full shielding from noise barriers or may be located at distances which vary from the assumed calculation distance.

Tables 3-5 summarize the modeled traffic noise levels at the nearest sensitive receptors along each roadway segment in the Project area. **Appendix C** provides the complete inputs and results of the FHWA traffic modeling.

TABLE 3: EXISTING PLUS PROJECT TRAFFIC NOISE LEVEL INCREASES

Road	Segment	Existing (dBA L_{dn})	Existing + Project (dBA L_{dn})	Change (dBA L_{dn})
Waterman Road	Sheldon Road to Bond Road	62.5	62.6	0.1
Waterman Road	Elk Grove Boulevard & Bond Road	64.9	65.2	0.3
Waterman Road	Mainline Dr Dino Dr & Elk Grove Blvd	64.7	64.8	0.1
Bond Road	Elk Grove Florin Road & Waterman Road	63.9	64.0	0.1
Bond Road	Waterman Road & Bradshaw Road	62.5	62.6	0.1
Bond Road	E. Stockton Boulevard to Elk Grove Florin Rd	68.2	66.4	-1.8
Elk Grove Blvd	Elk Grove Florin Rd & Waterman Rd	63.9	64.0	0.1
Elk Grove Blvd	Waterman Rd & Bradshaw Rd	56.1	56.1	0.0
Elk Grove Blvd	E. Stockton Boulevard to Elk Grove Florin Rd	66.1	66.2	0.1
Elk Grove Florin Road	Sheldon Road & Bond Road	62.2	62.2	0.0
Elk Grove Florin Road	Bond Road & Elk Grove Blvd	62.2	62.2	0.0
Bradshaw Rd	Bond Road & Elk Grove Blvd	60.9	60.9	0.0

Note: A negative value indicates a decrease in traffic volumes.

TABLE 4: NEAR-TERM PLUS PROJECT TRAFFIC NOISE LEVEL INCREASES

Road	Segment	Near-Term (dBA L_{dn})	Near-Term + Project (dBA L_{dn})	Change (dBA L_{dn})
Waterman Road	Sheldon Road to Bond Road	62.7	62.7	0.0
Waterman Road	Elk Grove Boulevard & Bond Road	65.1	65.3	0.2
Waterman Road	Mainline Dr Dino Dr & Elk Grove Blvd	64.8	64.8	0.0
Bond Road	Elk Grove Florin Road & Waterman Road	64.3	64.4	0.1
Bond Road	Waterman Road & Bradshaw Road	63.0	63.0	0.0
Bond Road	E. Stockton Boulevard to Elk Grove Florin Rd	66.5	66.5	0.0
Elk Grove Blvd	Elk Grove Florin Rd & Waterman Rd	64.0	64.0	0.0
Elk Grove Blvd	Waterman Rd & Bradshaw Rd	56.3	56.3	0.0
Elk Grove Blvd	E. Stockton Boulevard to Elk Grove Florin Rd	66.2	66.2	0.0
Elk Grove Florin Road	Sheldon Road & Bond Road	62.3	62.3	0.0
Elk Grove Florin Road	Bond Road & Elk Grove Blvd	62.3	62.3	0.0
Bradshaw Rd	Bond Road & Elk Grove Blvd	60.9	60.9	0.0

Note: A negative value indicates a decrease in traffic volumes.

TABLE 5: CUMULATIVE PLUS PROJECT TRAFFIC NOISE LEVEL INCREASES

Road	Segment	Cumulative (dBA L_{dn})	Cumulative + Project (dBA L_{dn})	Change (dBA L_{dn})
Waterman Road	Sheldon Road to Bond Road	64.3	64.4	0.1
Waterman Road	Elk Grove Boulevard & Bond Road	67.6	67.7	0.1
Waterman Road	Mainline Dr Dino Dr & Elk Grove Blvd	68.0	68.1	0.1
Bond Road	Elk Grove Florin Road & Waterman Road	64.8	64.9	0.1
Bond Road	Waterman Road & Bradshaw Road	63.5	63.6	0.1
Bond Road	E. Stockton Boulevard to Elk Grove Florin Rd	67.0	67.0	0.0
Elk Grove Blvd	Elk Grove Florin Rd & Waterman Rd	63.6	63.7	0.1
Elk Grove Blvd	Waterman Rd & Bradshaw Rd	58.0	58.0	0.0
Elk Grove Blvd	E. Stockton Boulevard to Elk Grove Florin Rd	66.9	66.9	0.0
Elk Grove Florin Road	Sheldon Road & Bond Road	64.0	64.0	0.0
Elk Grove Florin Road	Bond Road & Elk Grove Blvd	63.5	63.5	0.0
Bradshaw Rd	Bond Road & Elk Grove Blvd	65.1	65.1	0.0

Note: A negative value indicates a decrease in traffic volumes.

Based upon the **Tables 3-5** data, the proposed project is predicted to result in a maximum traffic noise level increase of 0.3 dBA along Waterman Road.

EVALUATION OF FUTURE TRANSPORTATION NOISE ON PROJECT SITE

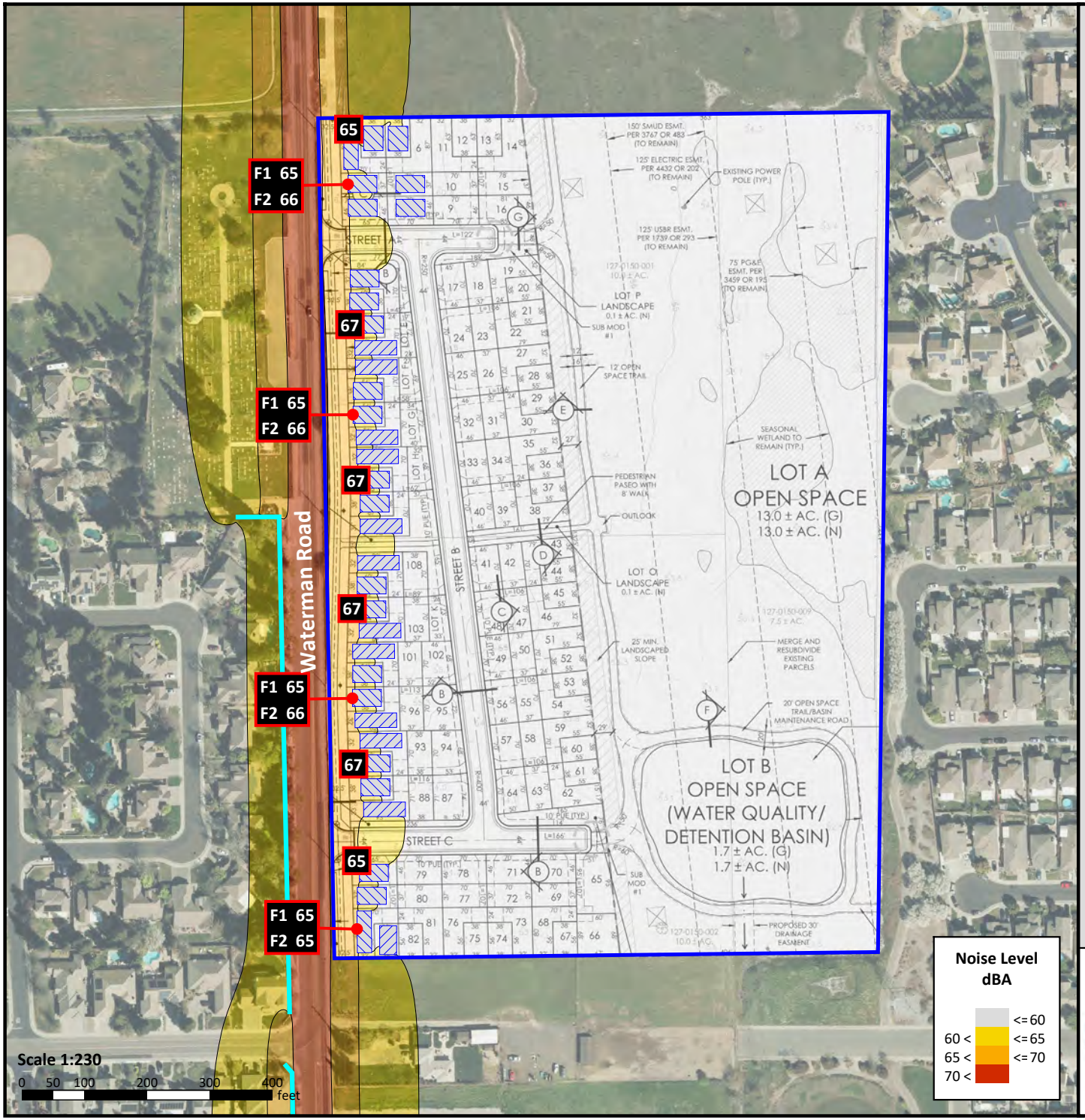
Saxelby Acoustics used the SoundPLAN noise model to calculate traffic noise levels at the proposed residential uses due to traffic on Waterman Road. Inputs to the SoundPLAN noise model include sound level data for Waterman Road collected during the ambient noise monitoring survey (**Appendix B**), topography, existing and proposed structures, roadway elevations, and the proposed building pad elevations. It was estimated that existing noise levels would increase by +2.8 dBA based upon traffic volumes provided by the project traffic engineer (Fehr & Peers 2025). The results of this analysis are shown graphically on **Figure 3**.

Summer Flats at Waterman Road

City of Elk Grove, California

Figure 3

Future Transportation Noise Levels dBA Ldn



Legend

- Project Boundary
- Project Building
- Noise Level
- Existing Sound Wall

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CONSTRUCTION NOISE ENVIRONMENT

The Federal Highway Administration's (FHWA) Roadway Construction Noise Model (RCNM) was used to predict noise levels for standard construction equipment used for roadway improvement projects. The assessment of potential significant noise effects due to construction is based on the standards and procedures described in the Federal Transit Authority (FTA) guidance manual and FHWA's RCNM.

The RCNM is a Windows-based noise prediction model that enables the prediction of construction noise levels for a variety of construction equipment based on a compilation of empirical data and the application of acoustical propagation formulas. It enables the calculation of construction noise levels in more detail than the manual methods, which eliminates the need to collect extensive amounts of project-specific input data. RCNM allows for the modeling of multiple pieces of construction equipment working either independently or simultaneously, the character of noise emission, and the usage factors for each piece of equipment.

Construction noise varies depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the schedule proposed to carry out each task (e.g., hours and days of the week), and the duration of the construction work.

Noise sources in the RCNM database include actual noise levels and equipment usage percentages. This source data was used in this construction noise analysis. **Table 6** shows predicted construction noise levels for the project site.

TABLE 6: CONSTRUCTION EQUIPMENT NOISE LEVELS

Equipment	Quantity	Usage (%)	Maximum, L_{max} (dBA at 50 feet)	Hourly Average, L_{eq} (dBA at 50 feet)
Site Preparation				
Dozer	3	40	82	83
Tractor/Loader/Backhoe	4	40	84	86
			Total:	**88**
Grading				
Excavator	1	40	81	77
Grader	1	40	85	81
Dozer	1	40	82	78
Tractor/Loader/Backhoe	3	40	84	85
			Total:	**87**
Building Construction				
Crane	1	16	81	73
Fork Lift	3	40	83	84
Generator	1	50	81	78
Tractor/Loader/Backhoe	3	40	84	85
Welder / Torch	1	40	74	70
			Total:	**88**
Paving				
Paver	2	50	77	77
Paving Equipment	2	50	77	77
Roller	2	20	80	76
			Total:	**81**
Architectural Coating				
Air Compressor	1	40	79	75
			Total:	**75**

Source: FHWA, Roadway Construction Noise Model (RCNM), January 2006.

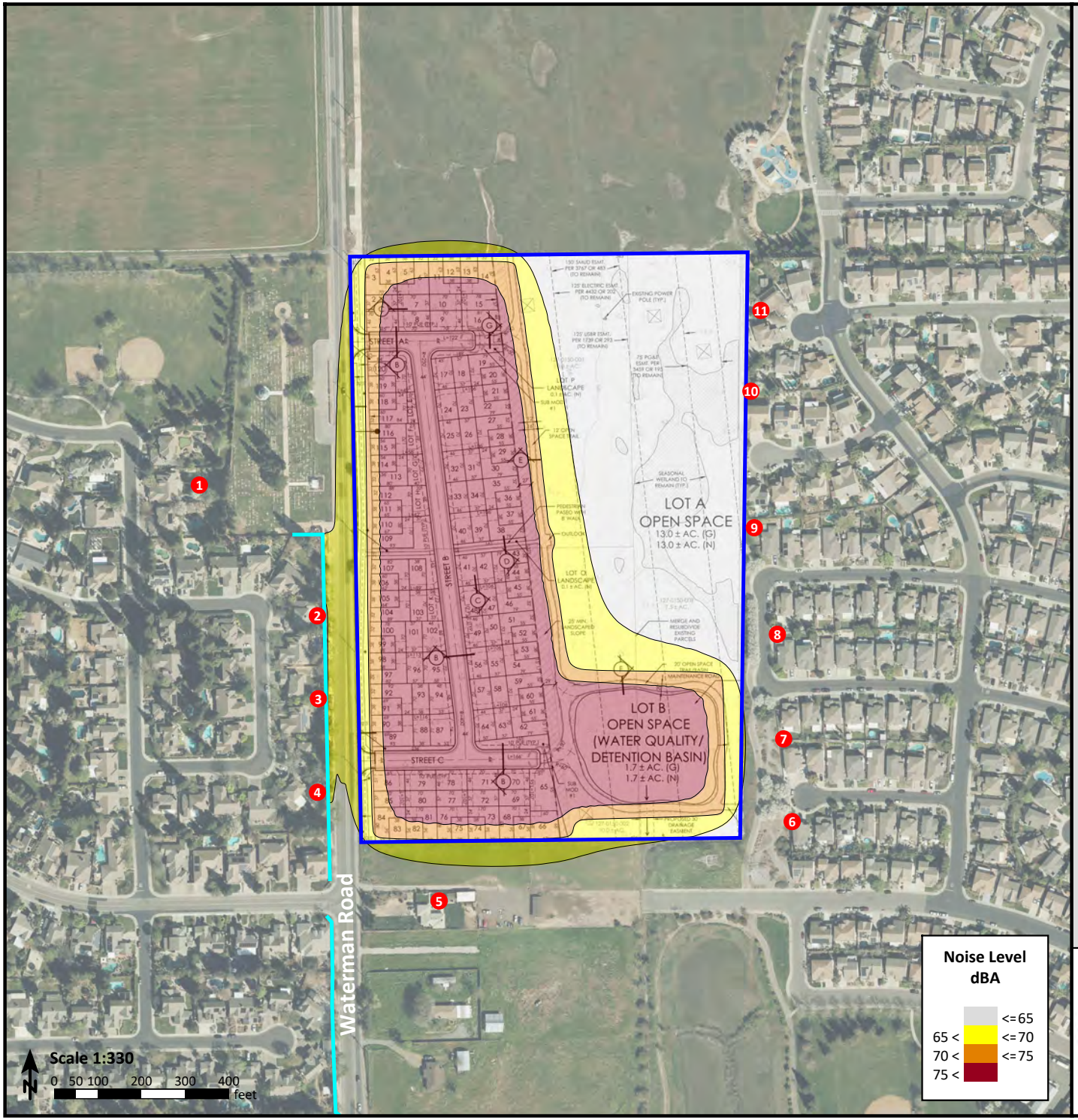
Based upon the **Table 6** data, the loudest phase of construction on the project site would be building construction with an average noise exposure of 88 dBA L_{eq} at 50 feet from the center of activity. The results of the construction noise analysis are shown graphically on **Figure 4**.

Summer Flats at Waterman Road

City of Elk Grove, California

Figure 4

Construction Noise Levels
dBA Leq



Legend

- Project Boundary
- Noise Level
- Existing Sound Wall

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CONSTRUCTION VIBRATION ENVIRONMENT

The primary vibration-generating activities associated with the proposed project would occur during construction when activities such as grading, utilities placement, and roadway construction occur. **Table 7** shows the typical vibration levels produced by construction equipment.

TABLE 7: VIBRATION LEVELS FOR VARIOUS CONSTRUCTION EQUIPMENT

Type of Equipment	Peak Particle Velocity at 25 feet (inches/second)	Peak Particle Velocity at 50 feet (inches/second)	Peak Particle Velocity at 100 feet (inches/second)
Large Bulldozer	0.089	0.031	0.011
Loaded Trucks	0.076	0.027	0.010
Small Bulldozer	0.003	0.001	0.000
Auger/drill Rigs	0.089	0.031	0.011
Jackhammer	0.035	0.012	0.004
Vibratory Hammer	0.070	0.025	0.009
Vibratory Compactor/roller	0.210 (Less than 0.20 at 26 feet)	0.074	0.026

Source: Transit Noise and Vibration Impact Assessment Guidelines. Federal Transit Administration. May 2006.

REGULATORY CONTEXT

STATE

California Environmental Quality Act

The California Environmental Quality Act (CEQA) Guidelines, Appendix G, indicate that a significant noise impact may occur if a project exposes persons to noise or vibration levels in excess of local general plans or noise ordinance standards, or cause a substantial permanent or temporary increase in ambient noise levels. CEQA standards are discussed below under the Thresholds of Significance section.

LOCAL

City of Elk Grove General Plan

Policy N-1-1: New development of the uses listed in **Table 8** shall conform with the noise levels contained in the table. All indoor and outdoor areas shall be located, constructed, and/or shielded from noise sources in order to achieve compliance with the City's noise standards.

TABLE 8: MAXIMUM ALLOWABLE NOISE EXPOSURE, TRANSPORTATION NOISE SOURCES

Land Use	Outdoor Activity Area	Interior Spaces	
		L_{dn}, dB	L_{eq}, dB[c]
Residential	60[d,g]	45	-
Residential subject to noise from railroad tracks, aircraft overflights, or similar noise sources which produce clearly identifiable, discrete noise events (the passing of a single train, as opposed to relatively steady noise sources as roadways.	60 [d, g]	40[f]	-
Transient Lodging	60[e,g]	45	-
Hospitals, Nursing Homes	60[e, g]	45	-
Theaters, Auditoriums, Music Halls	-	-	35
Churches, Meeting Halls	60[d, g]	-	40
Office Buildings	-	-	45
Schools, Libraries, Museums	-	-	45

a. Where the location of outdoor activity areas is unknown, the exterior noise level standards shall be applied to the property line of the receiving land use. Where it is not practical to mitigate exterior noise levels at patios or balconies of apartment complexes, a common area such as a pool or recreation area may be designated as the outdoor activity area.

b. Transportation projects subject to Caltrans review or approval shall comply with the Federal Highway Administration noise standards for evaluation and abatement of noise impacts.

c. As determined for a typical worst-case hour during periods of use.

d. Where it is not possible to reduce noise in outdoor activity areas to 60 dB, L_{dn} or less using a practical application of the best available noise reduction measures, an exterior noise level of up to 65 dB, L_{dn} may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

e. In the case of hotel/motel facilities or other transient lodging, outdoor activity areas such as pool areas may not be included in the project design. In these cases, only the interior noise level criterion will apply.

f. The intent of this noise standard is to provide increased protection against sleep disturbance for residences located near railroad tracks.

g. In cases where the existing ambient noise level exceeds 60 dbA, the maximum allowable project-related permanent increase in ambient noise levels shall be 3 dBA /L_{dn}

Policy N-1-2: Where noise mitigation measures are required to achieve the standards of Tables 8-3 and 8-4, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures, including the use of distance from noise sources, have been integrated into the project.

Policy N-2-2: The following criteria shall be used as CEQA significance thresholds for transportation and stationary noise sources:

- Where existing ambient noise levels are less than 60 dB L_{dn} at the outdoor activity areas of noise sensitive uses, a +5 dB L_{dn} increase in noise levels shall be considered significant; and
- Where existing ambient noise levels range between 60 and 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +3 dB L_{dn} increase in noise levels shall be considered significant; and
- Where existing ambient noise levels are greater than 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +1.5 dB L_{dn} increase in noise levels shall be considered significant. Public roadway improvements to alleviate traffic congestion and safety hazards shall utilize FHWA noise standards to allow a reasonable dollar threshold per dwelling to be used in the

evaluation and abatement of impacts.

- The standards outlined in Table 8-4 shall not apply to public projects to alleviate traffic congestion and safety hazards.

TABLE 9: NOISE LEVEL PERFORMANCE STANDARDS FOR NON-TRANSPORTATION NOISE SOURCES*

Performance Standards for Stationary Sources	Noise Level Descriptor	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Performance Standards for Typical Stationary Noise Sources[a]	Hourly L_{eq}, dB	55[c,d]	45[c,d]
Performance Standards for Stationary Noise Sources Which Are Tonal, Impulsive, Repetitive, or Consist Primarily of Speech or Music[b]	Hourly L_{eq}, dB	50[c,d]	40[c,d]

** Applies to noise-sensitive land uses only*

a. These standards will apply generally to noise sources that are not tonal, impulsive, or repetitive in nature. Typical noise sources in this category would include HVAC systems, cooling towers, fans, and blowers.

b. These standards apply to noises which are tonal in nature, impulsive, repetitive, or which consist primarily of speech or music (e.g., humming sounds, outdoor speaker systems). Typical noise sources in this category include pile drivers, drive-through speaker boxes, punch presses, steam valves, and transformer stations. HVAC/pool equipment are exempt from these standards.

c. These noise levels do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwelling). HVAC/pool equipment are exempt from these standards

d. The City may impose noise level standards which are more or less restrictive based upon determination of existing low or high ambient noise levels

City of Elk Grove Municipal Code

6.32.100 Exemptions.

E. Noise sources associated with construction, repair, remodeling, demolition, paving or grading of any real property, provided said activities only occur between the hours of 7:00 a.m. and 7:00 p.m. when located in close proximity to residential uses. Noise associated with these activities not located in close proximity to residential uses may occur between the hours of 6:00 a.m. and 8:00 p.m. However, when an unforeseen or unavoidable condition occurs during a construction project and the nature of the project necessitates that work in progress be continued until a specific phase is completed, the contractor or owner shall be allowed to continue work after 7:00 p.m. and to operate machinery and equipment necessary until completion of the specific work in progress can be brought to conclusion under conditions which will not jeopardize inspection acceptance or create undue financial hardships for the contractor or owner;

CRITERIA FOR ACCEPTABLE VIBRATION

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an

amplitude and frequency. A person's perception to the vibration will depend on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating.

Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of peak particle velocities in inches per second. Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of peak particle velocities.

Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. **Table 10**, which was developed by Caltrans, shows the vibration levels which would normally be required to result in damage to structures. The vibration levels are presented in terms of peak particle velocity in inches per second.

Table 10 indicates that the threshold for architectural damage to structures is 0.20 in/sec p.p.v. A threshold of 0.20 in/sec p.p.v. is considered to be a reasonable threshold for short-term construction projects.

TABLE 10: EFFECTS OF VIBRATION ON PEOPLE AND BUILDINGS

Peak Particle Velocity		Human Reaction	Effect on Buildings
mm/second	in/second		
0.15-0.30	0.006-0.019	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal buildings
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of "architectural" damage to normal dwelling - houses with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
10-15	0.4-0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: Transportation Related Earthborne Vibrations. Caltrans. TAV-02-01-R9601. February 20, 2002.

IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Appendix G of the CEQA Guidelines states that a project would normally be considered to result in significant noise impacts if noise levels conflict with adopted environmental standards or plans or if noise generated by the project would substantially increase existing noise levels at sensitive receivers on a permanent or temporary basis. Significance criteria for noise impacts are drawn from CEQA Guidelines Appendix G (Items XI [a-c]).

Would the project:

a. Generate 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?

b. Generate excessive groundborne vibration or groundborne noise levels?

c. 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?

Noise Level Increase Criteria for Long-Term Project-Related Noise Level Increases

The City of Elk Grove establishes the following criteria to determine significance of project-related noise level increases:

- Where existing ambient noise levels are less than 60 dB L_{dn} at the outdoor activity areas of noise sensitive uses, a +5 dB L_{dn} increase in noise levels shall be considered significant; and
- Where existing ambient noise levels range between 60 and 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +3 dB L_{dn} increase in noise levels shall be considered significant; and
- Where existing ambient noise levels are greater than 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +1.5 dB L_{dn} increase in noise levels shall be considered significant. Public roadway improvements to alleviate traffic congestion and safety hazards shall utilize FHWA noise standards to allow a reasonable dollar threshold per dwelling to be used in the evaluation and abatement of impacts.

Temporary Construction Noise Impacts

With temporary noise impacts (construction), identification of "substantial increases" depends upon the duration of the impact, the temporal daily nature of the impact, and the absolute change in decibel levels. Per the City of Elk Grove Municipal Code, construction activities operating between 7:00 a.m. and 7:00 p.m. when located in close proximity to residential uses are exempt from the ordinance.

The City has not adopted any formal threshold of significance for evaluating temporary construction noise which occurs within allowable hours. For short-term noise associated with Project construction, Saxelby Acoustics recommends use of the Caltrans increase criteria of 12 dBA (Caltrans Traffic Noise Protocol, 2020), applied to existing residential receptors in the project vicinity. This level of increase is approximately equivalent to a doubling of sound energy and has been the standard of significance for Caltrans projects at the state level

for many years. Application of this standard to construction activities is considered reasonable considering the temporary nature of construction activities.

PROJECT-SPECIFIC IMPACTS AND MITIGATION MEASURES

Impact 1: ***Would the project generate 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?***

Traffic Noise Increases at Off-Site Receptors

Based upon the City of Elk Grove criteria, where existing traffic noise levels are greater than 65 dBA L_{dn}, at the outdoor activity areas of noise-sensitive uses, a +1.5 dBA L_{dn} increase in roadway noise levels will be considered significant. Where traffic noise levels are between 60 dBA L_{dn} and 65 dBA L_{dn}, a +3.0 dB L_{dn} increase in roadway noise levels will be considered significant. Where traffic noise levels are less than 60 dBA L_{dn}, a +5.0 dB L_{dn} increase in roadway noise levels will be considered significant.

According to **Tables 3-5**, the maximum increase in traffic noise at the nearest sensitive receptor is predicted to be 0.3 dBA. Therefore, impacts resulting from increased traffic noise would be considered ***less-than-significant***, and no mitigation is required.

Operational Noise at Existing Sensitive Receptors

The proposed project would include typical residential noise which would be compatible with the existing adjacent residential uses. This is a ***less-than-significant*** impact, and no mitigation is required.

Construction Noise

On-Site Construction Noise

During the construction phases of the project, noise from construction activities would add to the noise environment in the immediate project vicinity. Construction activities would be temporary in nature and are anticipated to occur during normal daytime working hours. Noise would also be generated during the construction phase by increased truck traffic on area roadways. A project-generated noise source would be truck traffic associated with transport of heavy materials and equipment to and from the construction site. This noise increase would be of short duration and would occur during daytime hours.

Caltrans defines a significant increase due to noise as an increase of 12 dBA over existing ambient noise levels; Saxelby Acoustics used this criterion to evaluate increases due to construction noise associated with the project. Construction noise levels were modeled using the input data shown in **Table 6** and evaluated for significance in **Table 11** below. **Figure 4** shows modeled construction noise level contours as well as the locations of the analyzed receptors.

TABLE 11: CONSTRUCTION NOISE LEVEL INCREASES

Receptor	Representative NMS[1]	Existing Ambient (dBA L_{eq})	Construction Noise (dBA L_{eq})	Ambient + Construction (dBA L_{eq})	Difference (dBA L_{eq})	Exceeds 12 dB?
1	ST-1	49.0	57.4	58.0	9.0	No
2	LT-1	59.0	59.7	62.4	3.4	No
3	LT-1	59.0	59.5	62.3	3.3	No
4	LT-1	59.0	58.6	61.8	2.8	No
5	LT-1	64.0	58.3	65.0	1.0	No
6	ST-1	49.0	55.6	56.5	7.5	No
7	ST-1	49.0	57.0	57.6	8.6	No
8	ST-1	49.0	55.5	56.4	7.4	No
9	ST-1	49.0	55.5	56.4	7.4	No
10	ST-1	49.0	54.2	55.3	6.3	No
11	ST-1	49.0	52.9	54.4	5.4	No

[1]A -5 dBA correction was applied to ambient noise levels where sound walls shield residences from traffic noise.

As shown in the table, construction of the project is not predicted to generate noise levels which exceed the existing average ambient noise level by greater than the +12.0 dBA threshold.

Although construction activities are temporary in nature and would occur during normal daytime working hours, construction-related noise could result in sleep interference at existing noise-sensitive land uses in the vicinity of the construction if construction activities were to occur outside the normal daytime hours. Therefore, impacts resulting from noise levels temporarily exceeding the threshold of significance due to construction would be considered ***potentially significant***. Mitigation measure 1(a) would reduce construction noise levels at the existing sensitive receptors.

Transportation Noise on Project Site (Non-CEQA Issue)

Exterior Transportation Noise

Compliance with the City's standards on new noise-sensitive receptors is not a CEQA consideration. However, this information is provided here so that a determination can be made regarding the ability of the proposed project to meet the requirements of the City of Elk Grove for exterior and interior noise levels at new sensitive uses proposed under the project.

As shown in **Figure 3**, traffic noise levels are predicted to be 67 dBA L_{dn} at the residences directly adjacent to Waterman Road. This would exceed the City's noise level standard of 60 dBA L_{dn}. Therefore, Saxelby Acoustics recommends the construction of 8-foot-tall sound walls along Waterman Road. **Figure 5** shows the location of the sound walls and resulting noise level contours.

According to the City's General Plan, "Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn} or less using a practical application of the best available noise reduction measures, an exterior noise level of up to 65 dB L_{dn} may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table." As shown in the figure, the

sound walls would reduce noise levels in the outdoor areas of the new residences to 61 dBA L_{dn} or below. This would comply with the City's 65 dBA L_{dn} noise level standards.

Interior Transportation Noise

As shown in **Figure 5**, the proposed project would be exposed to exterior noise levels of up to 66 dBA L_{dn} at the facades of the proposed residences. Conventional construction typically achieves a 25 dBA noise level reduction (assuming a minimum of STC 29 rated glazing). This would result in interior noise levels of up to 41 dBA L_{dn}, which complies with the City's interior noise level standard of 45 dBA L_{dn}. Therefore, no additional noise control measures would be required.

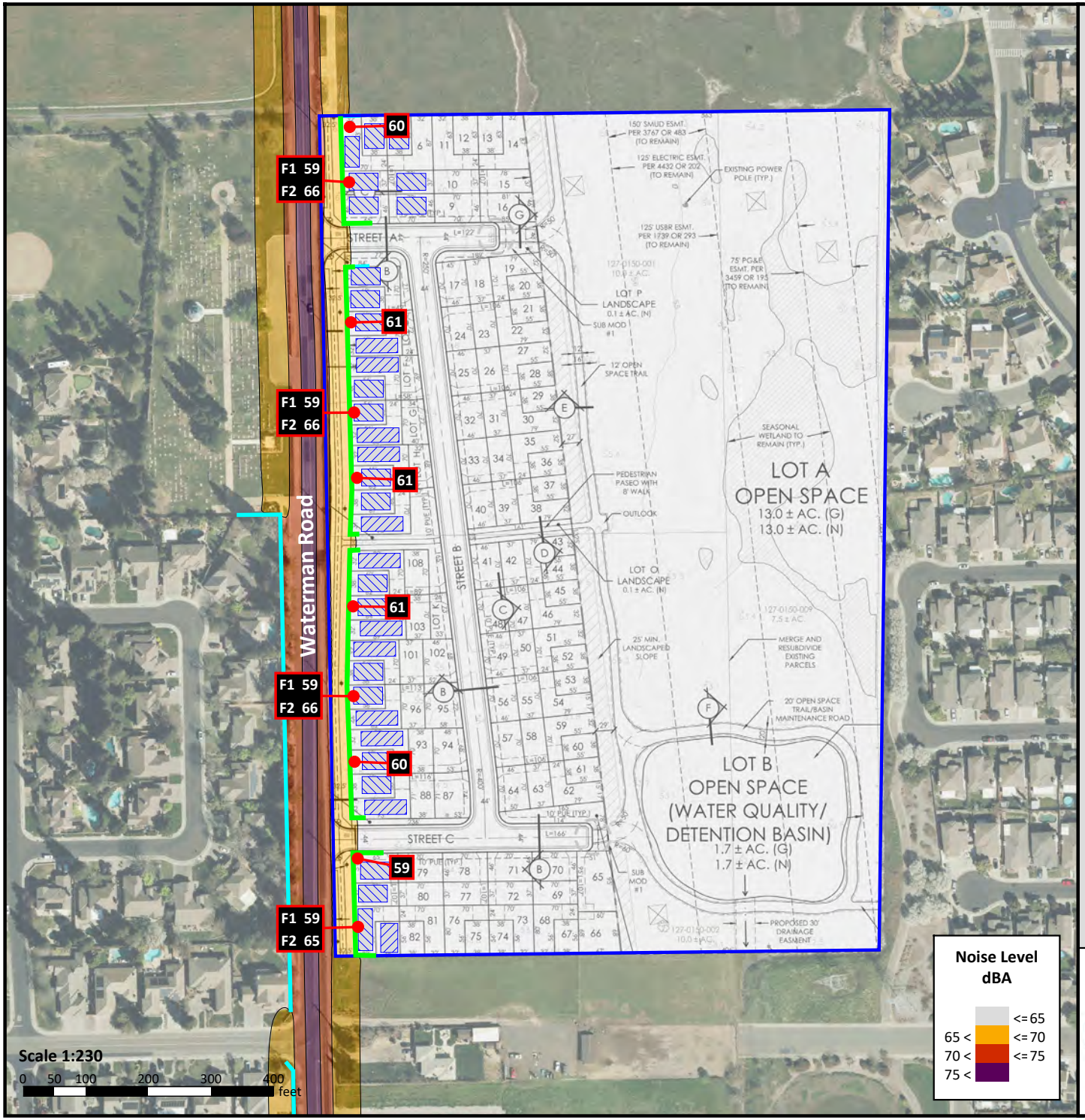
Summer Flats at Waterman Road

City of Elk Grove, California

Figure 5

Future Transportation Noise Levels with Noise Control

dBA Ldn



Legend

- Project Boundary
- Project Building
- Noise Level
- Existing Sound Wall
- 8' Sound Wall

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Mitigation Measures

1(a) The City shall establish the following as conditions of approval for any permit that results in the use of construction equipment:

- On-site construction activities (excluding activities that would result in a safety concern to the public or construction workers) shall be limited to between the daytime hours of 7 AM and 7 PM daily when located in close proximity to residential uses.
- Construction equipment shall be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations. Equipment engine shrouds shall be closed during equipment operation.
- When not in use, motorized construction equipment shall not be left idling for more than 5 minutes.
- Stationary equipment (power generators, compressors, etc.) shall be located at the furthest practical distance from nearby noise-sensitive land uses or sufficiently shielded to reduce noise-related impacts.

Timing/Implementation: Implemented prior to approval of grading and/or building permits
Enforcement/Monitoring: City of Elk Grove Community Development Services Department

Recommended Condition of Approval

Prior to approval of project improvement plans, the plans for the proposed project shall show that the western boundary of the project site shall be shielded from Waterman Road by minimum eight-foot-tall sound walls per the approval of the City Engineer. Sound walls may include a combination of earthen berm and masonry wall to achieve the required height. Wall heights shall be measured relative to either pad or roadway centerline elevations, whichever is higher. The approximate locations of these barriers are shown on ***Figure 5****. Other types of barriers may be employed but shall be reviewed by an acoustical engineer prior to being constructed.*

Impact 2: ***Would the project generate excessive groundborne vibration or groundborne noise levels?***

Construction vibration impacts include human annoyance and building structural damage. Human annoyance occurs when construction vibration rises significantly above the threshold of perception. Building damage can take the form of cosmetic or structural.

The **Table 7** data indicate that construction vibration levels anticipated for the project are less than the 0.2 in/sec threshold at distances of 26 feet. Sensitive receptors which could be impacted by construction related vibrations, especially vibratory compactors/rollers, are located further than 26 feet from typical construction activities. At distances greater than 26 feet construction vibrations are not predicted to exceed acceptable levels. Additionally, construction activities would be temporary in nature and would likely occur during normal daytime working hours.

This is a **less-than-significant** impact, and no mitigation is required.

Impact 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?***

There are no airports within two miles of the project vicinity. Therefore, this impact is not applicable to the proposed project.

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Appendix A: Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
ASTC	Apparent Sound Transmission Class. Similar to STC but includes sound from flanking paths and correct for room reverberation. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by +5 dBA and nighttime hours weighted by +10 dBA.
DNL	See definition of Ldn.
IIC	Impact Insulation Class. An integer-number rating of how well a building floor attenuates impact sounds, such as footsteps. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz (Hz).
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
L(n)	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L50 is the sound level exceeded 50% of the time during the one-hour period.
Loudness	A subjective term for the sensation of the magnitude of sound.
NIC	Noise Isolation Class. A rating of the noise reduction between two spaces. Similar to STC but includes sound from flanking paths and no correction for room reverberation.
NNIC	Normalized Noise Isolation Class. Similar to NIC but includes a correction for room reverberation.
Noise	Unwanted sound.
NRC	Noise Reduction Coefficient. NRC is a single-number rating of the sound-absorption of a material equal to the arithmetic mean of the sound-absorption coefficients in the 250, 500, 1000, and 2,000 Hz octave frequency bands rounded to the nearest multiple of 0.05. It is a representation of the amount of sound energy absorbed upon striking a particular surface. An NRC of 0 indicates perfect reflection; an NRC of 1 indicates perfect absorption.
RT60	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 Sabin.
SEL	Sound Exposure Level. SEL is a rating, in decibels, of a discrete event, such as an aircraft flyover or train pass by, that compresses the total sound energy into a one-second event.
SPC	Speech Privacy Class. SPC is a method of rating speech privacy in buildings. It is designed to measure the degree of speech privacy provided by a closed room, indicating the degree to which conversations occurring within are kept private from listeners outside the room.
STC	Sound Transmission Class. STC is an integer rating of how well a building partition attenuates airborne sound. It is widely used to rate interior partitions, ceilings/floors, doors, windows and exterior wall configurations. The STC rating is typically used to rate the sound transmission of a specific building element when tested in laboratory conditions where flanking paths around the assembly don't exist. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
Simple Tone	Any sound which can be judged as audible as a single pitch or set of single pitches.

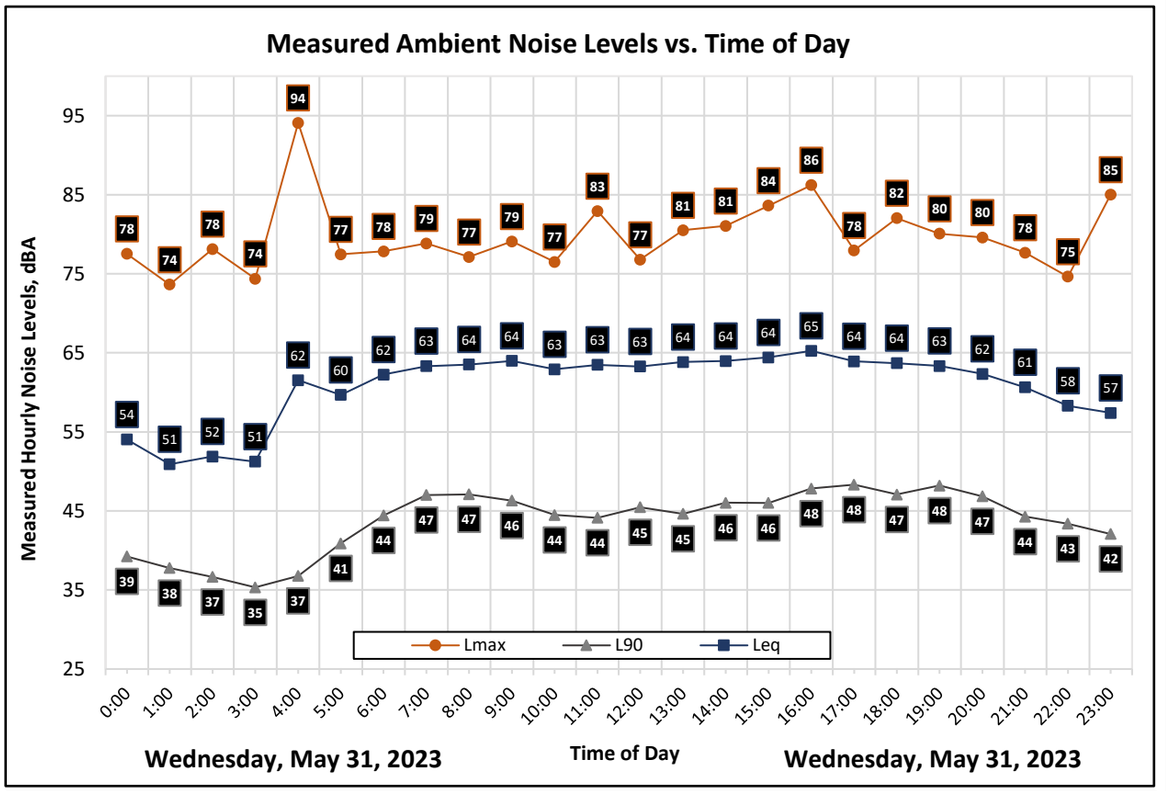
Appendix B: Continuous and Short-Term Ambient Noise Measurement Results

Appendix B1: Continuous Noise Monitoring Results

Site: LT-1
Project: Summer Flats at Waterman Road
Meter: LDL 820-5
Location: Northwestern Project Boundary
Calibrator: CAL200
Coordinates: (38.4163987, -121.3530322)

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Wednesday, May 31, 2023	0:00	54	78	42	39
Wednesday, May 31, 2023	1:00	51	74	40	38
Wednesday, May 31, 2023	2:00	52	78	39	37
Wednesday, May 31, 2023	3:00	51	74	37	35
Wednesday, May 31, 2023	4:00	62	94	42	37
Wednesday, May 31, 2023	5:00	60	77	48	41
Wednesday, May 31, 2023	6:00	62	78	54	44
Wednesday, May 31, 2023	7:00	63	79	59	47
Wednesday, May 31, 2023	8:00	64	77	60	47
Wednesday, May 31, 2023	9:00	64	79	60	46
Wednesday, May 31, 2023	10:00	63	77	59	44
Wednesday, May 31, 2023	11:00	63	83	60	44
Wednesday, May 31, 2023	12:00	63	77	61	45
Wednesday, May 31, 2023	13:00	64	81	61	45
Wednesday, May 31, 2023	14:00	64	81	61	46
Wednesday, May 31, 2023	15:00	64	84	62	46
Wednesday, May 31, 2023	16:00	65	86	63	48
Wednesday, May 31, 2023	17:00	64	78	63	48
Wednesday, May 31, 2023	18:00	64	82	61	47
Wednesday, May 31, 2023	19:00	63	80	60	48
Wednesday, May 31, 2023	20:00	62	80	59	47
Wednesday, May 31, 2023	21:00	61	78	54	44
Wednesday, May 31, 2023	22:00	58	75	49	43
Wednesday, May 31, 2023	23:00	57	85	45	42

Statistics	Leq	Lmax	L50	L90
Day Average	64	80	60	46
Night Average	58	79	44	40
Day Low	61	77	54	44
Day High	65	86	63	48
Night Low	51	74	37	35
Night High	62	94	54	44
Ldn	66	Day %		87
CNEL	66	Night %		13



Appendix B2 : Short Term Noise Monitoring Results

Site: ST-1
Project: Summer Flats at Waterman Road
Location: East of the Project Site
Coordinates: (38.4150949, -121.3499959)
Meter: LDL 831-5
Calibrator: CAL200

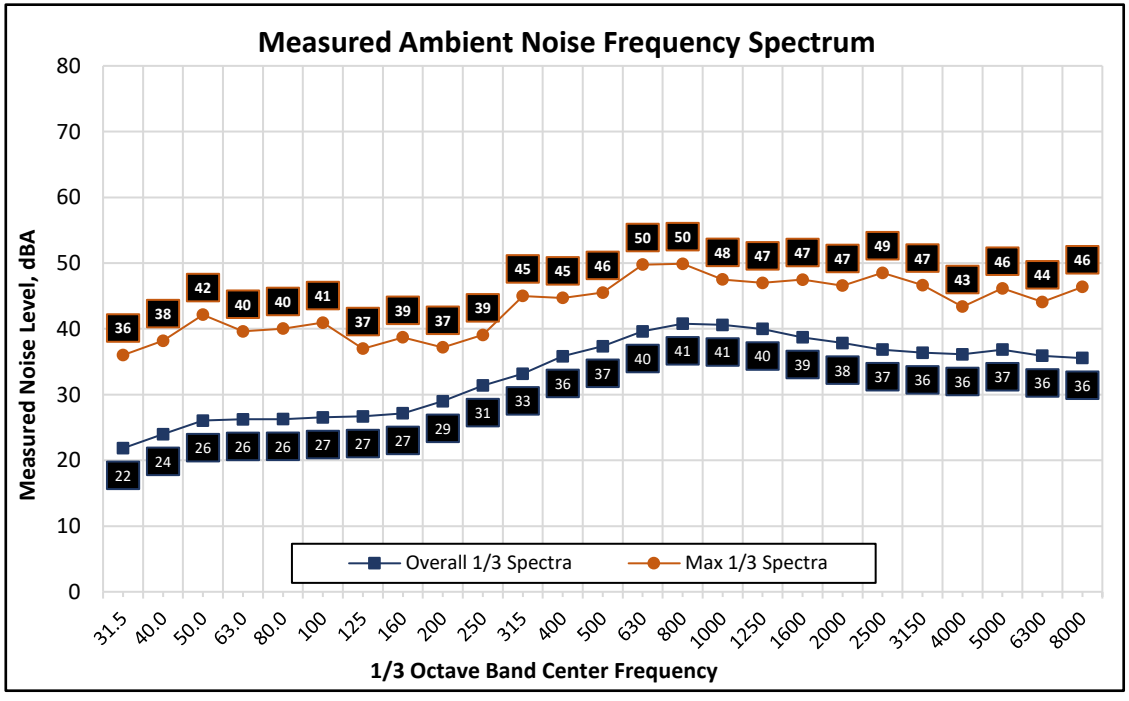
Start: 2023-05-30 16:21:44
Stop: 2023-05-30 16:31:44
SLM: Model 831
Serial: 2658

Measurement Results, dBA

Duration:	0:10
L_{eq}:	49
L_{max}:	56
L_{min}:	44
L_{50}:	48
L_{90}:	46

Notes

Primary noise source consists of natural noise such as winds and bird sounds



Appendix C: Traffic Noise Calculation Inputs and Results

Appendix C-1
FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 230515 Summer Flats at Waterman Road
Description: Existing Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset 60 dBA	65 dBA	70 dBA	Level, dBA
1	Waterman Road	Sheldon Road to Bond Road	14,037	85	0	15	1.0%	1.0%	45	125	0	185	86	40	62.5
2	Waterman Road	Elk Grove Boulevard & Bond Road	13,962	85	0	15	1.0%	1.0%	45	40	-5	184	85	40	64.9
3	Waterman Road	Mainline Dr Dino Dr & Elk Grove Blvd	10,753	85	0	15	1.0%	1.0%	35	50	0	103	48	22	64.7
4	Bond Road	Elk Grove Florin Road & Waterman Road	22,622	85	0	15	1.0%	1.0%	45	65	-5	254	118	55	63.9
5	Bond Road	Waterman Road & Bradshaw Road	14,745	85	0	15	1.0%	1.0%	45	60	-5	191	89	41	62.5
6	Bond Road	E. Stockton Boulevard to Elk Grove Florin Rd	54,000	85	0	15	1.0%	1.0%	45	60	-5	454	211	98	68.2
7	Elk Grove Blvd	Elk Grove Florin Rd & Waterman Rd	16,606	85	0	15	1.0%	1.0%	25	50	0	91	42	20	63.9
8	Elk Grove Blvd	Waterman Rd & Bradshaw Rd	6,885	85	0	15	1.0%	1.0%	35	65	-5	76	35	16	56.1
9	Elk Grove Blvd	E. Stockton Boulevard to Elk Grove Florin Rd	36,095	85	0	15	1.0%	1.0%	35	90	0	231	107	50	66.1
10	Elk Grove Florin Road	Sheldon Road & Bond Road	23,159	85	0	15	1.0%	1.0%	45	85	-5	258	120	56	62.2
11	Elk Grove Florin Road	Bond Road & Elk Grove Blvd	18,994	85	0	15	1.0%	1.0%	35	50	-5	150	70	32	62.2
12	Bradshaw Rd	Bond Road & Elk Grove Blvd	11,865	85	0	15	1.0%	1.0%	50	80	-5	197	92	43	60.9

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Appendix C-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 230515 Summer Flats at Waterman Road
Description: Existing Plus Project Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset 60 dBA	65 dBA	70 dBA	Level, dBA
1	Waterman Road	Sheldon Road to Bond Road	14,300	85	0	15	1.0%	1.0%	45	125	0	187	87	40	62.6
2	Waterman Road	Elk Grove Boulevard & Bond Road	14,800	85	0	15	1.0%	1.0%	45	40	-5	191	89	41	65.2
3	Waterman Road	Mainline Dr Dino Dr & Elk Grove Blvd	10,900	85	0	15	1.0%	1.0%	35	50	0	104	48	22	64.8
4	Bond Road	Elk Grove Florin Road & Waterman Road	23,100	85	0	15	1.0%	1.0%	45	65	-5	258	120	56	64.0
5	Bond Road	Waterman Road & Bradshaw Road	14,900	85	0	15	1.0%	1.0%	45	60	-5	192	89	41	62.6
6	Bond Road	E. Stockton Boulevard to Elk Grove Florin Rd	35,500	85	0	15	1.0%	1.0%	45	60	-5	343	159	74	66.4
7	Elk Grove Blvd	Elk Grove Florin Rd & Waterman Rd	16,800	85	0	15	1.0%	1.0%	25	50	0	92	43	20	64.0
8	Elk Grove Blvd	Waterman Rd & Bradshaw Rd	7,000	85	0	15	1.0%	1.0%	35	65	-5	77	36	17	56.1
9	Elk Grove Blvd	E. Stockton Boulevard to Elk Grove Florin Rd	36,300	85	0	15	1.0%	1.0%	35	90	0	232	107	50	66.2
10	Elk Grove Florin Road	Sheldon Road & Bond Road	23,200	85	0	15	1.0%	1.0%	45	85	-5	258	120	56	62.2
11	Elk Grove Florin Road	Bond Road & Elk Grove Blvd	19,100	85	0	15	1.0%	1.0%	35	50	-5	151	70	33	62.2
12	Bradshaw Rd	Bond Road & Elk Grove Blvd	11,900	85	0	15	1.0%	1.0%	50	80	-5	198	92	43	60.9

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Appendix C-3

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 230515 Summer Flats at Waterman Road
Description: Near-Term Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset 60 dBA	65 dBA	70 dBA	Level, dBA
1	Waterman Road	Sheldon Road to Bond Road	14,400	85	0	15	1.0%	1.0%	45	125	0	188	87	41	62.7
2	Waterman Road	Elk Grove Boulevard & Bond Road	14,300	85	0	15	1.0%	1.0%	45	40	-5	187	87	40	65.1
3	Waterman Road	Mainline Dr Dino Dr & Elk Grove Blvd	11,100	85	0	15	1.0%	1.0%	35	50	0	105	49	23	64.8
4	Bond Road	Elk Grove Florin Road & Waterman Road	25,200	85	0	15	1.0%	1.0%	45	65	-5	273	127	59	64.3
5	Bond Road	Waterman Road & Bradshaw Road	16,400	85	0	15	1.0%	1.0%	45	60	-5	205	95	44	63.0
6	Bond Road	E. Stockton Boulevard to Elk Grove Florin Rd	36,600	85	0	15	1.0%	1.0%	45	60	-5	350	163	75	66.5
7	Elk Grove Blvd	Elk Grove Florin Rd & Waterman Rd	17,000	85	0	15	1.0%	1.0%	25	50	0	93	43	20	64.0
8	Elk Grove Blvd	Waterman Rd & Bradshaw Rd	7,200	85	0	15	1.0%	1.0%	35	65	-5	79	37	17	56.3
9	Elk Grove Blvd	E. Stockton Boulevard to Elk Grove Florin Rd	36,400	85	0	15	1.0%	1.0%	35	90	0	232	108	50	66.2
10	Elk Grove Florin Road	Sheldon Road & Bond Road	23,700	85	0	15	1.0%	1.0%	45	85	-5	262	122	56	62.3
11	Elk Grove Florin Road	Bond Road & Elk Grove Blvd	19,500	85	0	15	1.0%	1.0%	35	50	-5	153	71	33	62.3
12	Bradshaw Rd	Bond Road & Elk Grove Blvd	12,000	85	0	15	1.0%	1.0%	50	80	-5	199	92	43	60.9

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Appendix C-4

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 230515 Summer Flats at Waterman Road
Description: Near-Term Plus Project Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset 60 dBA	65 dBA	70 dBA	Level, dBA
1	Waterman Road	Sheldon Road to Bond Road	14,600	85	0	15	1.0%	1.0%	45	125	0	190	88	41	62.7
2	Waterman Road	Elk Grove Boulevard & Bond Road	15,000	85	0	15	1.0%	1.0%	45	40	-5	193	90	42	65.3
3	Waterman Road	Mainline Dr Dino Dr & Elk Grove Blvd	11,100	85	0	15	1.0%	1.0%	35	50	0	105	49	23	64.8
4	Bond Road	Elk Grove Florin Road & Waterman Road	25,600	85	0	15	1.0%	1.0%	45	65	-5	276	128	59	64.4
5	Bond Road	Waterman Road & Bradshaw Road	16,500	85	0	15	1.0%	1.0%	45	60	-5	206	96	44	63.0
6	Bond Road	E. Stockton Boulevard to Elk Grove Florin Rd	37,000	85	0	15	1.0%	1.0%	45	60	-5	353	164	76	66.5
7	Elk Grove Blvd	Elk Grove Florin Rd & Waterman Rd	17,100	85	0	15	1.0%	1.0%	25	50	0	93	43	20	64.0
8	Elk Grove Blvd	Waterman Rd & Bradshaw Rd	7,200	85	0	15	1.0%	1.0%	35	65	-5	79	37	17	56.3
9	Elk Grove Blvd	E. Stockton Boulevard to Elk Grove Florin Rd	36,500	85	0	15	1.0%	1.0%	35	90	0	232	108	50	66.2
10	Elk Grove Florin Road	Sheldon Road & Bond Road	23,600	85	0	15	1.0%	1.0%	45	85	-5	261	121	56	62.3
11	Elk Grove Florin Road	Bond Road & Elk Grove Blvd	19,500	85	0	15	1.0%	1.0%	35	50	-5	153	71	33	62.3
12	Bradshaw Rd	Bond Road & Elk Grove Blvd	11,900	85	0	15	1.0%	1.0%	50	80	-5	198	92	43	60.9

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Appendix C-5

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 230515 Summer Flats at Waterman Road
Description: Cumulative Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset 60 dBA	65 dBA	70 dBA	Level, dBA
1	Waterman Road	Sheldon Road to Bond Road	21,100	85	0	15	1.0%	1.0%	45	125	0	243	113	52	64.3
2	Waterman Road	Elk Grove Boulevard & Bond Road	25,800	85	0	15	1.0%	1.0%	45	40	-5	277	129	60	67.6
3	Waterman Road	Mainline Dr Dino Dr & Elk Grove Blvd	23,200	85	0	15	1.0%	1.0%	35	50	0	172	80	37	68.0
4	Bond Road	Elk Grove Florin Road & Waterman Road	27,800	85	0	15	1.0%	1.0%	45	65	-5	292	135	63	64.8
5	Bond Road	Waterman Road & Bradshaw Road	18,500	85	0	15	1.0%	1.0%	45	60	-5	222	103	48	63.5
6	Bond Road	E. Stockton Boulevard to Elk Grove Florin Rd	40,800	85	0	15	1.0%	1.0%	45	60	-5	376	175	81	67.0
7	Elk Grove Blvd	Elk Grove Florin Rd & Waterman Rd	15,500	85	0	15	1.0%	1.0%	25	50	0	87	40	19	63.6
8	Elk Grove Blvd	Waterman Rd & Bradshaw Rd	10,700	85	0	15	1.0%	1.0%	35	65	-5	103	48	22	58.0
9	Elk Grove Blvd	E. Stockton Boulevard to Elk Grove Florin Rd	42,700	85	0	15	1.0%	1.0%	35	90	0	258	120	56	66.9
10	Elk Grove Florin Road	Sheldon Road & Bond Road	34,600	85	0	15	1.0%	1.0%	45	85	-5	337	157	73	64.0
11	Elk Grove Florin Road	Bond Road & Elk Grove Blvd	25,700	85	0	15	1.0%	1.0%	35	50	-5	184	85	40	63.5
12	Bradshaw Rd	Bond Road & Elk Grove Blvd	31,600	85	0	15	1.0%	1.0%	50	80	-5	379	176	82	65.1

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Appendix C-6

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 230515 Summer Flats at Waterman Road
Description: Cumulative Plus Project Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset 60 dBA	65 dBA	70 dBA	Level, dBA
1	Waterman Road	Sheldon Road to Bond Road	21,300	85	0	15	1.0%	1.0%	45	125	0	244	113	53	64.4
2	Waterman Road	Elk Grove Boulevard & Bond Road	26,500	85	0	15	1.0%	1.0%	45	40	-5	282	131	61	67.7
3	Waterman Road	Mainline Dr Dino Dr & Elk Grove Blvd	23,300	85	0	15	1.0%	1.0%	35	50	0	172	80	37	68.1
4	Bond Road	Elk Grove Florin Road & Waterman Road	28,300	85	0	15	1.0%	1.0%	45	65	-5	295	137	64	64.9
5	Bond Road	Waterman Road & Bradshaw Road	18,600	85	0	15	1.0%	1.0%	45	60	-5	223	104	48	63.6
6	Bond Road	E. Stockton Boulevard to Elk Grove Florin Rd	41,200	85	0	15	1.0%	1.0%	45	60	-5	379	176	82	67.0
7	Elk Grove Blvd	Elk Grove Florin Rd & Waterman Rd	15,700	85	0	15	1.0%	1.0%	25	50	0	88	41	19	63.7
8	Elk Grove Blvd	Waterman Rd & Bradshaw Rd	10,800	85	0	15	1.0%	1.0%	35	65	-5	103	48	22	58.0
9	Elk Grove Blvd	E. Stockton Boulevard to Elk Grove Florin Rd	42,800	85	0	15	1.0%	1.0%	35	90	0	258	120	56	66.9
10	Elk Grove Florin Road	Sheldon Road & Bond Road	34,600	85	0	15	1.0%	1.0%	45	85	-5	337	157	73	64.0
11	Elk Grove Florin Road	Bond Road & Elk Grove Blvd	25,700	85	0	15	1.0%	1.0%	35	50	-5	184	85	40	63.5
12	Bradshaw Rd	Bond Road & Elk Grove Blvd	31,600	85	0	15	1.0%	1.0%	50	80	-5	379	176	82	65.1

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Appendix J

Technical Memorandum

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

To:	Gyan Kalwani, Sheldon Business Park Bryan Wilson, Sheldon Business Park		
From:	Tom Balbierz, PE	**CC:**	Tim Denham, Wood Rodgers
Date:	March 18, 2025		
Subject:	**Summer Flats at Waterman Road** **Sewer Flow Assessment**		

Introduction

The purpose of this analysis is to confirm that proposed project sewer flows do not exceed those estimated as part of the 2020 SASD System Capacity Plan.

The project site is located along the east side of Waterman Road just north of its intersection with Rancho Drive in the City of Elk Grove. The property encompasses approximately 27.6 acres. Existing residences exist east of the site and existing residences and Hilltop Cemetery oppose the site on the western side of Waterman Road. The site will be developed to support 124 medium density residential units on the westerly half of the site with the easterly half supporting predominantly open space, a detention basin, and minor landscape corridors.

The project site is located within the LA Elk Grove Trunk Shed as reflected in the SASD 2020 System Capacity Plan. As such, sewer flows were modeled to properly size existing and proposed sewer facilities within the sewer shed. These flow models include estimated flows from the subject project site and are accounted for at the Regional Treatment Plant. Proposed sewer flows associated with the project are detailed and compared to the SacSewer model flows below under the "Sewer Flow Comparison" section of this memo.

Sewer Flow Comparison

SacSewer (formerly SASD) uses Peak Wet Weather Flow (PWWF) to size gravity collection systems. The following equations are used by SacSewer to determine design flows:

- PWWF (mgd) = (ADWF*PF)
- ADWF (mgd) = (310 gpd / ESD)*(# ESDs / acre)*(# of acres) / 1,000,000
- PF = 3.5-1.8*ADWF$^{0.05}$ where ADWF is in mgd, and a minimum value of PF is 1.2
- I/I (mgd) = 1,600 gpd/acre*(# acres) / 1,000,000

Where

PWWF = Peak Wet Weather Flow
ADWF = Average Dry Weather Flow
PF = Peaking Factor
ESD = Equivalent Single Family Dwelling
I/I = Inflow and Infiltration
mgd = million gallons per day
gpd = gallons per day

As indicated in the equation above, ADWF is based upon ESD units and a design domestric flow factor of 310 gallons/day/ESD. The ADWF is calculated as the largest of the following methods: a) 6 ESDs per acre; b) The number of units for a project; or c) The most recent zoning, if the number of units is uknown. The SacSewer 2020 System Capacity Plan estimates flow for this area based on 6 ESDs per acre.

Table 1 below presents a comparison of design sewer flows based on the assumptions in the SacSewer 2020 System Capacity Plan as well as the on site flows anticipated to be generated by the proposed project.

Table 1: Sewer Flow Comarison

Land Use	Development Area (acres)[1]	ESDs/Acre	Total ESDs based on ESD/acre factor	Total ESDs based on total project Lot Count	Total Sewer Flow (mgd)
2020 SASD System Capacity Plan	27.6	6	166	N/A	0.144
Proposed Summer Flats Project	11.9[1]	10[2]	119	124	0.095[3]

Conclusions

As clearly depicted by the Table 2 Summary, the total sewer flow for the proposed project (0.095 mgd) is significantly less than the estimated flows generated by the 2020 System Capacity Plan base assumptions (0.144 mgd).

Attachments

- Preliminary Tentative Subdivision Map for Summer Flats at Waterman Road dated June 2023.
- Figure A.14-1 - LA Elk Grove Expansion Shed (Excerpt from 2020 SASD System Capacity Plan)

1 Development area=total site area minus non-flow generating areas which includes Lots A & B and Waterman right of way.
2 Estimated ESDs per acre based on typical medium density residential value of 10 ESDs / acre.
3 Total sewer flow based on maximum estimated ESDs for the project as represented by the total lot county (124) for the proposed project.

TENTATIVE SUBDIVISION MAP

SUMMER FLATS AT WATERMAN ROAD

CITY OF ELK GROVE, CALIFORNIA

DRAFT

DRAFT

JUNE 7, 2023

PROJECT NOTES

APPLICANT/OWNER
SHELDON BUSINESS PARK LTD.
9501 SHELDON ROAD
ELK GROVE, CA 95642
CONTACT: GYAN KALWANI
PHONE: (916) 997-7873

PLANNER/ENGINEER
WOOD RODGERS INC.
3301 'C' STREET, BLDG. 100B
SACRAMENTO, CA 95816
CONTACT: TIM DENHAM
PHONE: (916) 341-7760

ASSESSOR'S PARCEL NO.
127-0150-001, -002, -009

AREA
27.6± ACRES GROSS

NUMBER OF LOTS

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1	OPEN SPACE LOT
7	LANDSCAPE LOTS
134	TOTAL LOTS

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VACANT

PROPOSED USE
SEE LAND USE SUMMARY

EXISTING ZONING
RD-4, O

PROPOSED ZONING
RD-12, O

PARK DISTRICT
COSUMNES CSD

FIRE PROTECTION
COSUMNES CSD

SCHOOL DISTRICT
ELK GROVE UNIFIED SCHOOL DISTRICT

SEWER
CITY OF ELK GROVE

STORM DRAIN
CITY OF ELK GROVE

WATER
ELK GROVE WATER SERVICE RETAIL/SWCA

ELECTRICITY
SMUD

GAS
PG&E

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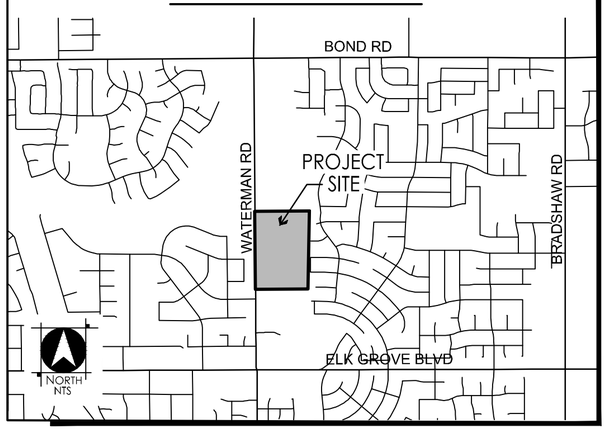

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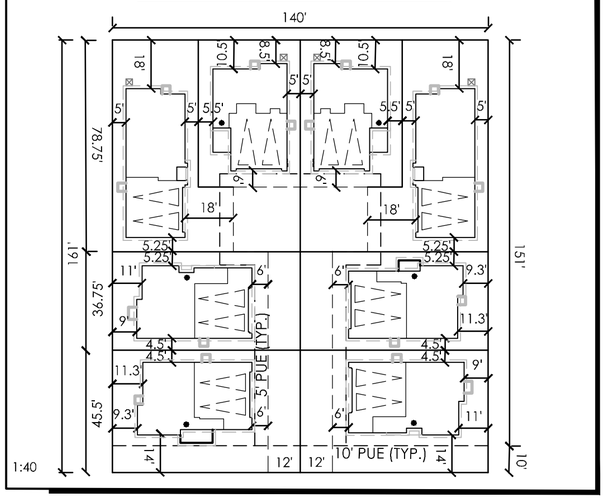
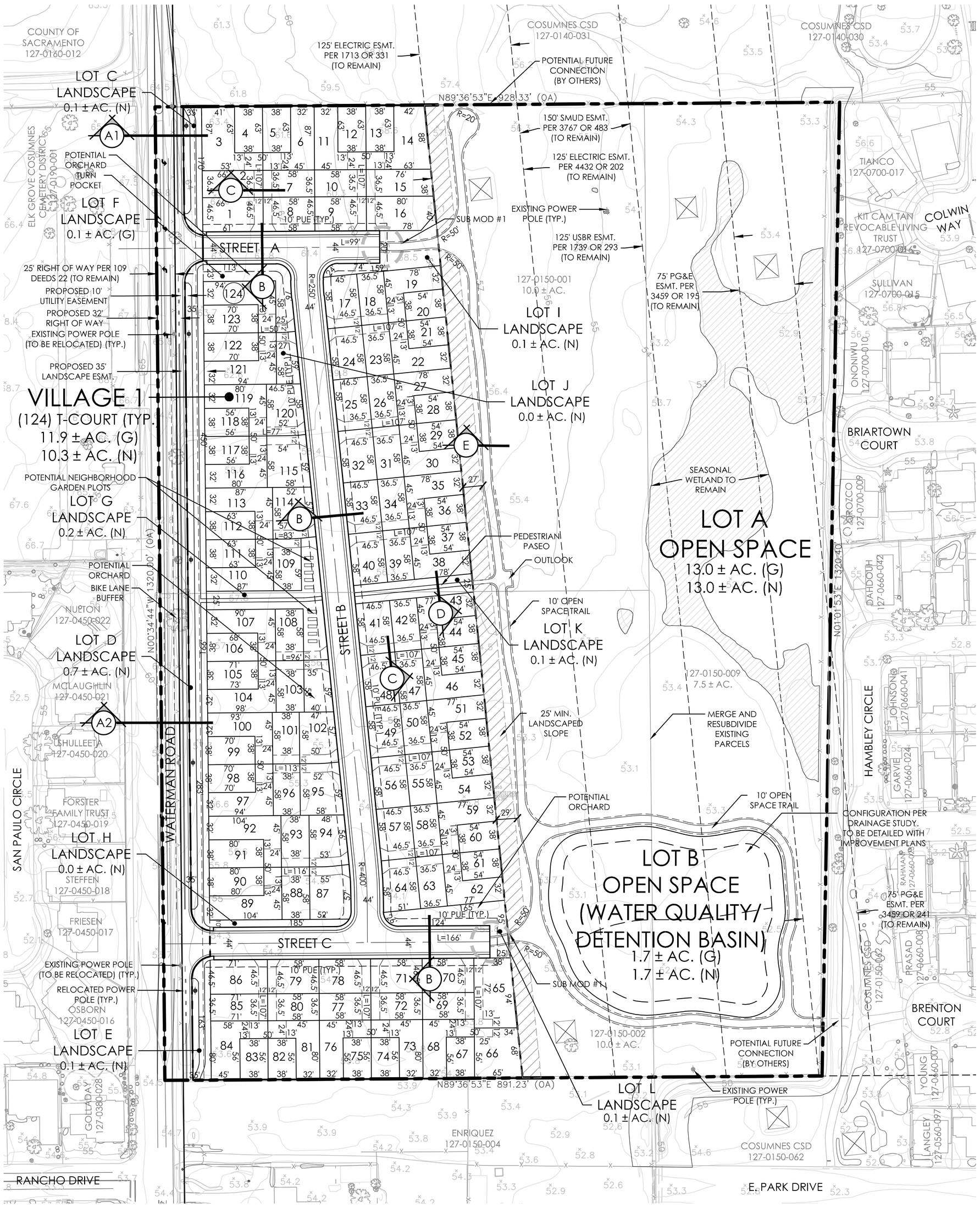
PROFESSIONAL LAND SURVEYOR · DENNIS L. BARBER · No. 8067 · STATE OF CALIFORNIA

DENNIS L. BARBER, P.L.S. 8067

PLOT PLAN (TYP.)





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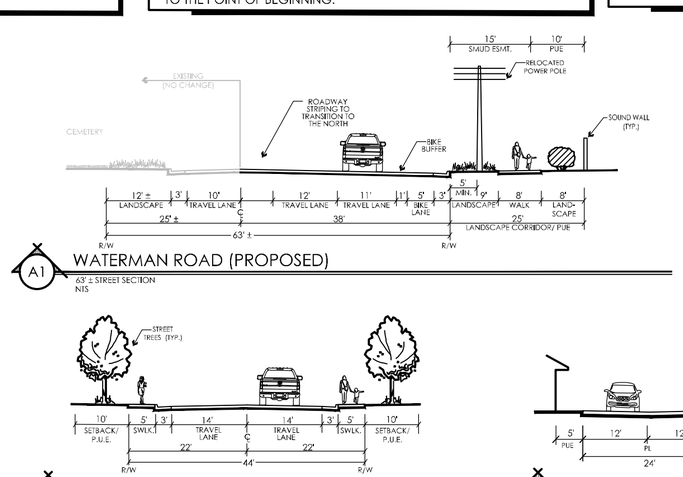
LAND USE SUMMARY

LOT NO./VILLAGE NO.	GENERAL PLAN/SPECIFIC PLAN/ ZONING DESIGNATIONS	USE	ACRES (G)	ACRES (N)	GROSS DENSITY	UNITS
VILLAGE 1	LDR/RD-12	S-F RESIDENTIAL (T-COURT)	11.9 ±	10.4 ±	10.4	124
SUBTOTAL			11.9 ±	10.4 ±	10.4	124
LOT A	OS/O	OPEN SPACE	13.0 ±	13.0 ±		
LOT B	OS/O	WATER QUALITY/DETENTION BASIN	1.7 ±	1.7 ±		
LOT C-E	VARIES	LANDSCAPE CORRIDOR	-	0.9 ±		
LOT F-L	VARIES	LANDSCAPE LOT	-	0.6 ±		
MAJOR RIGHT-OF-WAY (WATERMAN ROAD)	-	-	1.0 ±	1.0 ±		
SUBTOTAL			15.7 ±	17.2 ±		
TOTAL			27.6 ± ACRES	27.6 ± ACRES		124 DU

NOTES:
1. LANDSCAPE CORRIDORS ARE INCLUDED IN GROSS ACREAGE OF APPLICABLE LOT/VILLAGE.
2. NET ACREAGES EXCLUDE LANDSCAPE LOTS.

SUBDIVISION MODIFICATION

1. DEAD-END STUB STREET (2)



NORTH · 0 · 80 · 160 · 320

REGISTERED PROFESSIONAL ENGINEER · MICHAEL P. MOTRONI · No. 73891 · Exp. 6/30/2023 · CIVIL · STATE OF CALIFORNIA

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
3301 C St, Bldg. 100-B
Sacramento, CA 95816
Tel 916.341.7760
Fax 916.341.7767

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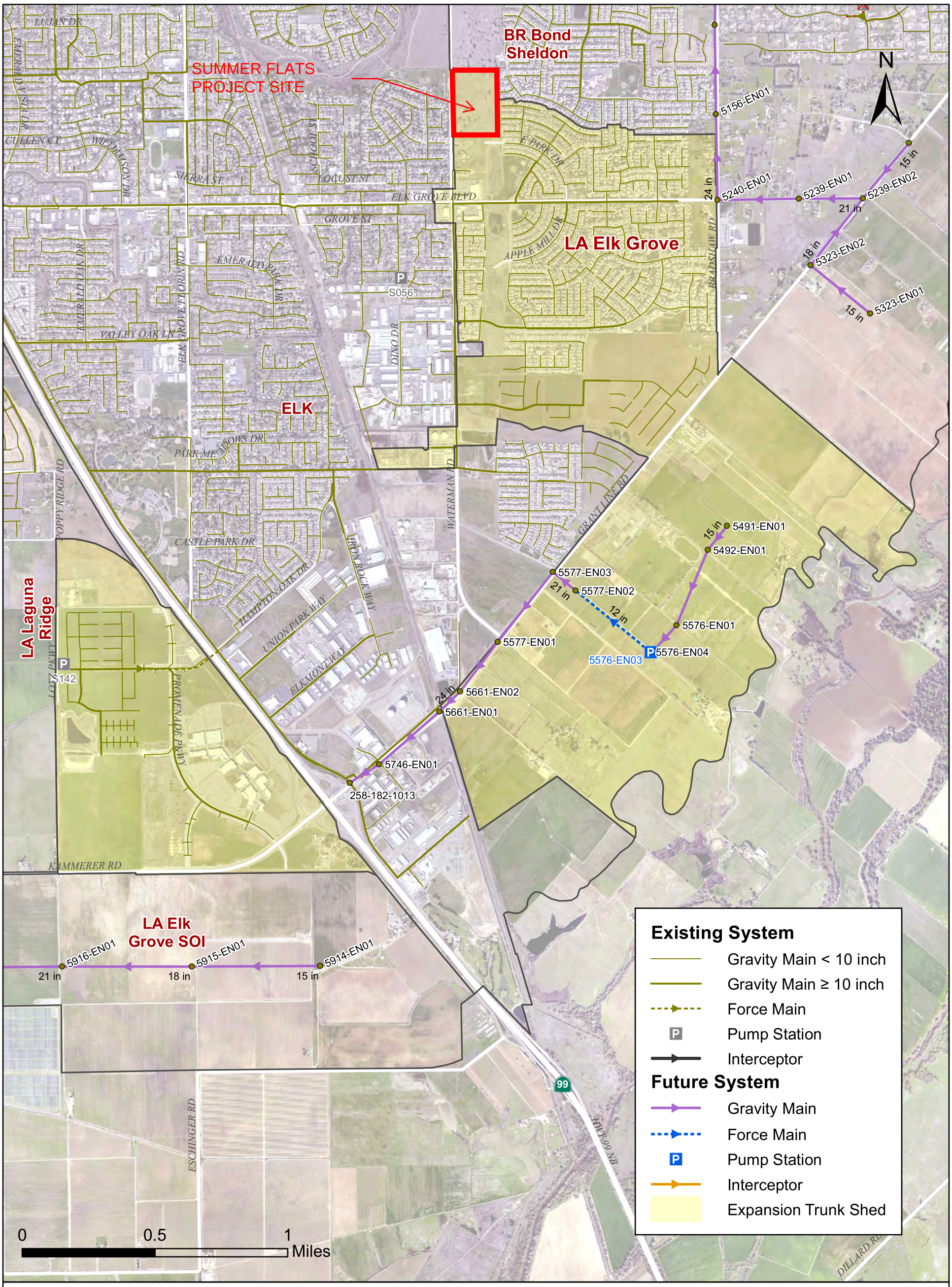

2020 SASD SYSTEM CAPACITY PLAN

SACRAMENTO AREA SEWER DISTRICT

LA Elk Grove
Sewer Shed and Facilities
Buildout Expansion Plan
FIGURE A.14-1

Updated: 9/3/2020

Appendix K

Technical Memorandum

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

To:	Gyan Kalwani, Sheldon Business Park		
From:	Tom Balbierz, PE	**CC:**	Bryan Wilson, Sheldon Business Park
Date:	February 20, 2025		
Subject:	**Summer Flats at Waterman Road Domestic Water Demand Analysis**		

Introduction

The purpose of this analysis is to confirm that proposed project water demand is suitably met by the proposed water infrastructure and further supported by the land use demand assumed by the Zone 40 Water Supply Master Plan dated September 2016.

The project site is located along the east side of Waterman Road just north of its intersection with Rancho Drive in the City of Elk Grove. The property encompasses approximately 27.6 acres. Existing residences exist east of the site and existing residences and Hilltop Cemetery oppose the site on the western side of Waterman Road. The site will be developed to support 124 medium density residential units on the westerly half of the site with the easterly half supporting predominantly open space, a detention basin, and minor landscape corridors.

The project site is located within Service Area 2 of the Elk Grove Water District (EGWD). The EGWD provides water through a series of groundwater wells and a treatment and storage facility on Railroad Street. In addition, EGWD also has a long term agreement with Sacramento County Water Agency (SCWA) to purchase additional water supplies. Backbone infrastructure improvements in support of the project include extending an existing EGWD 10" water distribution line from 700 feet south of the site to our southern entry. Additionally, an existing SCWA 16" water transmission main will be extended from 700 feet south of the site to and across the entire western frontage of the project, within Waterman Road. EGWD typically owns and operates the distribution main network (12" diameter or smaller) in the Distrtict while SCWA typically handles the maintenance and operation of the transmission main network (greater than 12" diameter) within the EGWD boundaries.

Water Demand Factors

The SCWA transmission main network is based upon the Zone 40 Water Supply Master Plan dated September 2016. Water demands for the proposed system are based on the area of land to be served multiplied by a demand factor which is based on a known/assumed land use. The applied water demand factors are summarized in Table 3-11 Buildout Unit Water Demand Factors within the Zone 40 Water Supply Master Plan and included within Table 1 below.

Water Demand Comparison

In order to compare the overall project water demand, the acreage for each land use is multiplied by the appropriate water demand factor. The 2016 Zone 40 master plan identifies the entire project area as Public Recreation.

Table 2: Water Demand Comarison (per SCWA Water Supply Master Plan)

		2016 SCWA WSMP		Summer Flats(Proposed)	
Land Use	**Gross Unit Water Demand Factor (ac-ft/acre/yr)[1]**	Area (acres)	Water Demand (ac-ft/yr)	Area (acres)	Water Demand (ac-ft/yr)
Rural Estate	1.37				
Single Family	2.13				
Multi Family – Low Density	2.44			10.4	25.4
Multi Family – High Density	3.33				
Commercial	2.02				
Industrial	2.02				
Public	0.81				
Public Recreation	2.80	27.6	77.3	3.2[2]	9.0
Mixed Land Use	2.15				
Right of Way	0.18			1.0	0.2
Self Suppt./Supp. by Others					
Non-Irrigated	--			13.0[3]	0
Industrial- Unutilized	--				
Agricultural	--				
Total Area & Demand		27.6	**77.3**	27.6	**34.6**

Conclusions

As clearly depicted by the Table 2 Summary, the total water demand assumed for the project site in the 2016 Zone 40 Water Supply Master Plan (77.3 ac-ft per year) far exceeds those anticipated to be developed by the planned Summer Flats project (34.6 ac-ft per year). Previous demands associated with the Zone 40 Water Supply Master Plan more than compensate for the demands associated with the proposed Summer Flats project.

Attachments

- Preliminary Tentative Subdivision Map for Summer Flats at Waterman Road dated June 2023.

1 Water demand factors per Zone 40 Water Supply Master Plan dated September 2016.
2 Area encompasses Lot B detention basin lot and Landscape Lots C through L.
3 Lot A Open Space per Draft Tentative Subdivision Map for Summer Flats at Waterman Road (non-irrigated).

TENTATIVE SUBDIVISION MAP

SUMMER FLATS AT WATERMAN ROAD

CITY OF ELK GROVE, CALIFORNIA

DRAFT

DRAFT

JUNE 7, 2023

PROJECT NOTES

APPLICANT/OWNER
SHELDON BUSINESS PARK LTD.
9501 SHELDON ROAD
ELK GROVE, CA 95642
CONTACT: GYAN KALWANI
PHONE: (916) 997-7873

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ASSESSOR'S PARCEL NO.
127-0150-001, -002, -009

AREA
27.6± ACRES GROSS

NUMBER OF LOTS

124	SINGLE-FAMILY RESIDENTIAL LOTS
1	WATER QUALITY/DETENTION BASIN
1	OPEN SPACE LOT
7	LANDSCAPE LOTS
134	TOTAL LOTS

EXISTING USE
VACANT

PROPOSED USE
SEE LAND USE SUMMARY

EXISTING ZONING
RD-4, O

PROPOSED ZONING
RD-12, O

PARK DISTRICT
COSUMNES CSD

FIRE PROTECTION
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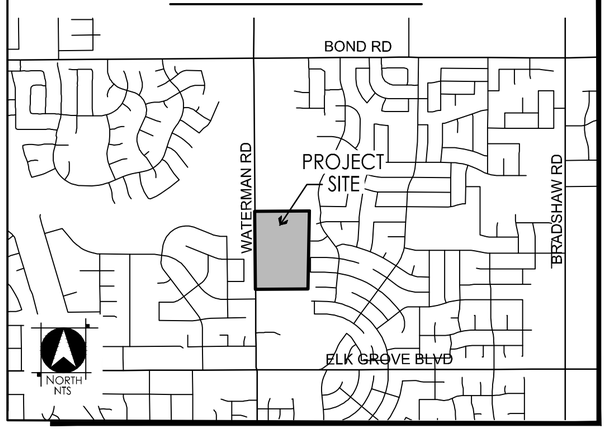

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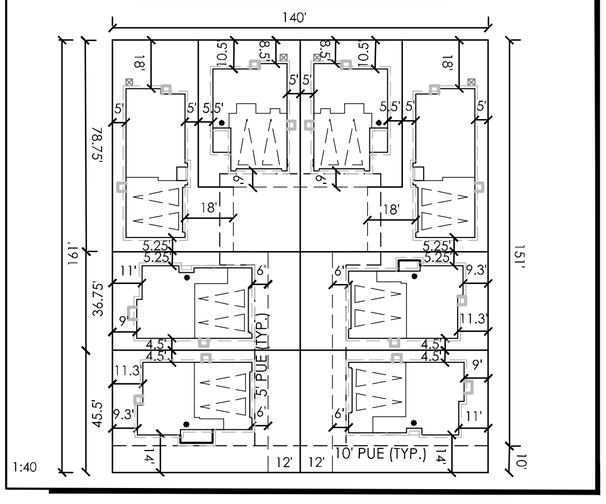
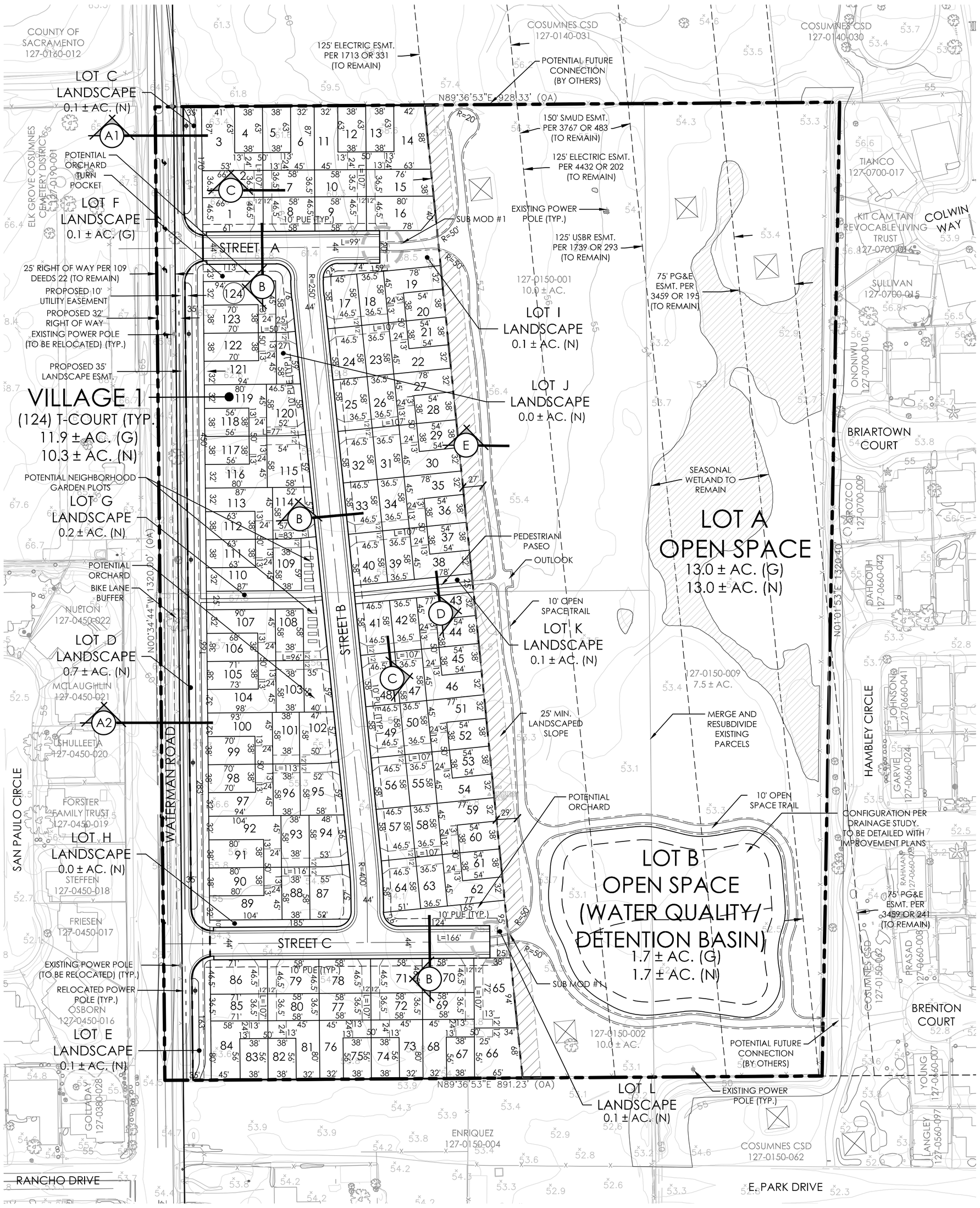
PROFESSIONAL LAND SURVEYOR · DENNIS L. BARBER · No. 8067 · STATE OF CALIFORNIA

DENNIS L. BARBER, P.L.S. 8067

PLOT PLAN (TYP.)





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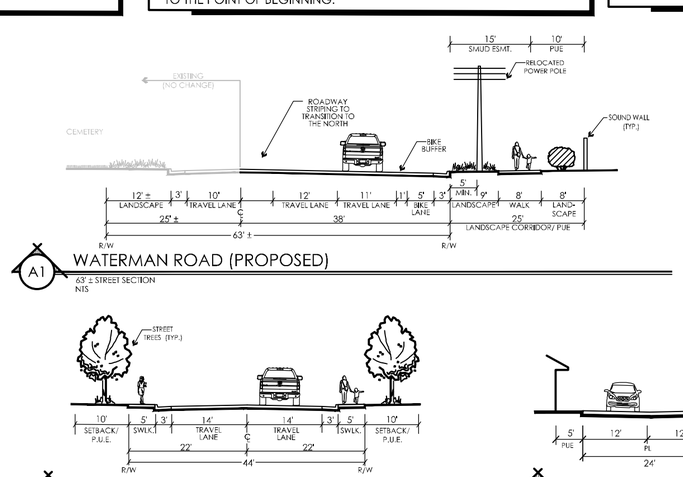

NORTH · 0 · 80 · 160 · 320

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Fax 916.341.7767

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Appendix L

Fehr & Peers

Summer Flats Transportation Analysis Report

Prepared for:
Raney

Submitted on:
March 2026

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Attachment A: EGSIM20 – Model Development Report and VMT Methodology

1. Introduction

1.1 Purpose

The purpose of this report is to analyze the transportation impacts associated with the proposed Summer Flats project in the City of Elk Grove, California. This study evaluates traffic conditions near the project under existing, Near-Term and cumulative conditions, representing General Plan Buildout. The transportation analysis addresses Vehicle Miles Traveled (VMT), roadway performance, and bicycle, pedestrian, and transit facilities and access.

This analysis is necessary because the project requires a General Plan Amendment from Low Density Residential (LDR) and Resource Management and Conservation (RMC) to Medium Density Residential (MDR) and RMC, a Rezone from RD-4 and O to RD-12 and O, a Tentative Subdivision Map, and Design Review. The report includes existing conditions, regulatory background, analysis methodology, impacts and mitigation measures, and an assessment of consistency with the City of Elk Grove General Plan.

1.2 Project Description

The Summer Flats project is located on a 27.6-acre site northeast of the Waterman Road and Rancho Drive intersection in the City of Elk Grove. The project area is proposed for residential development and open space. The project includes up to 120 single-family homes, designed to create a residential community with access to open space and trail amenities. The residential area is buffered from Waterman Road by a landscape corridor with pedestrian access.

The project consists of a General Plan amendment from Low Density Residential (LDR) and Resource Management and Conservation (RMC) to Medium Density Residential (MDR) and RMC, and Rezone from RD-4 and Open Space to RD-12 and Open Space, Tentative Subdivision Map, and Design Review for Subdivision Layout. Access to the project site will include two new internal roadways extending from Waterman Road, with connections to the residential lots. **Figure 1** shows the land use plan with the location of the access point. The Project would expand the Waterman Road ROW along the frontage of the property, ranging in width from 72 to 73 feet and including a total of four 11- to 11.5-foot vehicle travel lanes (two in each direction) and one 11-foot median with a portion designed as a two-way left turn lane, a 5-foot shoulder, and an attached 3-foot wide curb and gutter. The proposed frontage improvements would also include a 32.5-foot-wide landscape corridor, featuring a 10-foot-wide Class I multi-use path. The existing half ROW is 25 feet along the Project frontage. An additional 28-foot dedication would be required to include a 53-foot half ROW on the east side of Waterman Road fronting the Project.

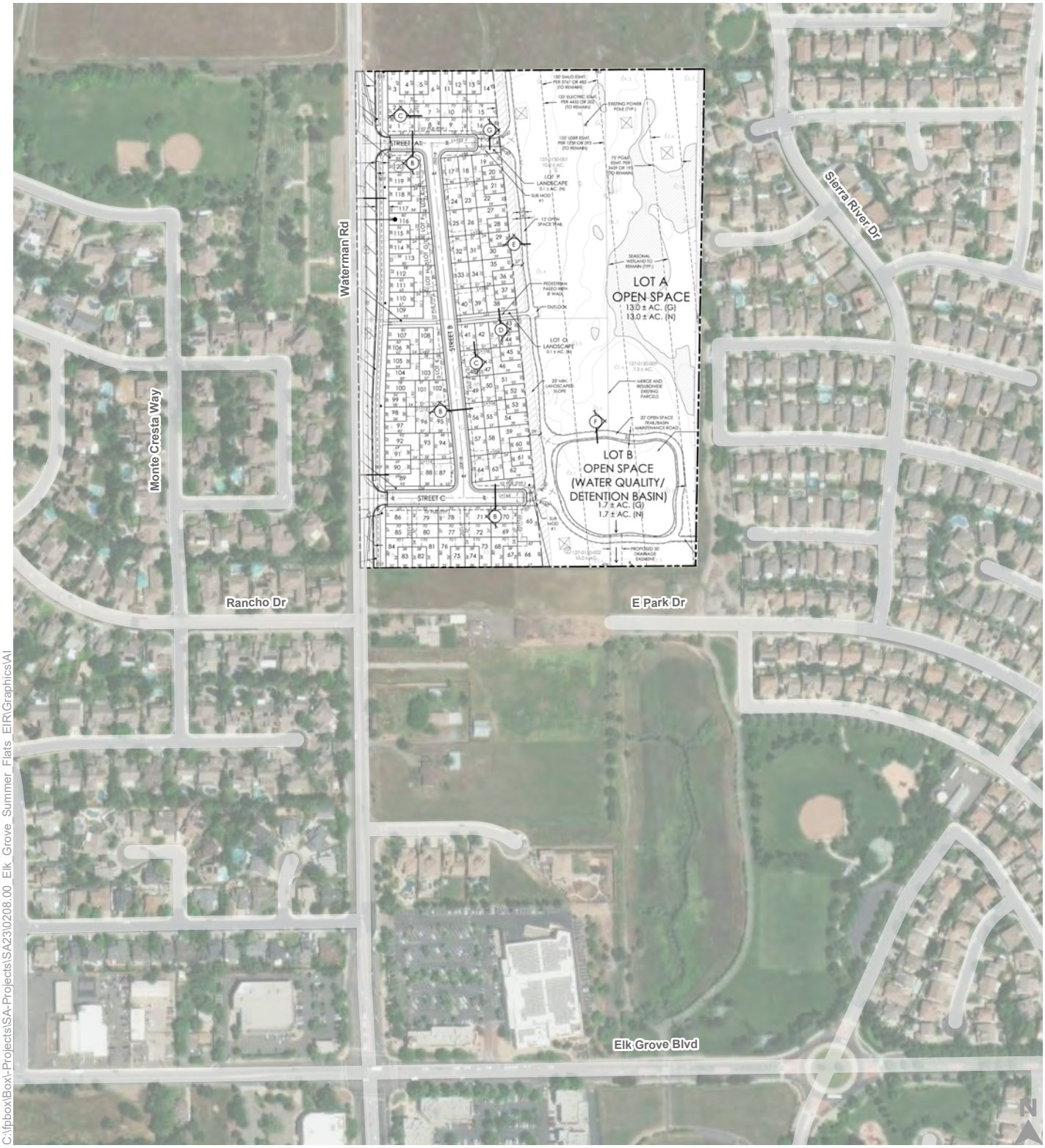

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Figure 1

Project Location

Fehr & Peers

2 Analysis Methodology

This chapter presents the methods used for the analysis of the proposed Project. The methods describe existing conditions data collection, Project travel characteristics, travel demand modeling, VMT analysis, roadway and intersection performance, the analysis of bicycle and facilities, and safety. The procedures outlined below are consistent with the *City of Elk Grove Transportation Guidelines, December 2023*.

2.1 Data Collection

Daily roadway segment counts collected the on Tuesday April 25, 2024. Turning movement traffic counts were collected at the existing study intersections on Tuesday August 20, 2024, during the AM (7:00 AM to 9:00 AM) and PM (4:00 PM to 6:00 PM) peak periods. Local schools were in session with in-person instruction and typical traffic conditions were observed. The existing conditions data is used for the roadway performance analysis.

2.2 Project Travel Characteristics

Project travel characteristics, including trip generation and trip distribution, were developed to assess the Summer Flats project's impact on the transportation system under Existing, Near-Term, and Cumulative conditions.

2.2.1 Trip Generation

The proposed project's trip generation was estimated using the Trip Generation Manual, 11th Edition (Institute of Transportation Engineers, 2021), applying rates for single-family detached housing (Land Use Code 210). For 120 dwelling units, the estimated trip generation is summarized in **Table 1**.

Table 1: Trip Generation

Land Use	Quantity	Time	Trip Rate	% In	% Out	Total Trips	Ins	Outs
Single-Family Detached Housing (ITE Code 210)	120	Daily	9.43	50%	50%	1,132	566	566
		AM Peak Hour	0.70	25%	75%	84	21	63
		PM Peak Hour	0.94	63%	37%	113	71	42

Note:
1 – All rates derived from the *Trip Generation Manual, 11th Edition* (Institute of Transportation Engineers, 2021).
2 – Average trip rate applied.
Source: Fehr & Peers, 2024

2.2.2 Project Trip Distribution

The distribution of project trips was developed using the City of Elk Grove Activity-Based Travel Demand Model (EGSIM20). Given the project's location near Waterman Road and Rancho Drive, trips are expected to primarily travel toward major arterials such as Waterman Road (north and south), Bond Road (east and west), and Elk Grove Boulevard (east and west). Trip distribution is as follows: **38%** west and **10%** east on Bond Road, **19%** north on Waterman Road, **10%** south on Waterman Road, **15%** west and **3%** east on Elk Grove Boulevard, and **5%** on other local routes. **Figure 2** illustrates the Project's trip distribution. These trips were used to evaluate roadway and intersection performance under plus-project conditions.

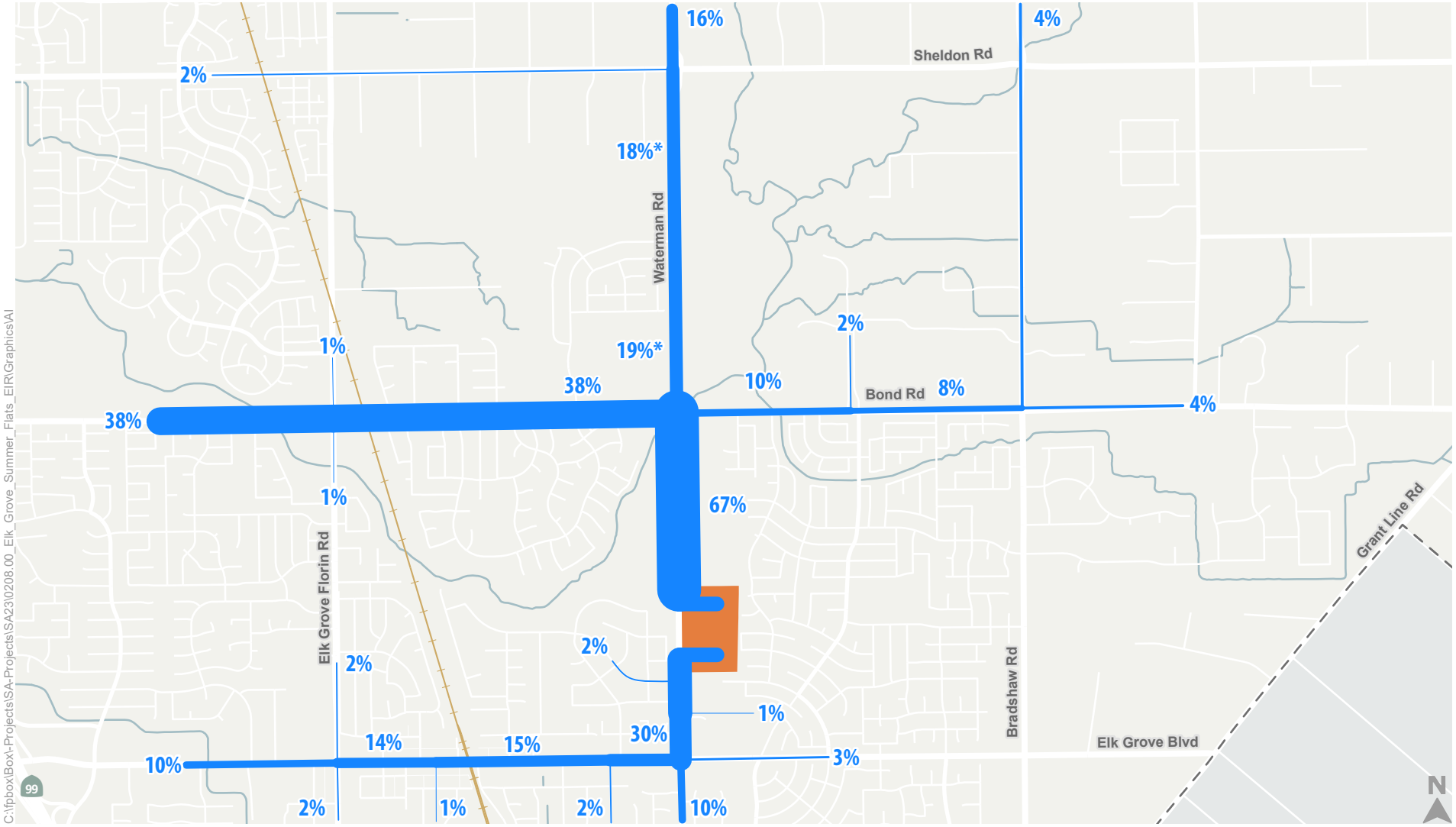


Figure 1

Project Trip Distribution

2.3 Traffic Forecasting Methodology

A modified version of the City of Elk Grove travel demand model EGSIM20 was used for forecasting the study scenarios. The following two model scenarios were used for forecasting.

- Base Year Model – 2019/2020 Pre-Pandemic Conditions
- Future Year Model – General Plan Buildout Model (Beyond 2040)

Table 2 compares total residential units and jobs under Base Year (2020) and General Plan Buildout conditions.

Table 2: City of Elk Grove Land Use Growth

Model Scenario	Residential Units	Jobs
Base Year (2020)	54,791	45,840
General Plan Buildout	103,460	94,897

Source: Fehr & Peers, 2023

For intersection and roadway analysis, Project's trip generation and trip distribution were used to estimate Plus Project scenarios. For VMT analysis, EGSIM20 was modified by replacing the General Plan land use assumptions (in the Project area) with the proposed Project's land use.

2.3.1 Study Scenarios

The study analyzes traffic conditions for the following scenarios:

- Existing Conditions (ENP)
- Existing Plus Project Conditions (E+P)
- Near-Term Conditions (E+AP)
- Near-Term Plus Project Conditions (E+AP+P)
- Cumulative Conditions (CNP)
- Cumulative Plus Project Conditions (C+P)

In addition to existing conditions and Cumulative conditions, the analysis included Near-term analysis that represents existing plus approved Project conditions, as the Elliot Springs Villages (previously Silverado Villages Special Planning Area (SPA)) is within the vicinity of the Project site. Throughout this document, the Silverado Village SPA will be referred to as the "approved Project". Forecasts for the E+AP and E+AP+P scenarios included adding the approved Project's trip generation from the Transportation Impact Study for Elliot Springs Villages SPA[1] to the existing traffic volumes.

[1] Draft Transportation Impact Study for Silverado Village SPA, April 2013 https://www.elkgrovecity.org/sites/default/files/city-files/Departments/Planning/Regulations/SilveradoVillageSPA_2014-08-27.pdf

2.3.2 VMT Forecasts

The estimation of the Project's VMT performance follows the methods documented in *EGSIM20 – Model Development Report and VMT Methodology* (May 31, 2023), which is included in **Attachment A.**

2.3.3 Roadway and Intersection Forecasts

This study applies a forecasting procedure known as the "difference method" to develop all future scenario forecasts. The difference method takes the base year model's raw estimates and the future year model's raw forecasts and adds the difference to existing traffic volumes to develop future year forecasts. This method corrects any potential anomalies within the model. The following formula illustrates this forecasting procedure:

Forecast Scenario = Existing Traffic Count +
(Forecast Scenario Raw Model Volume – Base Year Raw Model Volume)

The analysis applies this method to develop intersection turning movement traffic forecasts during the AM and PM peak hours, and daily roadway volume forecasts.

2.3.4 Potential Limitations to Travel Demand Forecasts

Travel behavior and transportation systems are changing quickly in response to emerging trends, new technologies, and different user preferences. Some of the new travel options and technologies emerging in the SACOG region are discussed below.

Commuter trends

According to "An American Community Survey Briefs" (February 2024), the pandemic has resulted in more people working from home (5.7% in 2019 to 15.2% in 2022) and a reduction in commuters using public transportation (5.0% in 2019 to 3.1% in 2022). These trends apply to the more than 12,000 State workers who live in Elk Grove (Sac Bee, 2017), as ridership on Sacramento Regional Transit Commuter Routes between Elk Grove and Downtown Sacramento have decreased.

Substitution of internet shopping and home delivery for some shopping or meal-related travel

- The 2018 SACOG Household Travel Survey (SHTS) showed that adults reported receiving a home delivery of a package on 17 percent of the travel days in the survey—and additional 4 percent received packages at work, food deliveries at home, etc. How these percentages compared to earlier years is not known.
- From 2019 (pre-pandemic) to 2023, Cyber Monday sales revenue increased at an average annual rate of 8% (Capital One Shopping Research 2024).
- National Household Travel Survey (NHTS) showed the number of online purchases with home delivery doubling between 2009 and 2017, from about 2.5 to 4.9 per household per month (FHWA 2018).

- Comparisons of 2017 to 2009 NHTS data show that nationally, non-work trips per household declined by 11 percent. Most of that decline is attributed to lower rates of shopping trips and other family-related errands (FHWA 2018).

New travel modes and choices

According to "An American Community Survey Briefs" (February 2024), the pandemic has resulted in more people working from home (5.7% in 2019 to 15.2% in 2022) and a reduction in commuters using public transportation (5.0% in 2019 to 3.1% in 2022). These trends apply to the more than 12,000 State workers who live in Elk Grove (Sac Bee, 2017), as ridership on Sacramento Regional Transit Commuter Routes between Elk Grove and Downtown Sacramento have decreased.

Transportation Network Companies (TNCs), car share, bike share, scooter share, and on-demand micro transit have increased the travel options available to travelers in the SACOG region and have contributed to changes in traditional travel demand relationships. The current share of resident trips served by TNCs (e.g., Uber, Lyft) is less than one-quarter percent, based on the 2018 SACOG Household Travel Survey (SHTS), and future growth depends on TNCs developing a sustainable business model.

Automation of vehicles

Both passenger vehicles and commercial vehicles and trucks are evolving to include more automation. Research, development, and deployment testing is proceeding on fully Autonomous Vehicles (AV), for which no human driver would be required, and the vehicle itself can navigate the roadways to take people or goods where they need to go. Forecasts of how quickly research, development, and deployment testing will transition to full deployment and marketing of fully AV vary widely both on the pace of the transition, and the market acceptance of fully autonomous operation. More uncertainty exists for the behavioral response to AVs. In terms of impact on the transportation system and the environment, a scenario of concern would be one in which AVs are privately owned, like most are at present, but the automated function of the vehicles would entice users to travel more. Examples of this phenomenon could include:

- Vehicles are repositioned to serve different members of a household (e.g., have a car drop a worker at their workplace, then drive back home empty to serve another trip, such as a student going to school). This could add significantly to traffic volumes and VMT.
- The time spent in a vehicle is reevaluated by travelers, resulting in an increase in the willingness to make longer trips.
- There may be an increasing willingness to drive more to avoid parking costs or tolls.

Uncertainties in Modeling

Few, if any models, explicitly capture the above-mentioned new modes of travel and emerging trends in travel behavior. Significant uncertainties exist at the present time that prevent explicit modeling of these new modes and emerging trends. However, the use of privately owned vehicles is the mode of

choice for the great majority of Californians. According to Caltrans[2], VMT Statewide increased by approximately 15% between 2001 and 2019.

Transportation and mobility are being transformed through several forces ranging from new technologies, different personal preferences, and the unique effects caused by the COVID-19 pandemic, the combination of which could alter traditional travel demand relationships in the near- and long-term future.

The COVID-19 pandemic and subsequent actions by federal, state, and local governments to curtail mobility and encourage physical distancing (i.e., limit in-person economic and social interactions) profoundly changed travel conditions. While travel activity will likely return to some form of normality after government shelter-in-place orders are lifted and the pandemic has concluded, it is likely that some of these temporary changes will influence people's travel choices into the future, including either accelerating or diminishing some of the emerging trends in transportation that were already underway prior to the pandemic.

The traffic counts collected for the transportation analysis pre-date any response to the pandemic. In addition, the travel demand forecasts developed for the transportation analysis of the proposed Project do not account for the potential short-term or long-term behavioral changes that may be instituted to reduce the general public's exposure level to this or other viruses moving forward. Although such measures (e.g., shifting to more telecommuting and virtual meetings) would tend to result in fewer average daily trips for most land uses, the degree that the changes would be implemented and their resilience over time is not known and cannot be predicted with a high degree of confidence. They are therefore not reflected in the forecasts.

2.4 VMT Analysis

As outlined above, the estimation of the Project's VMT performance follows the methodology documented in *EGSIM20 – Model Development Report and VMT Methodology* (May 31. 2023), which is included in **Attachment A**. A modified version of the City of Elk Grove travel demand model EGSIM20 was used for forecasting the study analysis scenarios.

2.4.1 Land Use Project Screening

The City has established specific limits on VMT allowable for each land use Project by General Plan land use designation as well as Citywide limits and limits within each Study Area. Land use Projects must show consistency with the General Plan Land Use Plan. Projects that are inconsistent with the Land Use Plan are automatically considered inconsistent with the VMT policy and shall conduct a VMT analysis. Projects that are consistent with the Land Use Plan move to the next step.

Projects that are not likely to lead to a substantial or measurable increase in VMT and are presumed to be less than significant include, but are not limited to, the following:

- Projects consistent with the General Plan and Zoning and located within low VMT generating areas as determined by the Development Services Director.

[2] Caltrans, California VMT Data, dot.ca.gov/programs/esta/sb-743/ca-vmt

- Projects consistent with the General Plan and Zoning and which qualify for a categorical or statutory exemption under CEQA.
- Projects consistent with the General Plan and Zoning and which were covered under a prior CEQA analysis, and where none of the conditions provided in CEQA Guidelines Section 15162 would trigger additional or new analysis.

The Project description and location were assessed to determine if the Project can be screened from VMT analysis.

2.4.2 VMT Performance Metrics

Consistent with CEQA Guidelines, § 15064.7, the City selected VMT per service population as the preferred performance metric, for implementing its VMT policy. Of the performance metrics considered, VMT per service population was the most intuitive to the decision makers and supported implementation of the General Plan by incentivizing development in the City's core and not in sensitive resource areas that the community values. A key emphasis of the General Plan was to plan and develop a better job-to-housing balance so residents can work where they live, and to support more mixed-use development to reduce the need to travel by car for goods and services. The VMT per service population metric is useful since it captures these trip-reduction benefits and accounts for travel from the full range of users and not just residents or just workers.

In addition, the City of Elk Grove uses VMT performance targets by General Plan land use category and VMT limits for the City and study areas, which is an additional step to ensure consistency with the General Plan. Active Adult units on average generate less trips than traditional single-family homes. This was accounted for by adjusting the age of household population in the population synthesis portion of the SACSIM activity-based model (refer to Attachment A for details). In addition, an off-model adjustment was done by comparing the model trip rates for active-adult households with ITE trip rates for the same household type. The Project's total daily VMT were evaluated against the underlying General Plan Land Use Designation limit of VMT per service population and Citywide (or Study Area) limit of total daily VMT (**Table 3**).

Table 3: VMT Metrics

Data Set	Description	Purpose
Total Daily VMT	Sum of all daily vehicle miles traveled produced by all uses within the City or applicable Study Area.	Assessing a Project against Citywide or Study Area total limits.
VMT per Service Population	Sum of all vehicle miles traveled produced by uses in the applicable land use designation, divided by the sum of total residents living and employees working in the project.	Assessing a Project against land use designation limits.

2.4.3 VMT Threshold Estimation

The EGSIM20 Travel Demand Model is a tool for implementing the General Plan (i.e., like General Plan policy and actions), like Policy MOB-1-1.

With the development of EGSIM20 and associated calibration and revalidation, the VMT performance measures were re-estimated to provide a consistent basis of evaluating the Project, a key requirement of SB 743, to ensure that the effects of the Project are accurately identified. **Tables 4 and 5** summarize the relevant VMT limits at General Plan Buildout (i.e., for the City limits) and VMT by General Plan land use category, respectively, using the VMT calculation methodology outlined in **Attachment A.**

Table 4: Daily VMT Limit by Study Area

City Limit and Study Areas	VMT Limit for Daily Total VMT Generated by the City of Elk Grove Limits
City	8,066,247
North Study Area	27,383
East Study Area	584,786
South Study Area	1,594,674
West Study Area	773,103

Source: Fehr & Peers, 2025
VMT limit is – Total Daily VMT generated by City of Elk Grove Boundary as per the most recent version of the General Plan Land Use designations from April 2024

Table 5: Daily VMT Per Service Population by Residential Land Use Category

Land Use Designation	VMT Per Service Population	
	Base Year (2020)	VMT Limit[1]
Commercial and Employment		
Community Commercial (CC)	31.4	26.7
Regional Commercial (RC)	31.7	26.9
Employment Center (EC)	23.8	20.2
Light Industrial/Flex (LI/FX)		15.5
Light Industrial (LI)	26.4	22.4
Heavy Industrial (HI)	31.2	26.5
Mixed Use		
Village Center Mixed Use (VCMU)	–	19.4
Residential Mixed Use (RMU)	–	20.6
Transect		
General Neighborhood Residential (T3-R)	–	20.7
Neighborhood Center Low (T3)	–	21.1
Neighborhood Center Medium (T4)	–	20.2
Neighborhood Center High (T5)	–	15.7
Public/Quasi Public and Open Space		
Parks and Open Space(P/OS)	–	NA[2]
Resource Management and Conservations (RMC)	–	NA[2]
Public Services (PS)	–	NA[2]
Residential		
Rural Residential (RR)	29.6	25.2
Estate Residential (ER)	24.2	20.6
Low Density Residential (LDR)	22.7	19.3
Medium Density Residential (MDR)	21.0	17.9
High Density Residential (HDR)	20.8	17.7
Other		
Agriculture (AG)	–	NA[2]

Notes
1 – VMT Limit is 85% of the average base year VMT per service population for parcels with land use designation or VMT per service population at Buildout for land use designation that do not exist in the base year.
2 – These land use designations are not anticipated to produce substantial VMT, as they have no residents and few to not employees.
Source: Fehr & Peers, 2024

2.5 Traffic Operations Analysis

2.5.1 Intersection Operations

This study analyzes intersection operating conditions using delay as the primary measure of operational performance, using procedures and methodologies contained in the Highway Capacity Manual, 6th Edition (Transportation Research Board, 2017) as implemented with the Synchro software for the signalized intersections and AASIDRA software for roundabouts. The HCM methodology determines delay at signalized and all-way stop controlled intersections based on the weighted average control delay per vehicle at the intersection. At side-street stop-controlled intersections, the delay is calculated for each movement. **Table 6** summarize the intersection performance targets.

Table 6: Intersection Performance Targets

Intersection Control	Delay (Seconds)
Stop (Side-Street & All-Way)	< 35.1
Signal	< 55.1
Roundabout	< 35.1

Source: *Highway Capacity Manual 2016*, Transportation Research Board, 2016.

2.5.2 Roadway Operations

Study roadways were analyzed by comparing daily (two-way total) roadway segment volumes to establish design targets identified in Table 9 of the *City of Elk Grove Transportation Guidelines, July 2023*. **Table 7** summarize the roadway performance targets.

2.5.3 General Plan Consistency

A Project may be inconsistent with the General Plan if it causes an intersection or roadway segment to operate in excess of the performance target. However, the City may allow deviations from these metrics when accounting for both roadway and intersection operations and the effectiveness of the improvements with the character of the surrounding area, the cost to complete the improvement, and ongoing maintenance obligations (General Plan policy MOB-1-3).

Table 7: Roadway Segment Performance Targets

Facility Type	Number of Lanes	Median	Speed (mph)	Average Daily Traffic Design Target (Number of Vehicles)
Collector/Arterial	2	No	25	13,600
			30	14,600
			35	15,700
			40	16,600
			45	17,700
			55	18.600
		Yes	25	14,300
			30	15,600
			35	16,500
			40	17,500
			45	18,600
			55	19,600
	4	No	30	29,800
			35	31,600
			40	33,500
			45	35,300
	4	Yes	30	31,400
			35	33,300
			40	35,300
			45	37,200
	5	Yes	45	45,600
	6	Yes	30	46,400
			35	48,900
			40	51,500
			45	54,000
	7	Yes	45	59,400
	8	Yes	45	64,800
			55	72,000
Expressway	4	Yes	55	64,800
	6	Yes	55	97,200
Freeway	4	Yes	55+	74,400
	6	Yes	55+	111,600
	8	Yes	55+	148,800

Source: City of Elk Grove Transportation Analysis Guidelines (Adopted February 2019/Updated December 2019)

2.6 Multimodal Analysis

The analysis methods evaluate the Project's potential adverse effects on transportation facilities and services related to bicycles, pedestrians, and transit. Existing and planned facilities near the Project area were identified to determine if the Project could disrupt current facilities and services or interfere with the implementation of planned ones. The analysis methods used to analyze bicycle, pedestrian, and transit facilities are discussed below.

2.6.1 Bicycle Level of Traffic Stress (LTS)

Bicycle LTS refers to the comfort associated with roadways, or the mental ease people experience riding on them. Metrics for bicycling LTS were developed at the Mineta Transportation Institute (MTI) and published in the report "Low-Stress Bicycling and Network Connectivity."[3] The criteria establish a "weakest link" approach, as roadways are classified based on their segments with the highest level of traffic stress, assuming that only those that are comfortable riding under the higher stress would travel on that road. Factors influencing LTS include:

- Number of travel lanes
- Speed of traffic
- Number of vehicles
- Presence of bike lanes
- Width of bike lanes
- Presence of physical barrier

Bicycle riders vary in experience, skill, ability, and confidence. As such, they rely on the bikeway system to cater to their specific needs and abilities. Some cyclists are more comfortable riding in traffic and value bikeways and routes that are direct and limit unnecessary delays. They more comfortably utilize facilities that share the roadway with automobiles or have limited bicycle infrastructure. People with limited bicycling confidence and lower or developing skill levels such as children and older adult riders may desire more separation from traffic to feel comfortable enough to ride. Different bicycle types also require more space in bicycle facilities, such as trailers for children or cargo or adult tricycles. For these reasons, facilities should be designed to accommodate the lowest skill levels, especially in heavily traveled areas.

Recent research has correlated these different bicycle riders with the level of "traffic stress" they are willing to experience while cycling. Bicycle LTS criteria span from 1 to 4, with 1 being the least stressful and 4 being the most stressful. **Table 8** summarizes Pedestrian Streetscore LTS.

[3] Mekuria, Maaza C., Peter G. Furth, and Hilary Nixon, (2012). *Low-Stress Bicycling and Network Connectivity*. San Jose, California: Mineta Transportation Institute.

Table 8: Bicycle Streetscore LTS

Streetscore LTS	Description
1	Most children and elderly riders can tolerate this level of stress and feel safe and comfortable. LTS 1 roadways typically require more separation from traffic.
2	This is the highest level of stress that the mainstream adult population will tolerate while still feeling safe.
3	Bicyclists who are considered "enthused and confident" but still prefer having their own dedicated space for riding will tolerate this level of stress and feel safe while bicycling.
4	For bicyclists, this is tolerated only by those characterized as "strong and fearless," which comprises a small percentage of the population. These roadways have high speed limits, multiple travel lanes, limited or non-existent bike lanes and signage, and large distances to cross at intersections.

Figure 3 shows the different LTS riders in a graphical format.

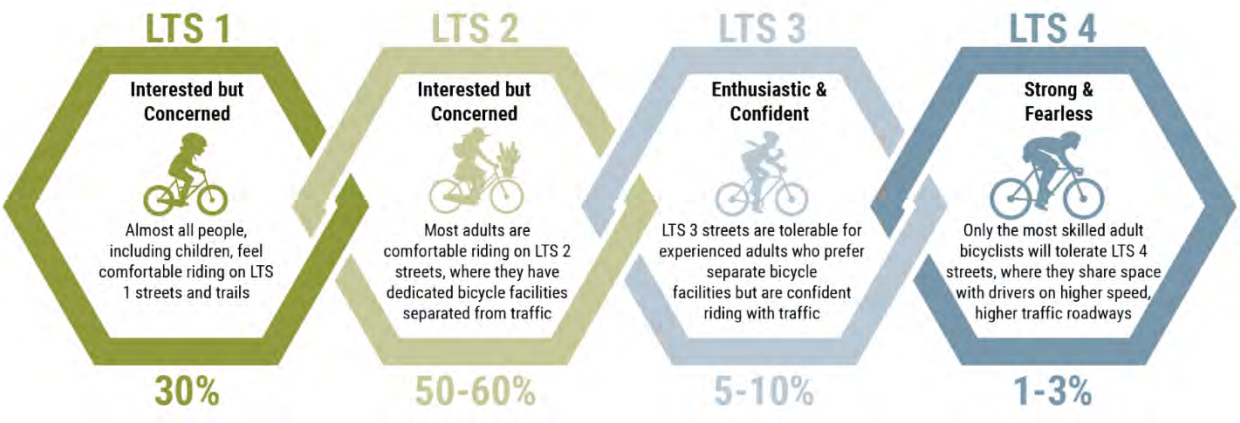


Figure 3: Bicycle Level of Traffic Stress (LTS)

Fehr & Peers Streetscore+ tool was used to analyze the level of traffic stress for bicyclists.

2.6.2 Pedestrian LTS

The Pedestrian LTS refers to the pedestrian comfort associated with a roadway or intersection. The Pedestrian LTS methodology builds on Mekuria, Furth, and Nixon's 2012 *Low Stress Bicycling and Network Connectivity* report and LTS methodology with a corresponding index for pedestrian comfort. A tool to evaluate Pedestrian and Bicycle LTS called Streetscore+ was developed by Fehr & Peers and includes recommended parameters for the pedestrian environment provided by the

NACTO Urban Streets Design Guide (USDG) and additional considerations of comfort informed by practitioner and best practice experience. Roadway segments and intersection approaches receive individual scores based on different considerations. The following factors are considered in developing the Pedestrian Streetscore+ for roadways and intersections:

Roadways	Intersections
Usable sidewalk space	Crossing distance
Driveways	Accessibility
Pedestrian-scale lighting	Channelized right-turns
Street trees and landscaping	Leading pedestrian intervals (LPIs) and pedestrian scrambles
Speed	
Sidewalk quality	
Number of travel lanes	
Heavy vehicle volumes	
Crosswalk frequency	

The Pedestrian Streetscore LTS uses a scale that ranges from 1 to 4, with 1 being the least stressful and 4. **Table 9** summarizes Pedestrian Streetscore LTS. Fehr & Peers Streetscore+ tool was used to analyze the level of traffic stress for pedestrians.

Table 9: Pedestrian Streetscore LTS

Streetscore LTS	Description
1	Highly comfortable, pedestrian-friendly, and easily navigable for pedestrians of all ages and abilities, including seniors or school-aged children walking unaccompanied to school. These streets provide an ideal "pedestrian-friendly" environment.
2	Generally comfortable for many pedestrians, but parents may not feel comfortable with children walking alone. Seniors may have concerns about the walking environment and take more caution. These streets may be part of a "pedestrian-friendly" environment where it intersects with a more auto-oriented roadway or other environmental constraints.
3	Walking is uncomfortable but possible. Minimum sidewalk and crossing facilities may be present, but barriers are also present that make the walking experience uninviting and uncomfortable.
4	Walking is a barrier and is very uncomfortable or even impossible. Streets have limited or no accommodation for pedestrians and are inhospitable and possibly unsafe environment for pedestrians.

2.6.3 Transit Analysis

This analysis focused on evaluation of the Project's potential adverse effects on transportation facilities and services related to transit facilities. The evaluation could include identification of any disruption to existing facilities and services or interference with the implementation of planned facilities and services or create demand for public transit service above the crush load capacity that is provided or planned.

3 VMT Analysis

This chapter presents analysis of Project vehicle miles traveled (VMT), relative to the re-estimated VMT limits and VMT by General Plan land use category presented in **Tables 4 and 5** above.

3.1 VMT Screening

The proposed Project does not qualify for VMT screening due to the Project size, location, and inconsistency with the General Plan land uses (i.e., type and intensity). The Project therefore triggers a need for VMT analysis.

3.2 VMT by General Plan Land Use Category

Project's VMT per service population was estimated by adding the Project to the cumulative GP Buildout scenario using the methodology described in the previous section. **Table 10** summarizes the Projects VMT per service population for proposed land use. The Project exceeds the VMT limit due to its location and lack of proximity to destinations.

Table 10: VMT Performance by Land Use

Land Use Designation	VMT per Service Population for Medium Density Residential
VMT Limit	17.9
Summer Flats Project	18.4
Comparison	+2.8%

Notes:
Calculated Using EGSIM20
VMT limit is – 85% of average base year VMT per service population by land use

3.3 VMT by Study Area Limits

In addition, the City of Elk Grove uses VMT performance targets by VMT limits for the City and study areas, which is an additional step to ensure consistency with the General Plan. Per General Plan MOB-1-1- (a)-(ii), Development projects within the (2017) City limits shall demonstrate that cumulative VMT within the City including the project would be equal to or less than the established Citywide cumulative limit of 8,066,247 VMT (total daily VMT). **Table 11** summarizes the total daily VMT generated by the City Limits with and without the proposed Project.

Table 11: VMT Performance by Study Area

Land Use Designation	Daily Total VMT Generated by the City of Elk Grove Limits
VMT Limit	8,066,247
VMT with Summer Flats Project	8,078,492
Comparison	+0.15%

Notes:
Calculated Using EGSIM20
VMT limit is – Total Daily VMT generated by City of Elk Grove Boundary as per the most recent version of the General Plan Land Use designations from April 2024

4 Intersection and Roadway Performance

This chapter presents analysis of intersection and roadway performance under Existing, Near-Term, and General Plan Buildout conditions, relative to the performance standards in **Tables 8 and 9** presented in Chapter 2.

4.1 Data Collection

Traffic data was collected to establish a baseline for the transportation analysis. The data collection effort focused on key intersections and roadway segments in the project vicinity.

Turning movement traffic counts were collected at two existing study intersections on Tuesday August 20, 2024 and four additional study intersections on Tuesday April 15, 2025, during the AM (7:00 AM to 9:00 AM) and PM (4:00 PM to 6:00 PM) peak periods at the following five intersections:

- Collected on 08/20/2024
    - Waterman Road/Bond Road
    - Waterman Road/Sheldon Road
- Collected on 04/15/2025
    - Elk Grove Florin Road/Bond Road
    - Waterman Road/ Elk Grove Boulevard
    - Elk Grove Florin Road/Elk Grove Boulevard
    - Bradshaw Road/Elk Grove Boulevard

Daily roadway segment counts collected on Tuesday April 25, 2024 for the following 12 segments:

- Waterman Road – Sheldon Road to Bond Road
- Waterman Road –Bond Road to Elk Grove Boulevard
- Waterman Road – Mainline Drive/Dino Drive to Elk Grove Boulevard
- Bond Road – Elk Grove Florin Road to Waterman Road
- Bond Road – Waterman Road to Bradshaw Road
- Bond Road – E Stockton Boulevard to Elk Grove Florin Road
- Elk Grove Florin Road – Sheldon Road to Bond Road
- Elk Grove Florin Road – Bond Road to Elk Grove Boulevard
- Elk Grove Boulevard – Elk Grove Florin Road to Waterman Road
- Elk Grove Boulevard – Waterman Road to Bradshaw Road
- Bradshaw Road – Bond Road to Elk Grove Boulevard
- Elk Grove Boulevard – E Stockton Boulevard to Elk Grove Florin Road

Local schools were in session during data collection, and typical traffic conditions were observed. **Figure 4** shows the daily volumes for project roadway segments.

Supplementary data included a review of existing and planned bicycle, pedestrian, and transit facilities from the *City of Elk Grove Bicycle, Pedestrian, & Trails Master Plan* (May 2021). Collision data for the study area was obtained from the Transportation Injury Mapping System (TIMS) for the most recent three-year period available **2020–2024**.

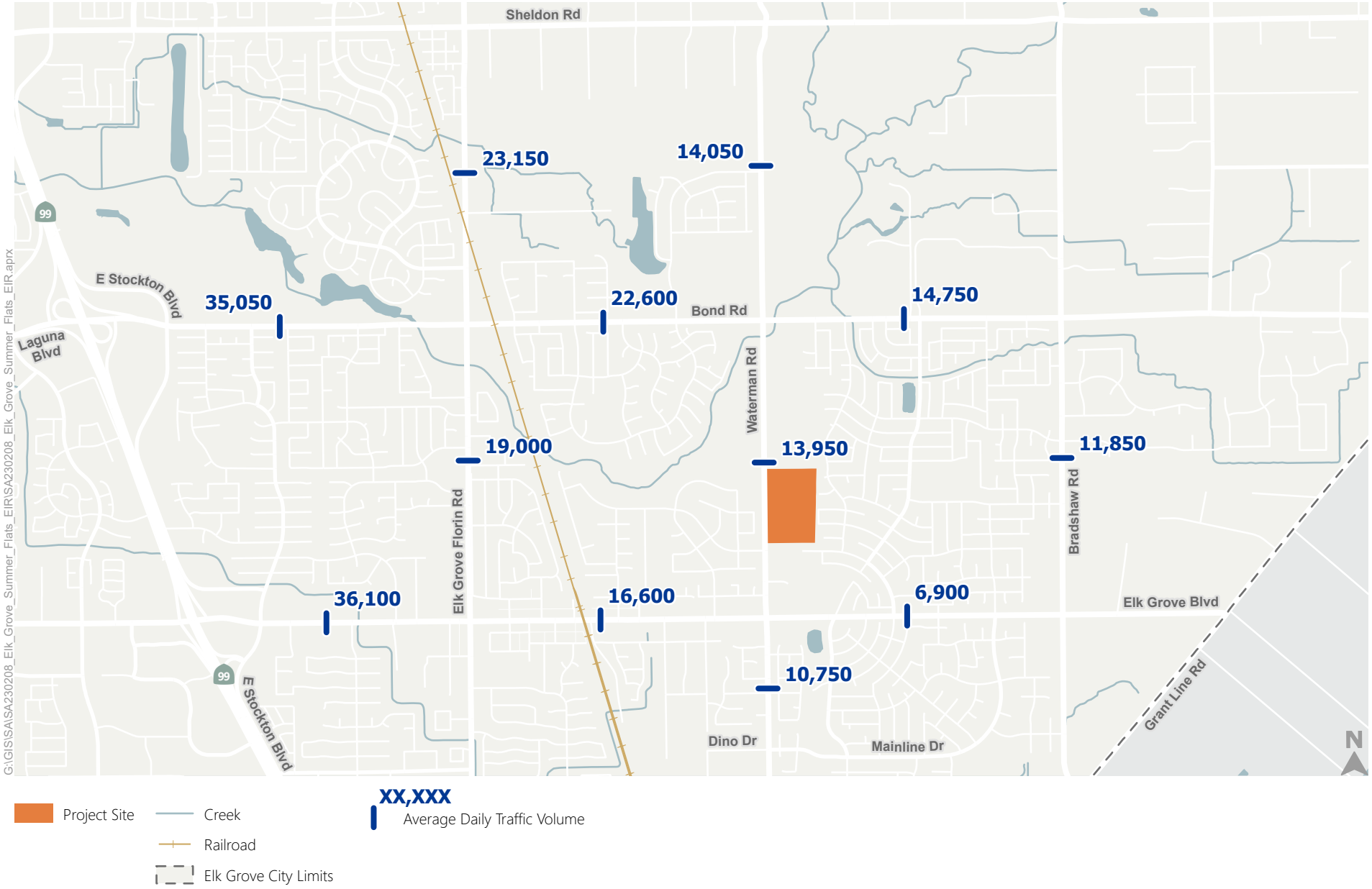


Figure 4

Average Daily Traffic Volume - Existing Conditions

4.2 Existing & Planned Transportation System

4.2.1 Regional Roadways

State Route 99 (SR-99) is a major north-south interstate freeway corridor that connects major cities within Sacramento County and beyond. The closest interchange to the Project site is the Bond Road interchange, which is approximately 3 miles west of the Project site.

4.2.2 Local Roadways

Key local study area roadways area is listed below. The functional classifications (e.g., arterial, collector, etc.) of listed local roadways represent designations identified in the Elk Grove General Plan. The number of lanes and posted speed limits of these roadways were obtained from Google Street View and their average daily traffic volume were collected from the City of Elk Grove traffic count repository.[4]

- **Sheldon Road** is an east–west roadway that extends from Grant Line Road at the eastern edge of City of Elk Grove to Bruceville Road to the west and is subject to the Elk Grove Rural Road Improvement Policy. The Project proposes three access driveways along Sheldon Road between Waterman Road and Valerie Way. The Sheldon Road/Waterman Road intersection has recently been improved to a roundabout with at-grade bicycle and pedestrian crossings. Sheldon Road is configured as a four-lane arterial between Bruceville Road and Jocelyn Way/Luis Stein Road, expands to six lanes between Jocelyn Way/Luis Stein Road and Power Inn Road, then reduces to four lanes until Elk Grove Florin Road, and finally transitions to a two-lane roadway up to Grant Line Road. The posted speed limit near the Project site is 40 mph and continues at this limit both east and west of the site. In May 2023, the average daily traffic volume on Sheldon Road was approximately 11,100 vehicles between Waterman Road and Bradshaw Road, and about 13,800 vehicles between Elk Grove Florin Road and Waterman Road.
- **Waterman Road** is a north–south roadway that extends north of Vintage Park Drive in the Sacramento County to Grant Line Road in the City of Elk Grove. The Project proposes one access driveway along Waterman Road between Sheldon Road and Crowell Drive. The segments of Waterman Road within a half mile north and south of Sheldon Road are subject to the Elk Grove Rural Road Improvement Policy. Waterman Road is generally a two-lane arterial throughout its length. In September 2020, the average daily traffic volume was about 10,300 vehicles south of Bond Road. The posted speed limit is 45 mph
- **Bradshaw Road** is a north–south arterial less than half a mile east of the Project, extending from Folsom Boulevard in Sacramento County to Grant Line Road in Elk Grove. It is generally a two-lane roadway. On May 24, 2023, the average daily traffic volume north of Bond Road was about 19,500 vehicles. The posted speed limit is 45 mph.
- **Elk Grove Florin Road** is a north–south arterial extending from Florin Road in Sacramento County to East Stockton Boulevard in Elk Grove. North of Florin Road, Elk Grove Florin continues as South Watt Avenue and provides regional connection to the City of Sacramento. Elk Grove Florin Road is generally a four-lane roadway between Florin Road and Gerber Road, widens to five and then six lanes south of Gerber Road until Sheldon Road, continues as four

[4] The counts were collected on Tuesday April 25, 2023.

lanes up to Bond Road, and finally transitions to two lanes. In September 2020, the average daily traffic volume was about 26,700 vehicles south of Calvine Road, and on September 22, 2021, about 22,800 vehicles between Sheldon Road and Bond Road. The posted speed limit is 45 mph.

- **Rancho Drive** is a local east–west roadway that intersects Waterman Road at the southwestern corner of the Summer Flats project site. It extends eastward from Waterman Road, serving nearby residential areas. The project site is located immediately northeast of the Waterman Road and Rancho Drive intersection, making Rancho Drive an important connection. Rancho Drive is a two-lane roadway with no median, typical of residential streets in Elk Grove.
- **Bond Road** is an east–west roadway that extends from SR 99 to Grant Line Road. West of SR 99, Bond Road continues as Laguna Boulevard and connects to Interstate 5. The Project is located half a mile north of the Road. Bond Road has four lanes between E. Stockton Boulevard and Bradshaw Road, and two lanes east of Bradshaw Road. The segment east of Bradshaw Road is subject to the Elk Grove Rural Road Improvement Policy. In September 2020, Bond Road had an average daily traffic volume of about 20,800 vehicles east of Elk Grove Florin Road and about 12,600 vehicles east of Waterman Road. The posted speed limit is 45 mph west of Bradshaw Road and 40 mph east of Bradshaw Road.

4.2.3 Collision History

This section analyzes collision data from January 1, 2020 to December 31, 2024, obtained from Transportation Injury Mapping System (TIMS) developed by Safe Transportation Research and Education Center, UC Berkeley[5]. Data used in TIMS is from the California Statewide Integrated Traffic Records System (SWITRS). **Figure 5** illustrates collisions by severity and calls out all bike and pedestrian collisions that resulted in fatalities.

For the analysis, collisions reported within the study area shown in **Figure 5** were analyzed. The study area was finalized such that it included all key roadways near the Project site (Bradshaw Road, Sheldon Road, Elk Grove Boulevard, and Elk Grove Florin Road).

Table 12 shows the number of collisions in the study area and their location by year. A total of 217 collisions were reported in the analysis period of which around 40 percent occurred at intersections and 60 percent occurred mid-block. Further, 28 collisions involved pedestrians or bicyclists. Two collisions resulted in fatality including one involving a pedestrian.

[5] https://tims.berkeley.edu/
The dataset between January 1, 2023 and September 30, 2024 is considered provisional and therefore may change.

Table 12: Collision History Within 1 Mile of the Project

Year	Total Collisions	Location		Involved Party	
		Intersection	Mid-Block	Pedestrian	Bicycle
2020	43	22	21	0	0
2021	41	16	25	1	1
2022	51	27	24	4	10
2023	38	13	25	0	2
2024	44	9	35	4	6
All	217	87	**130**	9	19

Notes: *Includes Fatal Collisions
Sources: SWITRS 2025, TIMS 2025, Fehr & Peers 2025

Collisions that result in some injuries are categorized into the following four degrees of severity:

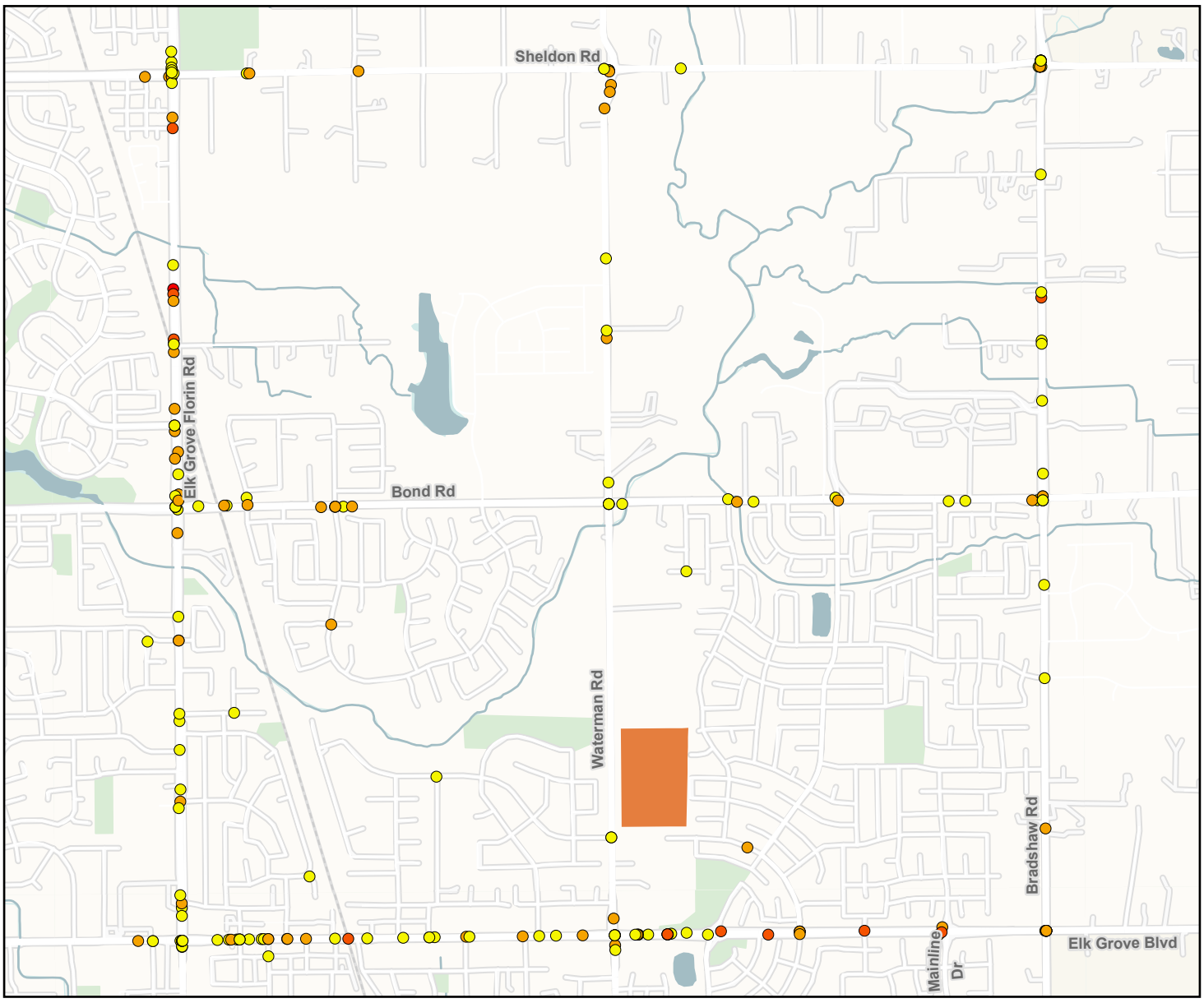
- Fatal
- Severe Injury
- Visible Injury
- Injury

Table 13 describes this data by year of collision for the study area. Around 7 percent of total collisions were identified as KSI (Fatal and Severe Injury) collisions. 32 percent of total collisions resulted in visible injuries and 66 percent resulted in minor injuries.

Table 13: Collision by Severity

Year	Total Collisions	Severity			
		Fatal	Severe Injury	Visible Injury	Injury (Complaint of Pain)
2020	43		1	11	31
2021	41		4	11	26
2022	51	1	2	16	32
2023	38	1	2	15	20
2024	44		5	16	23
All	217	2	14	69	132

Sources: SWITRS 2023, TIMS 2023, Fehr & Peers 2025



Severity

- Fatal Injury
- Suspected Severe Injury
- Suspected Minor Injury
- Posible Injury or Complaint of Pain

Project Site

Figure 5

Fehr & Peers

Collisions by Severity (2020 - 2024)

4.3 Traffic Operations

Turning Movement Counts (TMCs) were collected at two study intersections on Tuesday August 20, 2024 and four additional study intersections on Tuesday April 15, 2025, from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. Counts were recorded for each 15-minute increment during those periods, and the peak hour was defined as the four consecutive 15-minute periods with the greatest total vehicle volume. The AM and PM peak hours for each intersection are listed below. Detailed TMC count sheets with vehicle, bike, and pedestrian volumes can be found in **Appendix A**.

- Collected on 08/20/2024
    - Waterman Road/Bond Road: 7:30 AM – 8:30 AM and 5:00 PM – 6:00 PM
    - Waterman Road/Sheldon Road: 7:45 AM – 8:45 AM and 4:30 PM – 5:30 PM
- Collected on 04/15/2025
    - Waterman Road/Elk Grove Boulevard: 7:30 AM – 8:30 AM and 4:00 PM – 5:00 PM
    - Elk Grove Florin Road/Bond Road: 7:45 AM – 8:45 AM and 4:15 PM – 5:15 PM
    - Elk Grove Florin Road/Elk Grove Boulevard: 7:45 AM – 8:45 AM and 4:15 PM – 5:15 PM
    - Bradshaw Road/Elk Grove Boulevard: 7:30 AM – 8:30 AM and 4:15 PM – 5:15 PM

Under General Plan buildout conditions, roadways are assumed to be built to their ultimate as per the City of Elk Grove General Plan. All signalized intersections are assumed to have standard lane configuration as per the City of Elk Grove design guidelines. This assumes a minimum of two left-turn pockets, two through lanes, and one right-turn pocket. Bradshaw Road and Elk Grove Boulevard is assumed to be signalized in the cumulative conditions. Intersection turning movement volumes, traffic control, and lane configurations under existing and Buildout Conditions are shown on the following figures:

- **Figure 6:** Existing (ENP) Conditions
- **Figure 7:** Existing Plus Project (E+P) Conditions
- **Figure 8:** Near-Term Projects (E+AP) Conditions
- **Figure 9:** Near-Term Projects Plus Project (E+AP+P) Conditions
- **Figure 10:** Cumulative (CNP) Conditions
- **Figure 11:** Cumulative Plus Project (C+P) Conditions

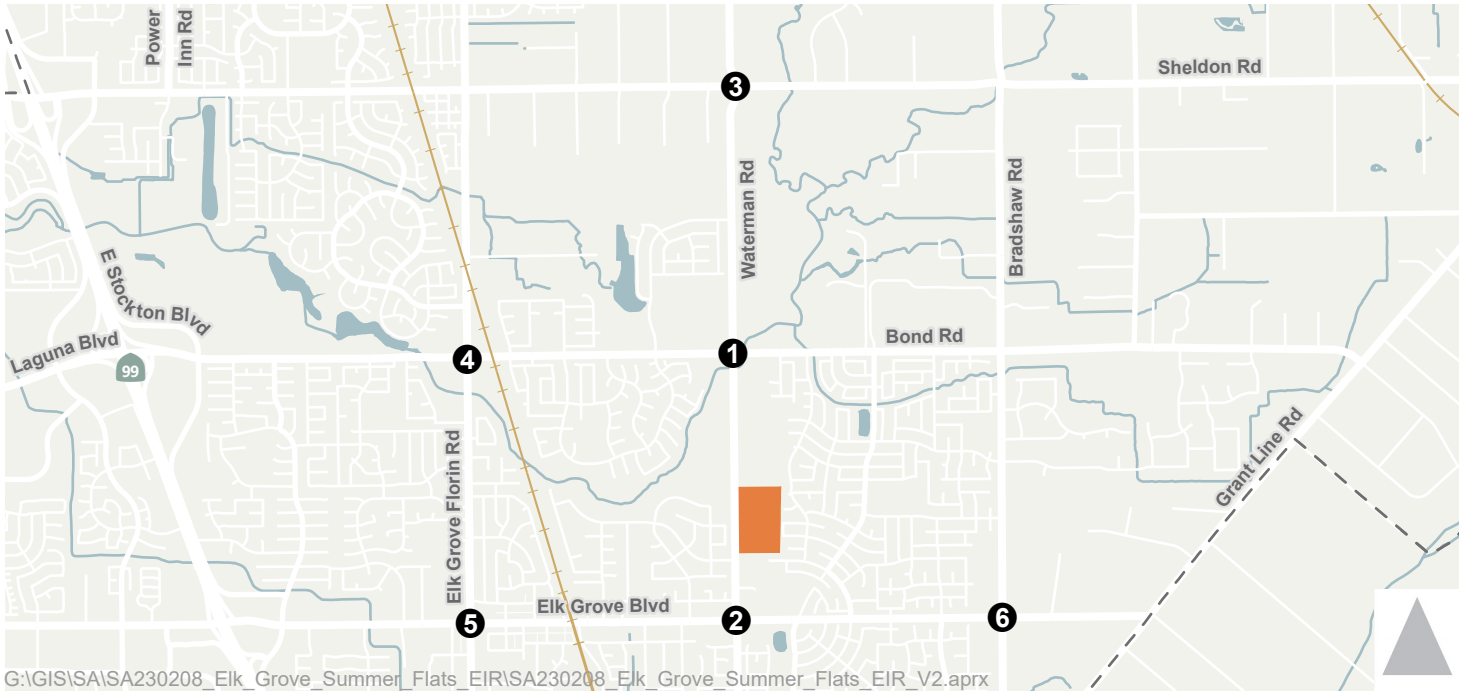
4.3.1 Intersection Operations

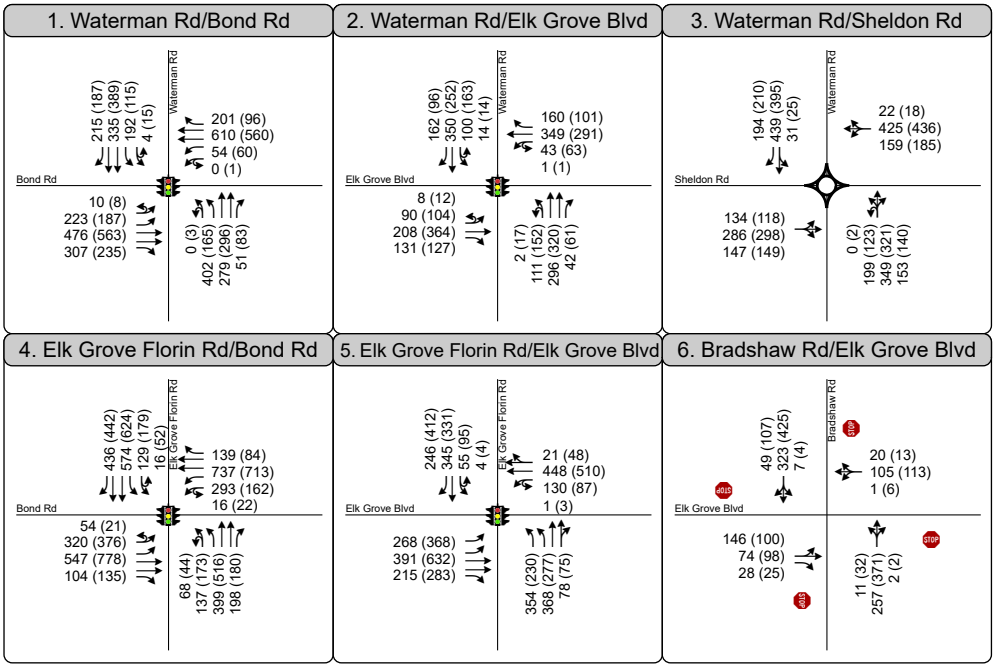
Table 14 summarizes intersection performance under all six scenarios with and without the proposed Project. ***Appendix B*** includes delay reports for intersections for all scenarios. As shown, all study intersections operate acceptably under Existing No Project Existing Plus Project, Near-Term Project, and Near-Term Plus Project conditions during the AM peak hour. Under PM peak hour conditions, Elk Grove Florin Road/Elk Grove Boulevard and Bradshaw Road/Elk Grove Boulevard exceed the delay thresholds under all four existing conditions scenarios. Under Cumulative No Project and Cumulative Plus Project conditions, Waterman Road/Sheldon Road, Elk Grove Florin Road/Bond Road, and Elk Grove Florin Road/Elk Grove Boulevard exceed delay thresholds during both AM and PM peak hour. The project increases delay by a maximum of 3 seconds. All signal timings were optimized under cumulative scenarios. Improvement recommendations to reduce delay are discussed in **Chapter 7**.

Table 14: Intersection Operations

Intersection	Traffic Control	Performance Delay Target	Peak Hour	Delay (seconds)					
				ENP	E+P	E+AP	E+AP+P	CNP	C+P
1: Waterman Road / Bond Road	Signal	< 55.1	AM	43	44	44	45	54	55
			PM	37	37	36	36	42	43
2: Waterman Road / Elk Grove Boulevard	Signal	< 55.1	AM	26	27	27	27	51	52
			PM	25	26	26	26	35	36
3: Waterman Road / Sheldon Road	Roundabout	< 35.1	AM	29	30	30	31	**116**	**119**
			PM	17	19	17	18	**66**	**68**
4: Elk Grove Florin Road / Bond Road	Signal	< 55.1	AM	50	51	53	54	**71**	**71**
			PM	50	50	52	53	**69**	**69**
5: Elk Grove Florin Road / Elk Grove Boulevard	Signal	< 55.1	AM	48	48	48	48	**56**	**56**
			PM	**66**	**66**	**67**	**67**	**79**	**80**
6: Bradshaw Road / Elk Grove Boulevard*	AWSC	< 35.1	AM	17	17	17	17	-	-
			PM	**45**	**46**	**47**	**48**	-	-
	Signal	< 55.1	AM	-	-	-	-	32	32
			PM	-	-	-	-	26	26

Notes:
Delay in **Bold** indicates delays that exceed performance targets.
Delays are rounded to the nearest whole number.
*Intersection 6 is assumed to be signalized under cumulative Conditions
Fehr & Peers 2025





Turn Lane

AM (PM) Peak Hour Traffic Volume

Traffic Signal

Stop Sign

Roundabout

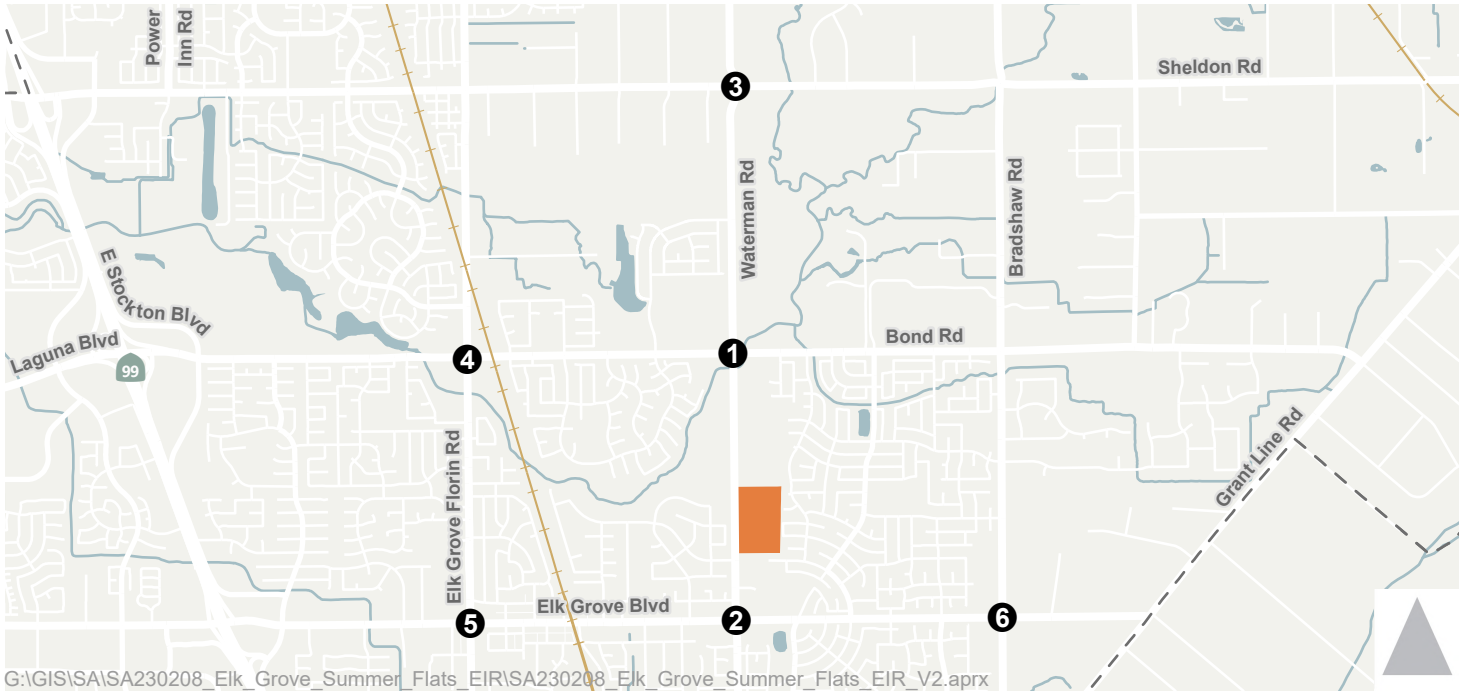
Study Intersection

Project Site

Figure 6

Peak Hour Traffic Volumes and Lane Configurations – Existing Conditions

Fehr & Peers



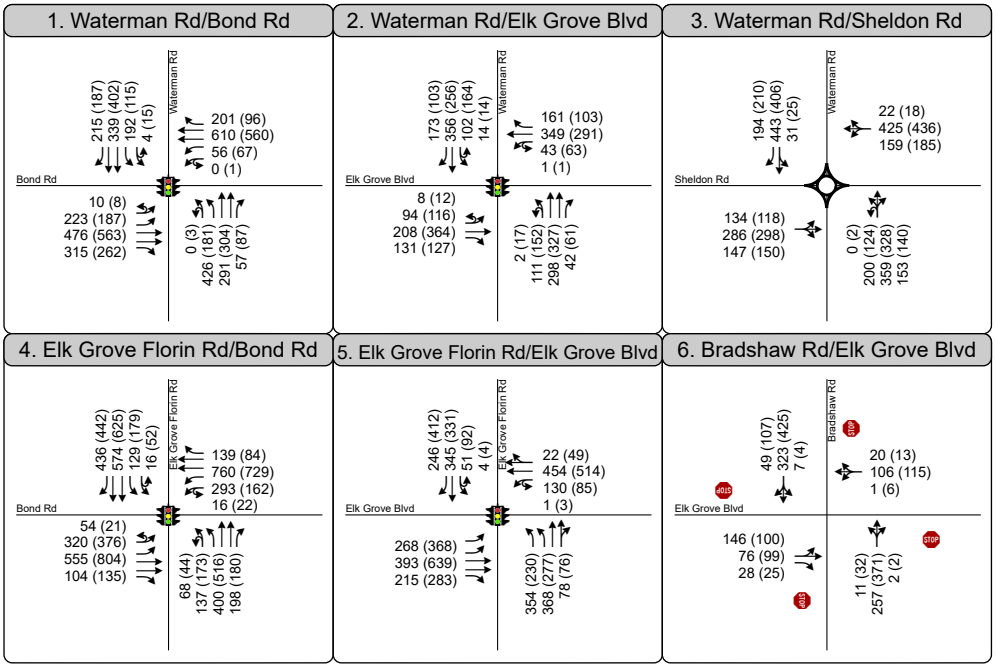
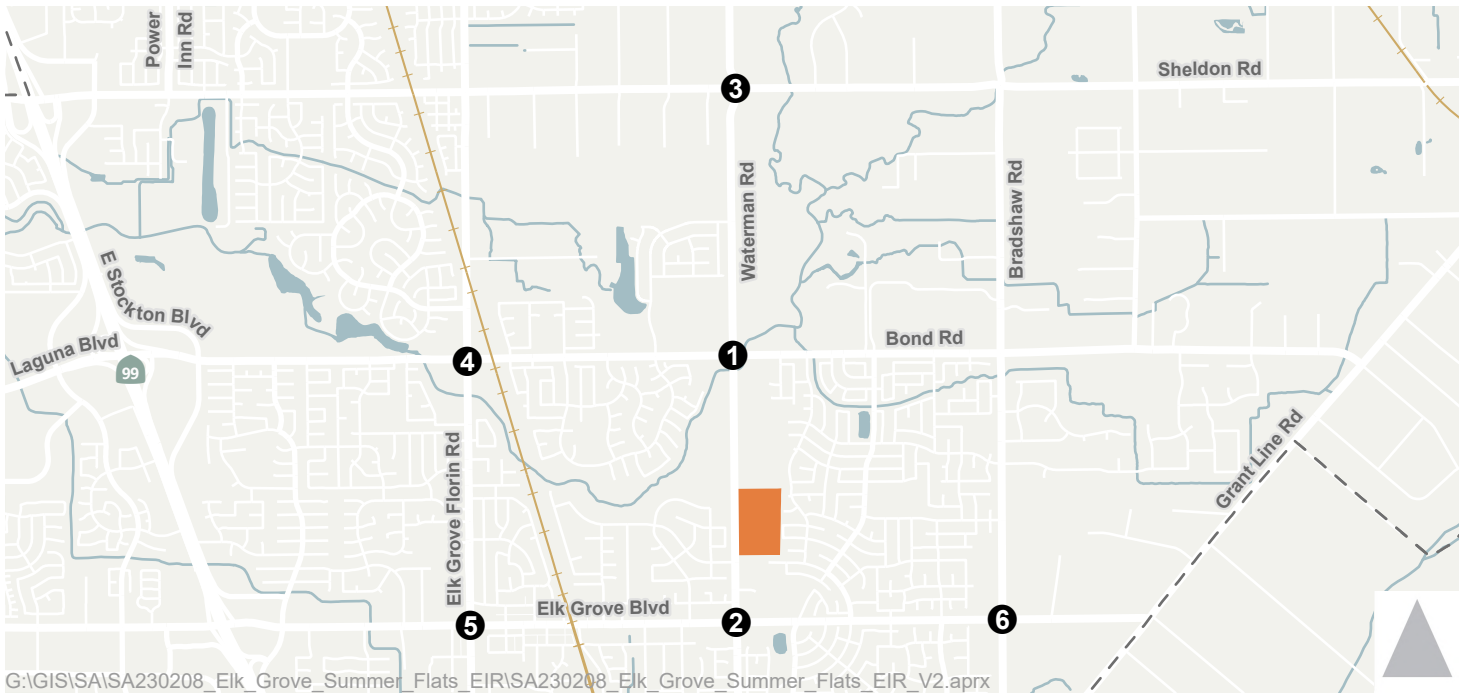


Figure 7

Peak Hour Traffic Volumes and Lane Configurations – Existing Plus Project Conditions

Fehr & Peers



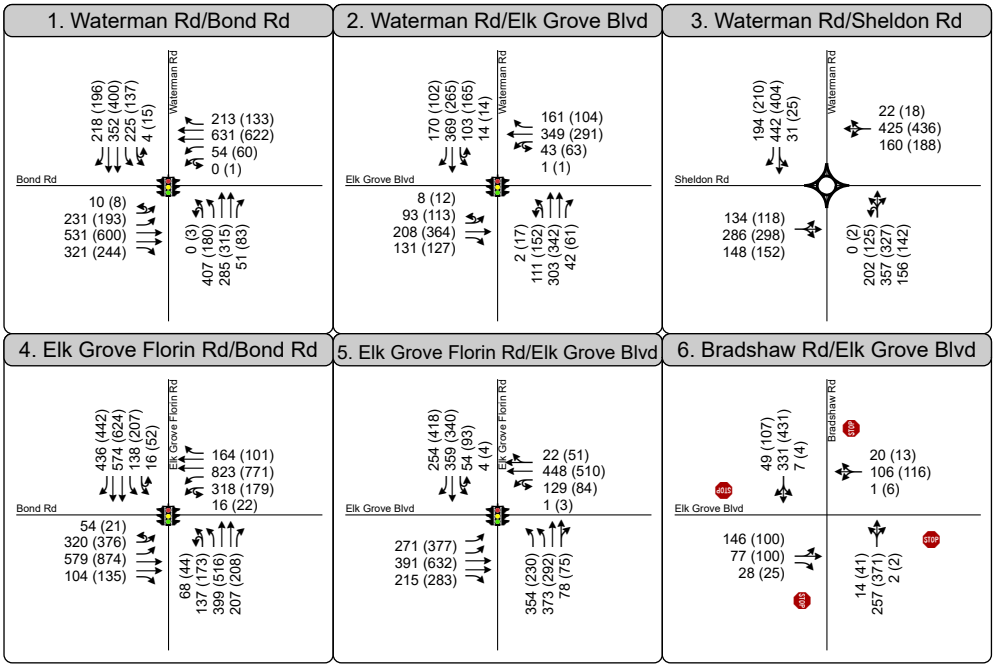
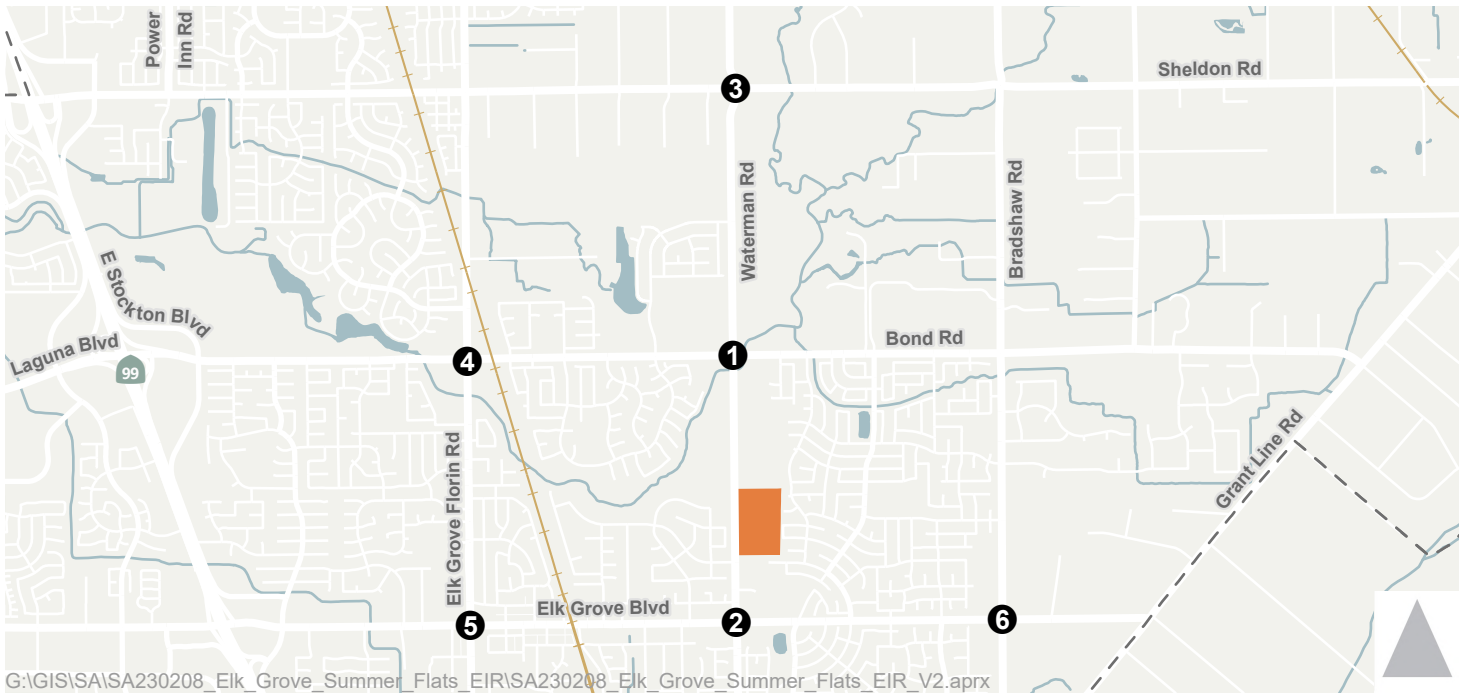
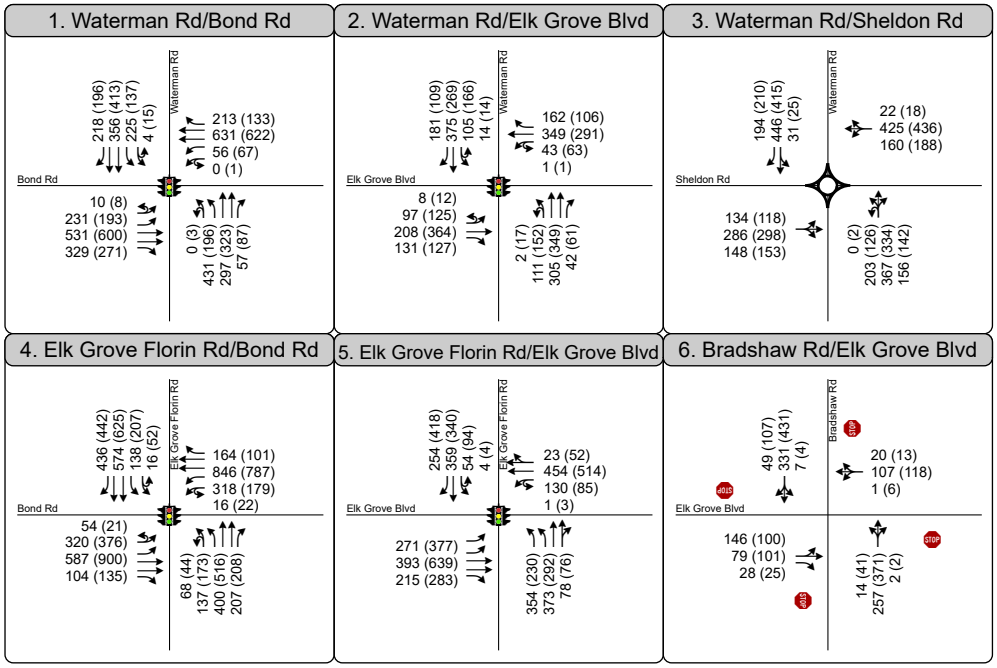


Figure 8

Peak Hour Traffic Volumes and Lane Configurations – Existing Plus Approved Project Conditions

Fehr & Peers





Turn Lane

AM (PM) Peak Hour Traffic Volume

Traffic Signal

Stop Sign

Roundabout

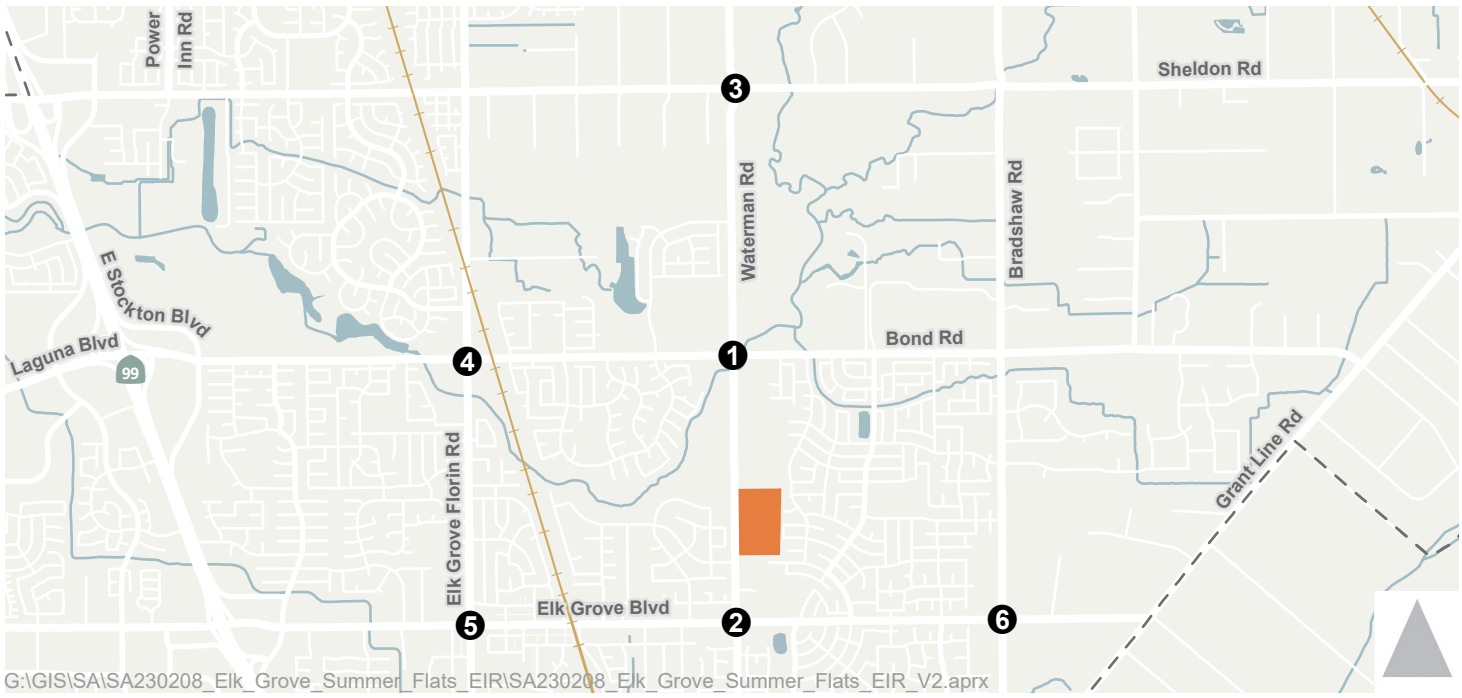
Study Intersection

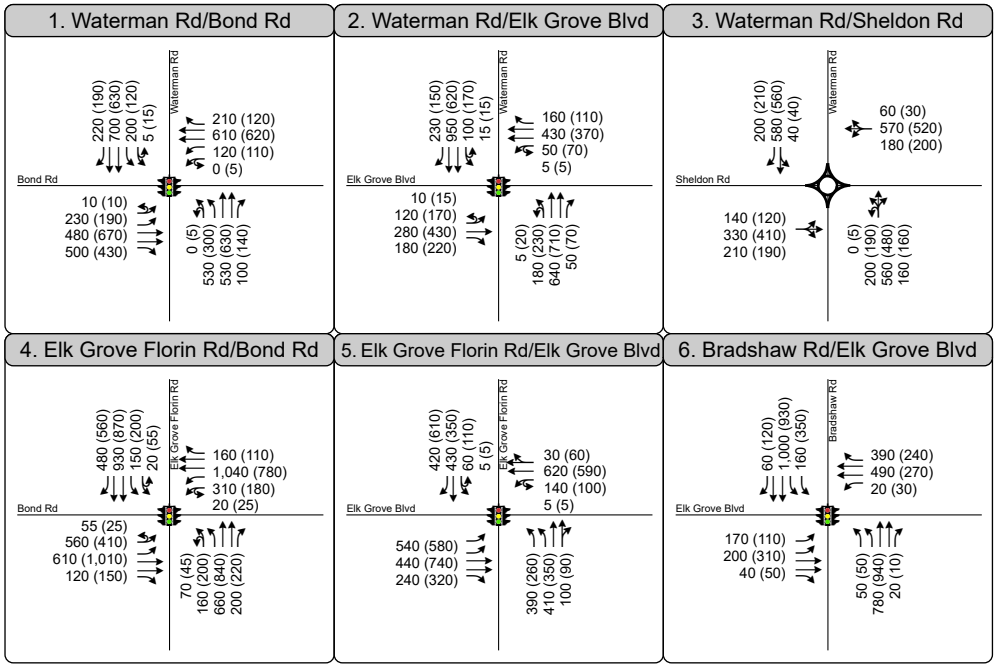
Project Site

Figure 9

Peak Hour Traffic Volumes and Lane Configurations – Existing Plus Approved Projects Plus Project Conditions

Fehr & Peers





Turn Lane

AM (PM) Peak Hour Traffic Volume

Traffic Signal

Stop Sign

Roundabout

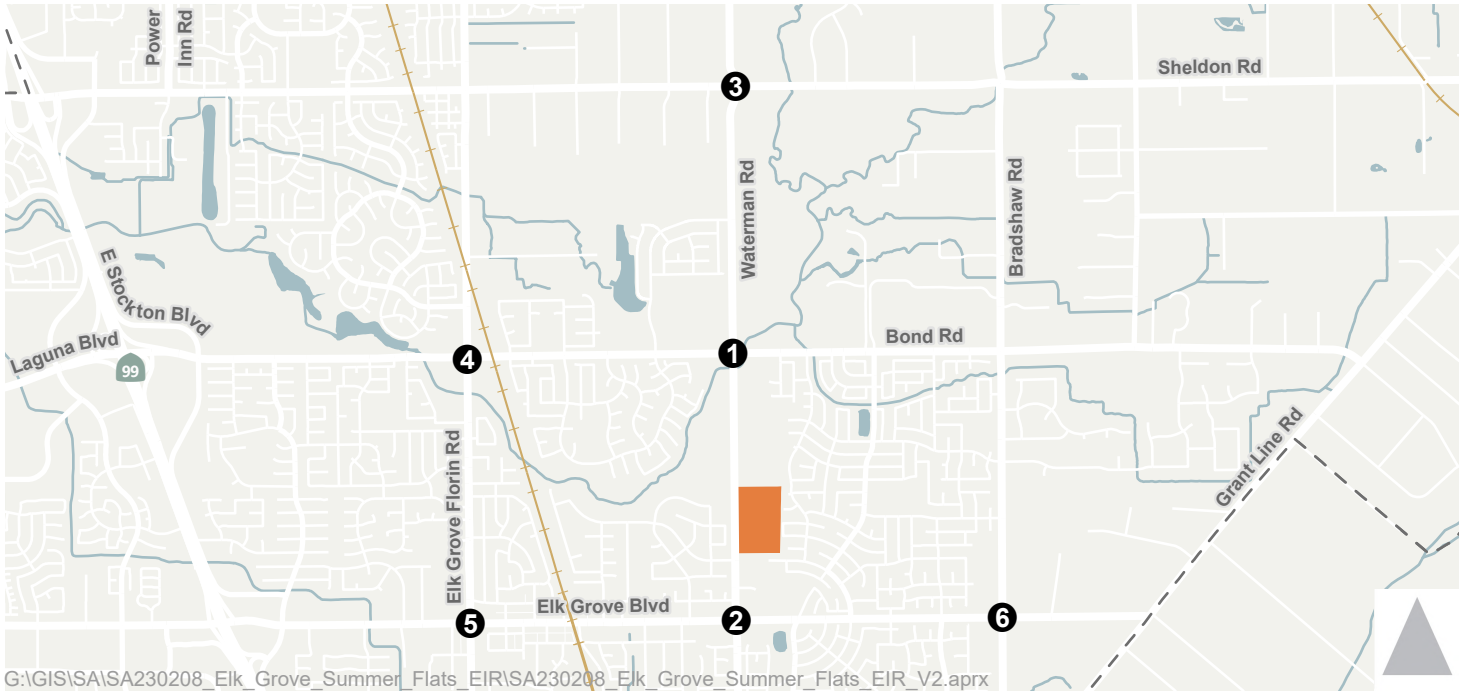
Study Intersection

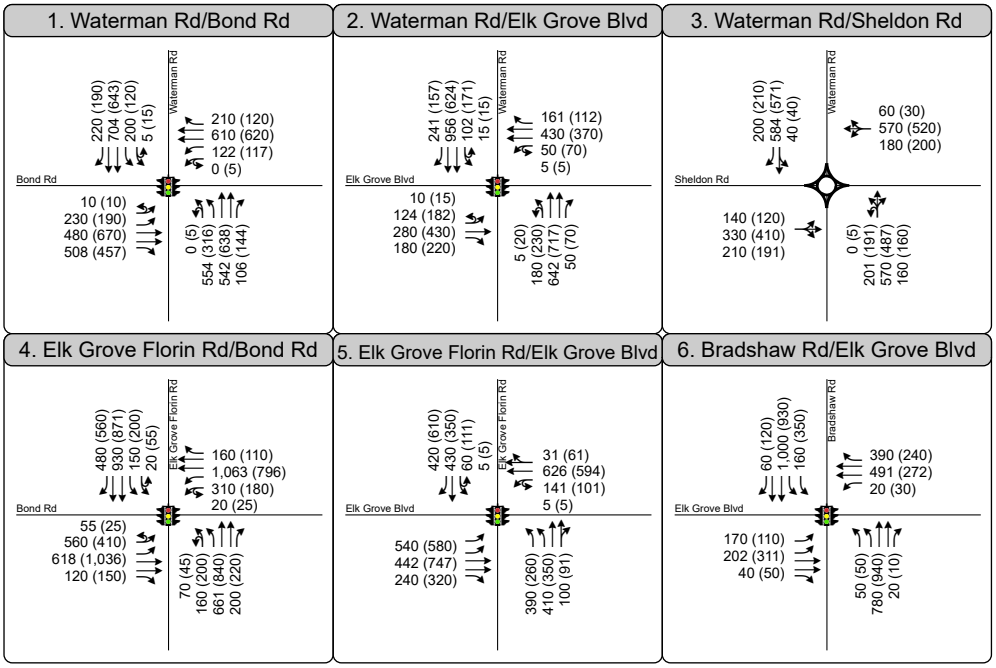
Project Site

Figure 10

Peak Hour Traffic Volumes and Lane Configurations – General Plan Buildout Conditions

Fehr & Peers





Turn Lane

AM (PM) Peak Hour Traffic Volume

Traffic Signal

Stop Sign

Roundabout

Study Intersection

Project Site

Figure 11

Peak Hour Traffic Volumes and Lane Configurations – General Plan Buildout Plus Project Conditions

Fehr & Peers

4.3.2 Roadway Operations

Table 15 summarizes the Average Daily Traffic (ADT) of study roadway segments with or without the Project against the design targets for Existing, Near-Term and Cumulative scenarios consecutively. As shown, the following roadway segments would exceed the average daily design target for all six scenarios:

- Elk Grove Boulevard – Elk Grove Florin Road to Waterman Road

The following roadway segments would exceed the average daily design target for the cumulative and cumulative plus project:

- Waterman Road – Sheldon Road to Bond Road
- Bond Road – E. Stockton Boulevard to Elk Grove Florin Road
- Elk Grove Boulevard – E. Stockton Boulevard to Elk Grove Florin Road

Improvement recommendations are discussed in Chapter 7.

Table 15: Daily Roadway Performance

Roadway	Segment	Existing Conditions				Near-Term Conditions		Cumulative Conditions			
		Lanes	Daily Design Target	ENP	E+P	E+AP	E+AP+P	Lanes	Daily Design Target	CNP	CPP
Waterman Road	Sheldon Road to Bond Road	2	17,700	14,037	14,300	14,400	14,600	2	18,600	**21,000**	**21,300**
	Bond Road to Elk Grove Boulevard	2	17,700	13,962	14,800	14,300	15,000	4	37,200	26,400	27,100
	Elk Grove Boulevard to Mainline Drive	3	27,900	10,753	10,900	11,100	11,100	4	37,200	23,200	23,300
Bond Road	E. Stockton Boulevard to Elk Grove Florin Road	4	37,200	35,038	35,500	36,700	37,100	4	37,200	**41,100**	**41,500**
	Elk Grove Florin Road to Waterman Road	4	37,200	22,622	23,100	25,200	25,600	4	37,200	28,100	28,600
	Waterman Road to Bradshaw Road	4	37,200	14,745	14,900	16,400	16,500	4	37,200	18,600	18,700
Elk Grove Boulevard	E. Stockton Boulevard to Elk Grove Florin Road	4	37,200	36,095	36,300	36,400	36,500	4	37,200	**42,800**	**42,900**
	Elk Grove Florin Road to Waterman Road	2	13,600	**16,606**	**16,800**	**17,000**	**17,100**	2	13,600	**18,300**	**18,500**
	Waterman Road to Bradshaw Road	2	16,500	6,885	7,000	7,200	7,200	4	35,300	10,700	10,800
Elk Grove Florin Road	Sheldon Road to Bond Road	4	37,200	23,159	23,200	23,700	23,600	4	37,200	34,600	34,600
	Bond Road to Elk Grove Boulevard	4	33,300	18,994	19,100	19,500	19,500	4	33,300	25,700	25,700
Bradshaw Road	Bond Road to Elk Grove Boulevard	2	17,700	11,865	11,900	12,000	11,900	4	37,200	31,600	31,600

Notes:
[1]The study segments of Sheldon Road are located in Elk Grove's Rural Area and are subject to the Elk Grove Rural Road Improvement Policy.
[1]The study segments of Waterman Road a half mile north and south of Sheldon Road are in Elk Grove's Rural Area and are subject to the Elk Grove Rural Road Improvement Policy.
Volumes in ***Bold*** indicate daily volumes that exceed daily design targets.
Volumes are rounded to the nearest 100.
Source: Fehr & Peers, 2025

5 Bicycle/Pedestrian/Transit Facilities and Services

This section discusses the conditions of bicycle and pedestrian facilities and transit service with the addition of the proposed Project.

5.1 Existing & Planned Transportation System

5.1.1 Bicycle Facilities

In general, bicycle and pedestrian facilities do not exist in the study area. The shoulders are currently striped as Class II Bicycle Lanes along Sheldon Road to the west of Waterman Road. Sheldon Road/Waterman Road intersection has recently improved roundabout intersection bicycle crossing. *City of Elk Grove Bicycle, Pedestrian, & Trails Master Plan*, May 2021 (BPTMP)[6] has the goal to reduce the percent of arterial streets that are Level of Traffic Stress (LTS) 4 from 84 percent to 70 percent by 2040.

The BPTMP and the Rural Road Improvement standards propose Class II Buffered Bicycle lanes along Waterman along the Project frontage and Class I Multi-Use Path along Sheldon Road between Elk Grove Florin Road and Waterman Road. Class I Multi-Use Path is also proposed along the Project frontage parallel to Waterman Road. Rural Road Improvement standard proposes bike lanes along Sheldon Road within the Rural Residential area of the City.

5.1.2 Pedestrian Facilities

In general, sidewalks are not present on Sheldon Road, Waterman Road, or Bradshaw Road. The City of Elk Grove BPTMP and Rural Road Improvement Standards propose a planned Class I multi use path along Waterman Road that could be used for pedestrian access that will connect to the existing sidewalks on Bond Road and Calvine Road, However, sidewalks are not planned along either Sheldon Road near the Project site.

[6] City of Elk Grove Bicycle, Pedestrian, & Trails Master Plan, May, 2021 https://www.elkgrovecity.org/sites/default/files/city-files/Departments/SPI/BPTMP/May%202021%20Final%20BPTMP%20Plan.pdf

5.1.3 Transit Facilities

There are currently no transit facilities within half a mile of the proposed Project. The nearest bus stops are one mile away at Elk Grove-Florin Road/Sheldon Road (West), Bond Road/Waterman Road (South), and Calvine Road/Waterman Road (North). There are four current bus routes operated by Sacramento Regional Transit (SacRT) that serve these three bus stops.

- **Route E114** is a local route that provides service between Bradshaw Christian High School and Sheldon High School at Bradshaw Road and Calvine Road. This route serves Cosumnes River College through to the Laguna and Laguna West neighborhoods. This route operates Monday through Friday from approximately 6:00 AM to 8:00 PM and from 7:00 AM to 5:30 pm on Saturdays. Generally, the route runs hourly. The nearest stop is at Calvine Road and Waterman Road one mile north of the Project.
- **Route E115** is a local route that provides service from Elk Grove Boulevard at Clarke Farms Drive to Cosumnes River College via Bond Road and Sheldon Road. This route runs Monday through Friday from approximately 6:00 AM to 8:00 PM Westbound to Cosumnes River College and 8:30 AM to 9:00 pm Eastbound. The nearest stop is 1-mile west of the Project at Sheldon Road and Elk Grove-Florin Road.
- **Route E19** is a commuter route that provides service from the Laguna West at Harbour Point Drive to the Butterfield Light Rail Station on Folsom Boulevard. This route runs every hour Monday through Friday from 5:00 AM to 7: AM heading to the Light Rail Station and returning every hour from 3:00 pm to 5:00 pm. The nearest stop is one mile west at Sheldon Road and Elk Grove-Florin Road.
- **Route E15** is a commuter route that provides service from Bond Road at Bradshaw Road near Katherine Albiani Middle School/Pleasant Grove High School to Downtown Sacramento. This route provides two buses towards Sacramento in the morning at 6:15 AM and 6:45 AM and two buses returning to Elk Grove in the evening at 4:15 PM and 4:45 PM. The nearest stop is one-mile northwest at Bond Road and Elk Grove-Florin Road.
- **SmaRT Ride** is an on-demand service operated by SacRT and is similar to other ride-share services where customers can use a smartphone app to request a ride that will pick up and drop off passengers within the service boundaries. The Project is within the Elk Grove SmaRT Ride zone. This offers corner-to-corner service where passengers are picked up and dropped off at the nearest corner or 'virtual bus stop,' which is usually within a block or two of their pickup or drop-off location. However, SmaRT ride services do not provide service outside of the zone. SmaRT Ride is available Monday through Friday from 7 AM. to 7 PM.

5.2 Multimodal Traffic Level of Stress

5.2.1 Bicycle Streetscore LTS

The BPTMP designates Waterman Road as LTS 3 north of the Project and LTS 4 south of the project frontage. Bond Road is designated as LTS 4 west of the site and LTS 4 east of Bradshaw Road. All approaches at Waterman Road and Bond Road intersection are also designated as LTS 4. **Table 16** summarizes Bicycle Streetscore LTS with the addition of the proposed Project on Waterman Road and Bond Road. As shown in **Table 16,** the LTS will remain unchanged with the addition of the proposed Project. The LTS score is due primarily to the travel speed and lack of bicycle infrastructure on Waterman and Bond Road. The proposed Project does not include accommodation for any off-site bicycle improvements. However, as detailed in Section 6.3.3, the Project would expand the Waterman Road ROW along the frontage of the property, ranging in width from 72 to 73 feet and including a total of four 11- to 11.5-foot vehicle travel lanes (two in each direction) and one 11-foot median with a portion designed as a two-way left turn lane, a 5-foot shoulder, and an attached 3-foot wide curb and gutter. The proposed frontage improvements would also include a 32.5-foot-wide landscape corridor, featuring a 10-foot-wide Class I multi-use path. The existing half ROW is 25 feet along the Project frontage. These improvements may enhance local bicycle access but do not alter the overall LTS of the analyzed segments, as they are limited to the project frontage.

Table 16: Bicycle Street Score LTS – Existing Conditions

Roadway	Segment	LTS	
		Existing	Existing With Project
Bond Road	Waterman Road to Bradshaw Road	4	4
	Waterman Road to Elk Grove Florin Road	4	4
Waterman Road	Bond Road to Elk Grove Boulevard	4	4
	Bond Road to Sheldon Road	3	3

Source: Fehr & Peers, 2025; based on City of Elk Grove Bicycle, Pedestrian, & Trails Master Plan (May 2021)

5.2.2 Pedestrian Streetscore LTS

Table 17 summarizes Pedestrian Streetscore LTS with the addition of the proposed Project on Waterman Road and Bond Road. As shown in **Table 17**, the LTS will remain at LTS 4 with addition of the proposed Project. The LTS score is due primarily to the lack of pedestrian facilities on the study roadways and travel speed. The proposed Project does not include accommodation for any off-site pedestrian improvements. However, as detailed in Section 6.3.4, the Project proposes frontage improvements which include a 32.5-foot-wide landscape corridor, featuring a 10-foot-wide Class 1 Multi-Use Path. The east side of the Project includes a 12-foot open space trail that connects to the existing north/south trail along the west side of the East Park neighborhood. The Project provides accessible and safe pedestrian connections between buildings and adjacent streets. The proposed improvements will accommodate the pedestrian trips generated by the Project. These improvements

may enhance local pedestrian access but do not alter the overall LTS of the analyzed segments, as they are limited to the project frontage.

Table 17: Pedestrian Street Score LTS – Existing Conditions

Roadway	Segment	LTS	
		Existing	Existing With Project
Bond Road	Waterman Road to Bradshaw Road	4	4
	Waterman Road to Elk Grove Florin Road	4	4
Waterman Road	Bond Road to Elk Grove Boulevard	4	4
	Bond Road to Sheldon Road	4	4

Source: Fehr & Peers, 2025; based on City of Elk Grove Bicycle, Pedestrian, & Trails Master Plan (May 2021)

6 Impacts and Mitigation Measures

This chapter identifies Project-specific and cumulative impacts of the proposed Project. Impact statements are provided for the topics of VMT and roadway safety, which are the criteria used to evaluate roadway system impacts. Impact statements are also provided for the bicycle, pedestrian, and transit systems. Mitigation measures are recommended for significant impacts.

6.1 Regulatory Background

The following regulations, policy and guidelines are relevant to the transportation analysis.

6.1.1 SB 743

SB 743, passed in 2013, required the California Governor's Office of Planning and Research (OPR) to develop new CEQA guidelines that address traffic metrics under CEQA. As stated in the legislation, upon adoption of the new guidelines, "automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment pursuant to this division, except in locations specifically identified in the guidelines, if any." In December 2018, OPR published *Technical Advisory on Evaluating Transportation Impacts in CEQA ("Technical Advisory")*, which provided guidance for implementing SB 743. On December 28, 2018, the Resources Agency adopted CEQA Guidelines Section 15064.3. Under this guideline, VMT is the primary metric used to identify transportation impacts. On July 1, 2020, the provisions of Section 15064.3 became effective statewide.

6.1.2 City of Elk Grove General Plan

The City of Elk Grove General Plan, amended December 2023, is a fundamental planning document that directs future growth, development, and conservation policy and reflects the long-range vision of the community. The Mobility chapter of the General Plan contains policies designed to further the City's mobility strategy. The Mobility chapter incorporates and expands the City's complete streets policies; supports key implementation tools, such as the Bicycle, Pedestrian, and Trails Master Plan, the Transportation Analysis Guidelines, and the Climate Action Plan; and identifies measures to support alternative transportation investments, as well as transit-friendly and active transportation-friendly development. It should be noted that a Project's effect on automobile delay is no longer a consideration when identifying a significant impact under CEQA.

6.1.3 City of Elk Grove Transportation Analysis Guidelines

Transportation Analysis (TA) Guidelines, updated December 2023, provides guidance regarding the City's preferred methods for conducting transportation analysis. The TA guidelines incorporate various elements of the Technical Advisory, OPR, but refinements and clarifications have been added to reflect local conditions. The guidelines also include requirements for multimodal (bicycle, pedestrian, and transit) transportation analysis, hazards related to design, on-site circulation, and construction. Currently, the City is updating its Transportation Analysis Guidelines. Table 9 of the

guidelines also establishes design targets for roadway segments based on the daily two-way total volumes

6.1.4 City of Elk Grove Rural Road Improvement Policy and Standards

The *City of Elk Grove Rural Road Improvement Policy* updated December 2019 is intended to preserve and maintain the rural roadways in the City's rural residential area. This policy establishes a value-based approach for incremental (rather than ultimate) road improvements that solve specific traffic issues identified through periodic evaluations of traffic conditions. Road improvements within the City's defined rural residential area shall be implemented in response to traffic impacts. This policy implements the General Plan goals, policies, and actions.

6.1.5 City of Elk Grove Bicycle, Pedestrian, and Trails Master Plan

The *City of Elk Grove Bicycle, Pedestrian, and Trails Master Plan* (BPTMP), May 2021 is intended to guide and influence pedestrian, bicycle, and trail policies, programs, and development standards to make biking and walking in the City more safe, comfortable, convenient, and enjoyable for all community members. The goal of the master plan is to increase the number of persons who walk and bicycle for transportation to work, school, and errands and for recreation. The plan identifies existing facilities, opportunities, constraints, destination points for bicycle users and pedestrians, and proposed bicycle and pedestrian improvements.

The Rural Road Improvement Standards implement the General Plan goals, policies, and actions. These standards implement the provisions of the Land Use and Circulation Elements regarding the maintenance of features that create the rural character. This document replaces the Citywide Improvement Standards for design details associated with road improvements for the City's designated rural/residential area.

6.2 Thresholds of Significance

The following thresholds of significance are used to evaluate the significance of Project impacts to the roadway, bicycle, pedestrian, and transit systems. The significance criteria used to evaluate Project impacts on transportation under CEQA are based on Appendix G of the State CEQA Guidelines, as well as thresholds of significance adopted in the City General Plan and the City Transportation Analysis Guidelines. The following describes the significance criteria used to identify impacts on the transportation for the proposed Project.

6.2.1 VMT

City of Elk Grove, as a part of the current General Plan update, has developed a City of Elk Grove travel demand model (EGSIM20). EGSIM20 is a modified version of the latest ABM developed by Sacramento Area Council of Governments (SACOG) known as SACSIM19. With the development of EGSIM20 and associated calibration and revalidation, the VMT performance measures were re-estimated to provide a consistent basis of evaluating the Project, a key requirement of SB 743, to ensure that the effects of the Project are accurately identified.

- Land Use Limits – Sum of all vehicle miles traveled produced by uses in the applicable land use designation, divided by the sum of total employees working within the assessed area and dwelling units in the assessed area. An impact on VMT would be significant if implementation of the Project would result in an exceedance of the VMT limits of the Project's following General Plan land use designations, which incorporate a 15 percent reduction for existing (i.e., 2020) condition:
    - Medium Density Residential – 17.9 daily VMT per service population
- Study Area Limits – Sum of all daily vehicle miles traveled produced by all uses within the City or applicable Study Area. An impact on VMT would be significant if implementation of the Project would result in an exceedance of the established 8,072,194 total daily VMT within the City Limits.

6.2.2 Bicycle Facilities

An impact would be significant if implementation of the Project would:

- Disrupt existing or planned bicycle facilities or conflicts with adopted City non-auto plans, guidelines, policies, or standards.
- Add trips to an existing transportation facility or service (e.g., bike path) that does not meet current design standards.
- Degrade the Bicycle Streetscore LTS.

6.2.3 Pedestrian Facilities

An impact would be significant if implementation of the Project would:

- Fail to provide accessible and safe pedestrian connections between buildings and adjacent streets and transit facilities.
- Disrupt existing or planned bicycle facilities or conflicts with adopted City non-auto plans, guidelines, policies, or standards.
- Add trips to an existing transportation facility or service (e.g., sidewalk) that does not meet current design standards.
- Degrade the Pedestrian Streetscore LTS.

6.2.4 Transit service and facilities

An impact would be significant if implementation of the Project would:

- Create demand for public transit service above the crush load capacity that is provided or planned.
- Disrupt existing or planned transit facilities and services or conflicts with adopted City non-auto plans, guidelines, policies, or standards.

6.2.5 Transportation Hazards Related to Geometric Design Feature or Incompatible Uses

An impact would be significant if implementation of the Project would:

- Result in designs for on-site circulation, access, and parking areas that fail to meet City or industry standard design guidelines.

6.2.6 Emergency Access

An impact would be significant if implementation of the Project would:

- Result in inadequate emergency access.

6.3 Project Specific Impacts

6.3.1 Impact 1: VMT – Land Use Limits

The Project's VMT performance was analyzed in a comprehensive manner that considered its relative VMT efficiency per service population. **Table 10** shows VMT per service population for the medium-density residential Project, which exceeds the VMT limit by 2.8 percent.

Therefore, the Project's residential land use VMT performance would be considered **significant**.

6.3.2 Impact 2: VMT – Study Area Limits

Table 11 shows the total daily VMT generated by the City of Elk Grove with the Project exceeds the General Plan Buildout VMT limit by 0.15 percent.

Therefore, the Project's Study Area VMT performance would be considered **significant**.

6.3.2.1 Mitigation Measures 1 & 2: VMT Reduction Strategies

The City of Elk Grove Transportation Analysis Guidelines identifies the following five categories of VMT reductions:

- Category A – Land Use/Location
- Category B – Site Enhancement
- Category C – Transit System Improvements
- Category D – Commute Trip Reductions
- Category E – In-Lieu Fee

Projects in growth areas must incorporate the highest available reductions through Category A and/or Category B reduction strategy first (as determined by the City) before utilizing strategies in other categories.

Mitigation actions that could lessen this impact include those that would reduce the number of vehicle trips generated by the Project's residential component. This could be accomplished by changing the proposed land uses, the Project design, or by implementing transportation demand management (TDM) strategies. TDM strategies can result in reductions to a Project's vehicle trip generation based on certain types of Project site modifications, programming, and operational changes.

Prior to occupancy of the residential units, the applicant shall implement TDM strategies to reduce the number of vehicle trips that would be generated by the Project's residential component. Potential TDM strategies range from site design characteristics to on-going parking management and commute travel programs.

The California Air Pollution Control Officers Association (CAPCOA) Handbook for Analyzing GHG Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (December 2021) identifies numerous TDM strategies and quantifies their potential vehicle trip reduction effects. While each strategy provides standalone VMT reduction potential, multiplicative dampening[7] limits the VMT reduction potential in instances where multiple strategies are implemented together. The associated VMT reduction potential presented for each strategy represents raw VMT reduction percentages without adjustments for multiplicative dampening and/or category maximums:

6.3.2.1.1 CATEGORY A – LAND USE/LOCATION

1. **Increase residential density (CAPCOA Handbook Strategy T-1)** – This measure accounts for the VMT reduction achieved by a project that is designed with a higher density of dwelling units compared to the average residential density in the United States (9.1 dwelling units/net acre). Increased densities affect the distance people travel and provide greater options for the mode of travel they choose. Increasing residential density results in shorter and fewer trips by single-occupancy vehicles.

   According to CAPCOA, each 0.5 dwelling units/acre increase in residential density (above 9.1 dwelling units/net acre) would result in a reduction of 1 percent of Project VMT, with a maximum reduction potential of 30 percent of Project VMT. Quantifying the efficacy of this strategy would be dependent on the increase to residential densities that could be accomplished by the Project.

   According to CAPCOA, this strategy is most applicable to larger mixed-use development project or projects located withing walking distance of goods and services.

2. **Provide transit-oriented development (CAPCOA Handbook Strategy T-3)** – This measure could reduce Project VMT in the study area relative to the same project sited in a non-transit-oriented development (TOD) location. TOD refers to projects built in compact, walkable areas that have easy access to public transit, ideally in a location with a mix of uses, including housing, retail offices, and community facilities. Project site residents, employees, and visitors would have easy access to high-quality public transit, thereby encouraging transit

[7] Multiplicative dampening captures the reality that many people who would consider using Strategy A overlap with the potential market for Strategy B, and would choose A or B for each trip, but not both A and B.

ridership and reducing the number of single-occupancy vehicle trips and associated GHG emissions.
To qualify as a TOD, the development must be a residential or office project that is within a 10-minute walk (0.5 mile) of a high frequency transit station (either rail, or bus rapid transit with headways less than 15 minutes). Ideally, the distance should be no more than 0.25 to 0.3 of a mile but could be up to 0.5 mile if the walking route to station can be accessed by pedestrian-friendly routes.

The Project is not located near high frequency transit.

6.3.2.1.2 CATEGORY B – SITE ENHANCEMENT

3. **Implement carshare program (CAPCOA Handbook Strategy T-21-A)** – This measure would increase carshare access in the Project site by deploying conventional carshare vehicles. Examples include programs like Zipcar, GIG Car Share, Get around, and Turo. Carsharing offers people convenient access to a vehicle for personal or commuting purposes. This helps encourage transportation alternatives and reduces vehicle ownership, thereby avoiding VMT.

   The Project applicant shall partner with a carshare service provider and ensure that carshare vehicles are available to Project residents prior to occupancy of the first phase of the Project residential component.

   According to CAPCOA, this strategy would have a maximum reduction potential of 0.15 percent of Project VMT. Quantifying the efficacy of this strategy would be dependent on the number of carshare vehicles deployed in the Project area.

6.3.2.1.3 CATEGORY C – TRANSIT SYSTEM IMPROVEMENT

4. **Implement subsidized/discounted transit program (CAPCOA Handbook Strategy T-9A)** – This measure would provide subsidized or discounted, or free transit passes for Project residents. Reducing the out-of-pocket cost for choosing transit improves the competitiveness of transit against driving, increasing the total number of transit trips and decreasing vehicle trips. This decrease in vehicle trips results in reduced VMT.

   According to CAPCOA, this strategy would have a maximum reduction potential of 0.62 percent of Project VMT based on existing transit service performance. Quantifying the efficacy of this strategy would be dependent on the percent reduction in transit fares with this measure and the percentage of Project area transit routes that receive reduced fares.

5. **Extend transit network coverage or hours (CAPCOA Handbook Strategy T-25)** – This measure would expand the local transit network by either adding or modifying existing transit service or extending the operation hours to enhance the service near the Project site.

   According to CAPCOA, this strategy would result in a 0.01 percent reduction in Project VMT for a 1 percent increase in transit service miles or service hours. Based on current transit performance in Elk Grove, this strategy would have a maximum reduction potential of 1.17 percent of Project VMT based on Elk Grove transit system performance. Quantifying the efficacy of this strategy would be dependent on the total transit service miles or service hours in the Project area after expansion.

6. **Increase transit service frequency (CAPCOA Handbook Strategy T-26)** – This measure would increase transit frequency on one or more transit lines serving the plan/community. Increased transit frequency reduces waiting and overall travel times, which improves the user experience and increases the attractiveness of transit service. This results in a mode shift from single occupancy vehicles to transit, which reduces VMT. This strategy would require coordination with regional transit to determine the appropriate transit frequency given the transit market characteristics of the Project site.

   Quantifying the efficacy of this strategy would be dependent on the percent increase in transit frequency and the level of implementation (i.e., the number of transit routes receiving the frequency improvement as a fraction of the total transit routes in the Project area).

   According to CAPCOA, this strategy would have a maximum reduction potential of 2.65 percent of Project VMT based on existing Elk Grove transit service performance.

7. **Implement subsidized/discounted transit program (CAPCOA Handbook Strategy T-29)** – This measure would provide subsidized or discounted, or free transit passes for Project residents. Reducing the out-of-pocket cost for choosing transit improves the competitiveness of transit against driving, increasing the total number of transit trips and decreasing vehicle trips. This decrease in vehicle trips results in reduced VMT.

   According to CAPCOA, this strategy would have a maximum reduction potential of 0.26 percent of Project VMT based on existing Elk Grove transit service performance. Quantifying the efficacy of this strategy would be dependent on the percent reduction in transit fares with this measure and the percent of Project area transit routes that receive reduced fares.

   Strategies described in this mitigation measure that would entail physical modifications to the transportation system shall be consistent with City of Elk Grove design standards and are subject to review and approval by the City Engineer.

6.3.2.1.4 CATEGORY D – COMMUTE TRIP REDUCTION

8. **Community-based travel planning (CAPCOA Handbook Strategy T-23)** – This measure would target residences in the Project area with community-based travel planning (CBTP). CBTP is a residential-based approach to outreach that provides households with customized information, incentives, and support to encourage the use of transportation alternatives in place of single occupancy vehicles, thereby reducing household VMT.

   The Project applicant shall partner with a CBTP service provider such as SacTMA and ensure that CBTP services are available to Project residents prior to occupancy of the first phase of the Project residential component and renewed on an annual basis.

   According to CAPCOA, this strategy would have a maximum reduction potential of 2.3 percent of Project VMT. Quantifying the efficacy of this strategy would be dependent on the number of residences in the Project area that would be targeted with CBTP.

6.3.2.1.5 CATEGORY E – IN-LIEU FEE

9. **Create Communities Facilities District (CDF) –** A CFD is a Special Tax District provided in State Law that funds the installation of public improvements or ongoing services within an identified area. A special tax is levied on taxable property within the district boundaries. Revenue received from the special tax is used to fund the CFD's authorized public facilities and or services. Creating a CDF can help fund ongoing transportation needs such as on-demand transit services, educational services, operation and maintenance of active transportation facilities. CDF will help reduce VMT by providing community-based travel planning.

6.3.2.2 Significance after Mitigation

Implementation of Mitigation Measure TR-1 would reduce residential VMT per capita associated with the Project's residential component by implementing TDM strategies to reduce external vehicle trips generated by Project residents. **Table 18** summarizes potential VMT reduction based on the strategies outlined in Mitigation Measure TR-1.

Table 18: Potential VMT Reduction with TDM Strategies

VMT Category	CAPCOA Strategy[1]		Max Reduction	Potential Reduction Based on Planning Context	Notes
(A) Land Use/Location	T-1	Increase Residential Density	30.00%	5.50%	Assumed max density for residential land use based on maximum density for MDR. (Increase from 12.0 to 15.0). Increase of about 30 DUs.
	T-3	Provide Transit-Oriented Development	31.00%	-	Project is not located near high-frequency transit service.
(B) Site Enhancement	T-21-A	Implement Carshare Program	0.15%	0.15%	
(C) Transit System Improvements	T-9	Implement Subsidized or Discounted Transit Program	5.50%	0.62%	Assumed 100 percent subsidy, so max potential reduction shown. Linear relationship. Reduction is a function of transit system performance.
	T-25	Extend Transit Network Coverage or Hours	4.60%	1.17%	Assumed 100 percent increase in coverage/hours.
	T-26	Increase Transit Service Frequency	11.30%	2.65%	Assumed 300% increase in transit service frequency.

VMT Category	CAPCOA Strategy[1]		Max Reduction	Potential Reduction Based on Planning Context	Notes
(D) Commute Trip Reduction	T-23	Provide Community-Based Travel Planning	2.30%	2.30%	Assumed 100 percent of residents are eligible for program. Recommend considering participation in 50 Corridor TMA as a mechanism to implement this strategy.
(E) In-Lieu Fee	–	Implement Communities Facilities District	N/A	–	Mechanism to fund selected strategies.

[1]Reduction strategies from Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (airquality.org), California Air Pollution Control Officers Association (CAPCOA), December 2021
Source: Fehr & Peers, 2025

Existing evidence indicates that the effectiveness of TDM strategies with regards to vehicle trip reduction can vary based on a variety of factors, including the context of the surrounding built environment (e.g., urban versus suburban) and the aggregate effect of multiple TDM strategies deployed together. Moreover, many TDM strategies are not just site specific, but also rely on implementation and/or adoption by private entities (e.g., elective use of carpool program by residents) and other agencies (e.g., transit service operators). Consequently, the trip reduction outcomes in suburban settings such as that of the Project site are difficult to achieve.

Due to uncertainties regarding the ability for the aforementioned mitigation measure to reduce VMT impacts to less-than-significant levels, VMT impacts would be considered **significant and unavoidable**.

6.3.3 Impact 3: Bicycle Facilities

The internal Project roadways have bicycle infrastructure that will comply with the City's design standard and will ensure adequate and safe access for bikes within the Project site. The Project will add bicycle trips to existing roadways that do have bicycle facilities. The Project would expand the Waterman Road ROW along the frontage of the property, ranging in width from 72 to 73 feet and including a total of four 11- to 11.5-foot vehicle travel lanes (two in each direction) and one 11-foot median with a portion designed as a two-way left turn lane, a 5-foot shoulder, and an attached 3-foot wide curb and gutter. The proposed frontage improvements would also include a 32.5-foot-wide landscape corridor, featuring a 10-foot-wide Class I multi-use path. The existing half ROW is 25 feet along the Project frontage. An additional 28-foot dedication would be required to include a 53-foot half ROW on the east side of Waterman Road fronting the Project.

The Project's impact on bicycle facilities would be **less than significant**. No Mitigation is required.

6.3.4 Impact 4: Pedestrian Facilities

The internal Project roadways have pedestrian infrastructure that will comply with the City's design standard and will ensure adequate and safe access for pedestrians within the Project site. The Project proposes frontage improvements which include a 32.5-foot-wide landscape corridor, featuring a 10-foot-wide Class 1 Multi-Use Path. The east side of the Project includes a 12-foot open space trail that connects to the existing north/south trail along the west side of the East Park neighborhood. The Project provides accessible and safe pedestrian connections between buildings and adjacent streets. The proposed improvements will accommodate the pedestrian trips generated by the Project.

The Project's impact on pedestrian facilities would be **less than significant**. No Mitigation is required.

6.3.5 Impact 5: Transit Facilities and Services

Elk Grove Transit (e-tran), which is currently operated by Sacramento Regional Transit, receives funding from state sources (Transit Development Act [TDA] funds), federal sources (Federal Transportation Administration), and through fare collection. State and federal funds are generally allocated based on population, with a portion of TDA funds derived from a ¼-cent general sales tax and a sales tax on diesel fuel. Therefore, development of the proposed Project would increase funding for transit, through these sources, because of population growth.

The Federal Transit Administration maintains a database of transit system performance. The City of Elk Grove 2021 Annual Agency Profile8 identifies that local bus service had unlinked trips per vehicle revenue hour of 2.2, or about 2 passengers per hour. Generally, this level of performance is indicative of low demand and productivity. Routes performing at this level would have excess seated and standing capacity. Consequently, the proposed Project would not create demand for public transit services above the crush load capacity of the transit system.

While the demand for public transit services will not result in an increase in ridership above the crush load capacity of the transit system, the Project will increase transit ridership and demand for transit stops near the Project. Consequently, the Project should coordinate with Sacramento Regional Transit, which operates e-tran to fund and implement necessary improvements to transit stop amenities (i.e., shelters) near the Project to ensure that they are adequate to accommodate new transit riders generated by the Project.

The Project's impact on transit facilities and services would be considered **less than significant**, and no mitigation is required.

6.3.6 Impact 6: Transportation Hazards Related to Geometric Design Feature or Incompatible Uses

The proposed Project would only build new roadways that are internal to the Project and provide connections to Waterman Road. The City's improvement standards and design criteria to ensure that

[8] https://www.transit.dot.gov/sites/fta.dot.gov/files/transit_agency_profile_doc/2021/90205.pdf

residential subdivisions and non-subdivision public right-of-way improvements are designed to meet or exceed uniform levels of sound engineering practice. The design criteria address speed, sight distance, minimum and maximum roadway grade, minimum curve radius, and lighting. As part of general engineering practice, all roadway facilities would also be designed to meet applicable industry standards from the Caltrans Highway Design Manual (HDM), the California Manual on Uniform Traffic Control Devices (CAMUTCD), and The American Association of State Highway and Transportation Officials (AASHTO) A Policy on Geometric Design of Highways and Streets. Each development application would be subject to review and approval by the City, including the Cosumnes Community Services District (CCSD) Fire Department, which would include a review of the Project's consistency with the City's design criteria to ensure safe vehicle access is provided, including for emergency vehicles.

The Project description does not provide details on types of intersection control at the proposed entries. The Project access points shall be analyzed to include appropriate intersection control to minimize conflicting movements and discourage unsafe maneuver. Appropriate site distance and storage capacity shall be provided at intersections. The distance of entries from the major intersection of Bond Road and Waterman Road shall also be analyzed for safe queuing and sight distance. The Project shall work with the city of Elk Grove to finalize geometric design at intersections in accordance with the City guidelines. Implementation of the proposed Project would not substantially increase hazards due to design features or incompatible uses. Therefore, **no impact** is identified.

6.3.7 Impact 7: Emergency Access

The proposed Project would include two access points on Waterman Road. These routes will serve as primary emergency access routes.

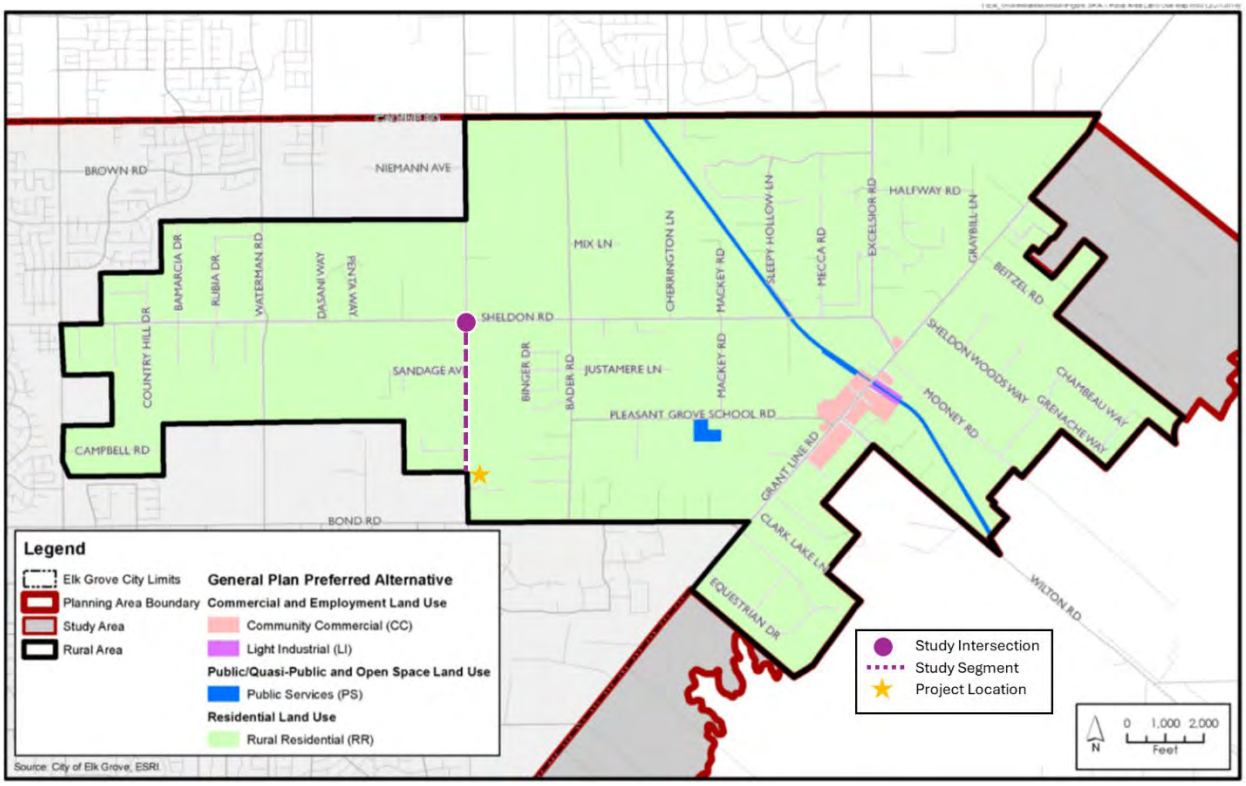
The Cosumnes Community Services District operates the Cosumnes Fire Department (CFD), which provides fire and emergency medical service to the City of Elk Grove. The Cosumnes Fire Department maintains minimum requirements for emergency access, which include minimum roadway width and turning radius for fire apparatus. All internal roadways would be designed to meet these standards. Each subdivision and building permit application would be subject to review and approval by the City, including CFD to ensure specific roadway design and access standards are met. The CFD will review the Project's proposed circulation plan to ensure adequate access is provided throughout the entire plan area. The proposed Project will participate in fee programs that fund the provision of fire and emergency medical services to ensure adequate staffing and equipment. The closest CFD fire stations are Station 73 and Station 71 and are approximately 1.8 miles from the Project site.

Implementation of the proposed Project would not result in inadequate emergency access. Therefore, the Project's impact on emergency services is considered **less than significant**. No Mitigation is required.

7 General Plan Consistency

This chapter summarizes the transportation improvements that are necessary to be consistent with the City of Elk Grove General Plan with special emphasis placed on facilities located in the City of Elk Grove's Rural Area, which is shown in **Figure 12**.

Figure 12: Elk Grove Rural Area



The City's Rural Road Policy (RRP), adopted in 2007 (Amended in 2019) implements the General Plan goals, policies, and actions. Specifically, this policy implements the provisions of the Land Use and Circulation Elements regarding the preservation and maintenance of features that contribute to the rural residential character, including small local roadways with minimum paving, natural landscape, and preservation of existing mature trees. The Rural Road Improvement Policy applies to the area defined in the General Plan as the Rural Area Community Plan. Since the project site and several study roadways/intersections are located within the areas designated under the General Plan as the Rural Area Community, the Rural Road Policy (RRP) applies.

The RRP establishes a value-based approach for incremental (rather than ultimate) road improvements. As shown in **Figure 12**, the Project is in the City of Elk Grove Rural Area and the following study facilities (highlighted in **Figure 12**) are subject to the Rural Road Improvement Policy:

Roadway Segment: Waterman Road – South of Sheldon Road (Half Mile)

Intersection: Sheldon Road/Waterman Road

The Rural Road Policy emphasizes adding capacity to intersections to postpone the need for widening complete segments of roadways.

Table 19: Intersection Improvement Steps – Daily Volume Thresholds

Improvement Step	Configuration	Daily Volume Thresholds
1	All-way stop control	≤8,000
2	Traffic signal control Separate left turn lanes or single-lane roundabout	8,000 – 15,000
3	Traffic signal control Separate left turn lanes Separate right turn lanes or single-lane roundabout	15,001 – 18,000
4	Traffic signal control Separate left turn lanes Separate right turn lanes and two through lanes	18,001 – 24,000
5	Widen roadway segment from 2 lanes to 4 lanes	24,001 – 36,000
6	Widen roadway segment from 4 lanes to 6 lanes	>36,000

Elk Grove Rural Road Policy, adopted in 2007 (Amended in 2019)
Source: Fehr & Peers, 2025

As shown in **Table 19**, the improvement transition from Step 3 to Step 4 (i.e., a daily volume > 18,000 vehicles) would require the addition of through lanes through a subject intersection to add capacity prior to Step 5, which triggered widening the roadway segment (i.e., a daily volume > 24,000 vehicles). Consequently, if a single lane roundabout was implemented at Step 3, it would be replaced with traffic signal control with Step 4 because two-lane roundabout applications were not desired at the time the RRP was developed. However, since then, the city has successfully implemented two-lane roundabout configurations, including at the Bradshaw Road/Sheldon Road intersection. Therefore, 2-lane roundabouts are now considered an acceptable improvement with Step 4, since they can be implemented to defer roadway segment widening are considered below.

The RRP was developed and intended to manage the implementation of capital improvement projects and not specifically to guide the review of development projects. However, to maintain consistency with the RRP, identified improvements to maintain consistency with the General Plan design targets for roadways and delay targets for intersections should only be implemented when traffic volume monitoring indicates that the roadway segment volumes are satisfied. They should not be implemented based purely on a forecast of future travel conditions. Consequently, conditions placed on the Project should include fee payment for ongoing volume monitoring on Sheldon Road and Waterman Road and as appropriate fee payment for the project proportional share of needed

improvements, which may be satisfied through payment of the City of Elk Grove Development Impact Fees.

Based on the existing daily traffic volumes shown in **Table 15**, the current traffic volumes do not satisfy the thresholds for widening the segments of Waterman Road in the Rural Area. At present, the measured volumes fall within Step 2 in **Table 19**. Step 3, which includes the addition of right-turn improvements would be satisfied when the daily roadway segment volume exceeds 15,000 vehicles per day.

As shown in **Table 15**, the daily traffic volumes on the rural segment of Waterman Road would satisfy Step 4 under Cumulative conditions. This segment would also exceed their roadway design target, which would indicate the need to widen the segments from two to four lanes to maintain the roadway performance specified in General Plan Policy MOB-1-3. However, recognizing the unique context of the rural community, the General Plan also includes the following policy specific to mobility improvements in the Sheldon/Rural Area:

- **Policy RA-3-1:** make context-sensitive design improvements to roadways in the Rural Area, when warranted, consistent with the Rural Road Improvement Policy and consistent with the intent of the Complete Streets Act.
- **Policy RA-3-3:** Support improvements necessary to ensure safe, efficient, and improved access for mobility in the Rural Area consistent with the Rural Road Improvement Policy.

Therefore, when evaluating the effectiveness of infrastructure improvements, it is important to consider operations at the intersections along study segments, since intersections are the locations in the system where drivers typically experience poor operations characterized by long delays and queuing. As shown in **Table 21**, implementing the improvements at the Waterman Road/Sheldon Road intersection (see **Table 20**), which are consistent with the Rural Road Improvement Policy (discussed above), would result in delay below the performance delay target. In addition, the Waterman Road/Bond Road intersection, at the other end of the deficient roadway segments, would also operate below the performance delay targets. Therefore, implementing the recommended improvements would result in acceptable operations at the Waterman Road/Sheldon Road intersection and would be consistent with the implementation steps of the Rural Road Improvement Policy. Consequently, widening the roadways from two to four lanes, which would be a logical improvement based on General Plan Policy MOB-1-3 (Table 6-4), is not recommended in the rural context.

The Project is responsible for its proportional fair share towards implementing these improvements, which could be achieved through payment of the City's Development Impact Fees. **Table 21** summarizes the change in delays with improvement recommendations.

Table 20 summarizes the improvement recommendations. The project is responsible for its proportional fair share towards implementing the City's standard expanded intersection configuration, which could be achieved through payment of the City's Development Impact Fees. **Table 21** summarizes the change in delays with improvement recommendations.

Appendix C includes delay reports for intersections with improvements.

Table 20: Improvement Recommendations

Location		Impacted Scenarios	Located in Rural Area?	Improvement Recommendation
Roadways	Waterman Road from Sheldon Road to Bond Road	CNP, C+P	Yes	Implement intersection improvements identified for the Waterman Road/Sheldon Road intersection.
	Bond Road from E. Stockton Boulevard to Elk Grove Florin Road	CNP, C+P	No	Implement intersection improvements identified for the Elk Grove Florin Road/Bond Road intersection.
	Elk Grove Boulevard from Elk Grove Florin Road to Waterman Road	ENP, E+P, E+AP, E+P+AP, CNP, C+P	No	Design target is exceeded in existing conditions. Addition of project does not significantly increase roadway volume. Additional right-of-way is not available to expand the roadway. Therefore, implement the traffic signal timing improvements identified below for Elk Grove Florin Road / Elk Grove Boulevard intersection.
	Elk Grove Boulevard from E. Stockton Boulevard to Elk Grove Florin Road	CNP, C+P	No	Implement intersection improvements identified for the Elk Grove Florin Road/Elk Grove Boulevard intersection.
Intersections	Waterman Road / Sheldon Road	CNP, C+P	Yes	The intersection delay exceeds the design target for both CNP and C+P scenarios. Additional capacity is required for the intersection. Reconfiguring the roundabout to a two-lane circulatory design and widening all four approaches to accommodate an additional lane for all movements at the intersection. Widening will be limited to the intersection only, with the two lanes transition to one lane after the intersection.
	Elk Grove Florin Road / Bond Road	CNP, C+P	No	The intersection delay exceeds the design target for both the CNP and C+P scenarios during both the AM and PM peak hours. However, the addition of the Project would not result in increased delay, compared to CNP. Additional right-of-way is not available to expand the intersection. Therefore, implement signal timing improvements to accommodate changes in travel demand due to approved and planned development. In addition, consider the following bicycle facility improvements: • East Leg (westbound) – Provide green pavement marking at the entrance to the Class II Bike Lane. • West Leg (westbound) – Stripe a bus lane prior to the first driveway into the shopping center. • West Leg (westbound) – Stripe a Class II Bike Lane between the new bus lane and the through lane. • West Leg (westbound) – Provide green conflict bike lane pavement marking at the first driveway The Project is responsible for its proportional share of implementing signal timing improvements, which could be achieved through payment of the City's Development Impact Fees.
	Elk Grove Florin Road / Elk Grove Boulevard	ENP, E+P, E+AP, E+P+AP, CNP, C+P	No	ENP, E+P, E+AP, and E+P+AP: The intersection delay exceeds the design target during the PM peak hour. However, the addition of the Project would not result in increased delay. CNP and C+P: The intersection delay exceeds the design target during the AM and PM peak hour. However, during the AM peak hour, the addition of the Project would not result in increased delay. The delay in the PM peak hour would increase by one second with the addition of the Project. Additional right-of-way is not available to expand the intersection. Therefore, implement signal timing improvements to accommodate changes in travel demand due to approved and planned development. The Project is responsible for its proportional share of implementing signal timing improvements, which could be achieved through payment of the City's Development Impact Fees.
	Bradshaw Road / Elk Grove Boulevard*	ENP, E+P, E+AP, E+P+AP	No	The intersection delay exceeds the design target under existing and near-term conditions during PM peak hour only with and without the project. A signal warrant analysis shows the need to implement a signal at this intersection. Since the project worsens unacceptable delay conditions, the project is responsible for its proportional fair share towards implementing the City's standard expanded intersection configuration, which could be achieved through payment of the City's Development Impact Fees.

Source: Fehr & Peers, 2025

Table 21: Intersection Delay – with recommended improvements

Intersection	Traffic Control	Performance Delay Target	Scenario	Delay		Delay with Improvement		Improvements
				AM	PM	AM	PM	
Waterman Road / Sheldon Road	Roundabout	< 35.1	CNP	**116**	**66**	29	22	Reconfigure the roundabout to a two-lane circulatory design and widen all four approaches to accommodate an additional lane for all movements at the intersection. Widening will be limited to the intersection only, with the two lanes tapering off into one lane.
			CPP	**119**	**68**	29	21	
Bradshaw Road / Elk Grove Boulevard	AWSC (Signal)	<35.1 (< 55.1)	ENP	17	**45**	7	7	Add traffic signal control. A peak hour signal warrant analysis was conducted in accordance with Warrant 3 in the California Manual on Uniform Traffic Control Devices for the weekday AM and PM peak hours. The intersection meets the peak hour traffic volume signal warrant in both the AM peak hour and PM peak hour under existing conditions (Warrant B). See Appendix D for signal warrant analysis. A Synchro analysis was done with a signal assumed instead of AWSC while keeping existing land configuration.
			E+P	17	**46**	7	7	
			E+AP	17	**47**	7	7	
			E+AP+P	18	**48**	8	7	

Notes:
Delay in **Bold** indicates delays that exceed performance targets.
Delays are rounded to the nearest whole number.
Source: Fehr & Peers, 2025

8 Project Site review

The Project Site Plan dated April 22, 2024, was reviewed to assess project access and evaluate on-site and off-site safety considerations using the City of Elk Grove Improvement Standards, 2024. The findings and recommendations are as follows:

- The proposed site access driveways are aligned with the existing/future planned driveways, maintaining consistency with current traffic patterns.
- The preliminary layouts for Waterman Road (July 2024) include ultimate and interim geometrics for Waterman Road along the project frontage. The ultimate layout includes a center turn lane, and two through lanes and a 5-foot shoulder northbound and southbound. A 100-foot striped southbound left-turn lane is provided at each project access intersection. The interim layout includes a center turn lane, and one through lane. A 100-foot southbound left-turn lane is provided at the southern driveway but not at the northern driveway. At the northern driveway, a striped median will be provided as the frontage improvements transition to conform with the existing cross section of Waterman Road north of the project, which will prohibit the southbound left-turn movement under interim conditions.
- The two proposed driveways have a width of 44' which is consistent with the minor residential street.
- The two proposed driveways along the project frontage are spaced approximately 950 feet apart, exceeding the City of Elk Grove's minimum driveway spacing requirements of 200 feet.
- Sight distance at all driveways was evaluated relative to the minimum sight distance in Section 4.8 Sight Distance and Visibility Easements at Intersections of the Improvement Standards, 2024 and the standard drawings ST-26.1 and ST-26.2. Sight distance was found to be adequate, with no issues identified.
- The project supports the City's bike and pedestrian trail network by incorporating a public open space trail that connects to the existing system, promoting walking and bicycle use.
- The maximum southbound queue length on Waterman Road at Elk Grove Boulevard for the critical scenario (AM peak for C+P) is approximately 437ft which is shorter than the distance between the Ranch Drive and Elk Grove Boulevard.
- All internal roadways shall be constructed in accordance with the City of Elk Grove's Standard Drawings of the Design Guidelines.

Appendix A – Count Sheets

National Data & Surveying Services

Intersection Turning Movement Count

Location: Waterman Rd & Bond Rd
City: Elk Grove
Control: Signalized

Project ID: 24-070131-003
Date: 8/20/2024

Data - Total

NS/EW Streets:	Waterman Rd				Waterman Rd				Bond Rd				Bond Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	1 WR	0 WU	TOTAL
7:00 AM	23	45	5	0	15	39	28	2	31	70	20	0	7	98	17	0	400
7:15 AM	23	84	5	1	19	46	38	0	59	89	23	1	7	123	28	0	546
7:30 AM	59	83	12	0	20	65	68	1	63	104	20	2	12	149	32	0	690
7:45 AM	123	74	15	0	41	81	65	2	56	127	35	2	10	154	33	0	818
8:00 AM	166	62	18	0	89	89	52	0	52	142	102	2	13	154	58	0	999
8:15 AM	54	60	6	0	42	100	30	1	52	103	150	4	19	153	78	0	852
8:30 AM	38	43	10	1	15	83	37	1	55	80	35	2	21	152	51	0	624
8:45 AM	28	44	11	0	8	66	40	4	26	57	23	2	13	117	20	0	459
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	514	495	82	2	249	569	358	11	394	772	408	15	102	1100	317	0	5388
APPROACH %'s :	47.03%	45.29%	7.50%	0.18%	20.98%	47.94%	30.16%	0.93%	24.80%	48.58%	25.68%	0.94%	6.71%	72.42%	20.87%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	402	279	51	0	192	335	215	4	223	476	307	10	54	610	201	0	3359
PEAK HR FACTOR :	0.605	0.840	0.708	0.000	0.539	0.838	0.790	0.500	0.885	0.838	0.512	0.625	0.711	0.990	0.644	0.000	0.841
	0.744				0.811				0.822				0.865				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	1 WR	0 WU	TOTAL
4:00 PM	39	66	23	1	33	82	59	5	35	130	47	1	22	149	55	0	747
4:15 PM	48	72	21	0	35	81	58	0	37	120	48	1	22	152	21	0	716
4:30 PM	37	79	20	0	35	89	62	3	39	137	66	2	17	104	14	0	704
4:45 PM	39	65	15	1	39	101	62	1	56	126	64	2	21	104	14	0	710
5:00 PM	35	86	24	1	34	94	45	4	62	134	52	5	10	124	23	0	733
5:15 PM	42	75	24	2	25	86	39	3	35	143	68	2	12	150	14	0	720
5:30 PM	47	74	18	0	37	103	52	5	39	153	62	1	17	139	20	1	768
5:45 PM	41	61	17	0	19	106	51	3	51	133	53	0	21	147	39	0	742
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	328	578	162	5	257	742	428	24	354	1076	460	14	142	1069	200	1	5840
APPROACH %'s :	30.57%	53.87%	15.10%	0.47%	17.71%	51.14%	29.50%	1.65%	18.59%	56.51%	24.16%	0.74%	10.06%	75.71%	14.16%	0.07%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	165	296	83	3	115	389	187	15	187	563	235	8	60	560	96	1	2963
PEAK HR FACTOR :	0.878	0.860	0.865	0.375	0.777	0.917	0.899	0.750	0.754	0.920	0.864	0.400	0.714	0.933	0.615	0.250	0.965
	0.937				0.896				0.974				0.866				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Waterman Rd & Elk Grove Blvd
City: Elk Grove
Control: Signalized

Project ID: 25-070090-001
Date: 4/15/2025

Data - Total

NS/EW Streets:	Waterman Rd				Waterman Rd				Elk Grove Blvd				Elk Grove Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	1	1	0	1	1	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	24	29	7	0	5	29	10	2	14	35	23	0	9	76	16	0	279
7:15 AM	27	47	4	1	10	46	28	6	20	41	21	3	7	78	12	0	351
7:30 AM	29	50	5	1	13	49	21	7	15	51	14	1	15	89	42	0	402
7:45 AM	29	97	11	0	18	67	36	6	26	37	16	3	6	90	70	0	512
8:00 AM	22	111	15	0	22	100	43	6	24	46	28	0	8	88	43	0	556
8:15 AM	33	46	5	0	30	97	53	1	19	65	40	1	15	97	30	0	532
8:30 AM	27	42	11	2	30	86	30	1	21	60	47	4	14	74	17	1	467
8:45 AM	13	46	4	0	22	56	20	4	20	46	28	3	12	78	26	0	378
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	204	468	62	4	150	530	241	33	159	381	217	15	86	670	256	1	3477
APPROACH %'s :	27.64%	63.41%	8.40%	0.54%	15.72%	55.56%	25.26%	3.46%	20.60%	49.35%	28.11%	1.94%	8.49%	66.14%	25.27%	0.10%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	111	296	42	2	100	350	162	14	90	208	131	8	43	349	160	1	2067
PEAK HR FACTOR :	0.841	0.667	0.700	0.250	0.833	0.875	0.764	0.583	0.865	0.800	0.697	0.500	0.717	0.899	0.571	0.250	0.929
	0.762				0.865				0.828				0.833				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	1	1	0	1	1	1	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	34	61	17	3	49	91	46	4	34	82	35	3	16	72	21	0	568
4:15 PM	40	54	8	3	39	54	27	1	24	76	33	6	16	89	25	0	495
4:30 PM	48	80	18	3	45	69	18	4	36	85	24	7	18	67	25	0	547
4:45 PM	36	65	13	4	30	54	21	3	14	81	45	2	9	83	27	1	488
5:00 PM	34	103	16	4	37	63	28	3	24	96	38	2	21	76	26	0	571
5:15 PM	34	72	14	6	51	66	29	4	30	102	20	1	15	65	23	0	532
5:30 PM	32	56	10	5	32	59	38	3	28	81	23	2	15	72	29	0	485
5:45 PM	39	68	18	1	41	59	16	2	34	89	39	4	18	74	29	1	532
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	297	559	114	29	324	515	223	24	224	692	257	27	128	598	205	2	4218
APPROACH %'s :	29.73%	55.96%	11.41%	2.90%	29.83%	47.42%	20.53%	2.21%	18.67%	57.67%	21.42%	2.25%	13.72%	64.09%	21.97%	0.21%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	152	320	61	17	163	252	96	14	104	364	127	12	63	291	101	1	2138
PEAK HR FACTOR :	0.792	0.777	0.847	0.708	0.799	0.913	0.828	0.875	0.722	0.892	0.706	0.429	0.750	0.877	0.935	0.250	0.936
	0.876				0.875				0.948				0.927				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Waterman Rd & Sheldon Rd
City: Elk Grove
Control: 4-Way Yield

Project ID: 24-070131-001
Date: 8/20/2024

Data - Total

NS/EW Streets:	Waterman Rd				Waterman Rd				Sheldon Rd				Sheldon Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0.3	0.3	0.3	0	0.5	0.5	1	0	0.3	0.3	0.3	0	0.3	0.3	0.3	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	15	58	21	0	2	46	13	0	12	70	20	0	14	68	2	0	341
7:15 AM	28	85	50	0	5	58	17	0	23	98	22	0	33	68	6	0	493
7:30 AM	41	99	43	0	7	104	28	0	44	72	16	0	40	79	3	0	576
7:45 AM	35	96	36	0	5	109	39	0	46	99	42	0	48	109	1	0	665
8:00 AM	49	79	36	0	12	129	57	0	27	67	52	0	40	109	12	0	669
8:15 AM	74	75	38	0	7	97	70	0	17	48	37	0	31	128	6	0	628
8:30 AM	52	67	36	0	4	81	60	0	16	66	29	0	30	105	3	0	549
8:45 AM	29	48	29	0	4	56	28	0	14	55	21	1	27	91	5	0	408
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	323	607	289	0	46	680	312	0	199	575	239	1	263	757	38	0	4329
APPROACH %'s :	26.50%	49.79%	23.71%	0.00%	4.43%	65.51%	30.06%	0.00%	19.63%	56.71%	23.57%	0.10%	24.86%	71.55%	3.59%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	199	349	153	0	31	439	194	0	134	286	147	0	159	425	22	0	2538
PEAK HR FACTOR :	0.672	0.881	0.890	0.000	0.646	0.851	0.693	0.000	0.728	0.722	0.707	0.000	0.828	0.830	0.458	0.000	0.948
	0.937				0.838				0.758				0.918				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0.3	0.3	0.3	0	0.5	0.5	1	0	0.3	0.3	0.3	0	0.3	0.3	0.3	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	46	103	36	0	6	106	65	0	32	73	28	0	43	106	4	0	648
4:15 PM	27	54	37	2	5	83	47	0	27	98	34	0	50	114	8	0	586
4:30 PM	22	78	29	0	6	95	50	0	30	67	38	0	48	119	4	0	586
4:45 PM	28	86	38	0	8	111	48	0	29	60	49	0	44	97	2	0	600
5:00 PM	38	90	50	0	3	103	45	0	28	80	35	1	34	118	1	0	626
5:15 PM	21	71	31	0	4	86	35	0	32	67	34	0	37	112	5	0	535
5:30 PM	32	80	25	0	5	111	40	0	30	70	52	0	44	115	5	0	609
5:45 PM	39	83	34	0	4	76	25	0	23	73	45	0	46	94	2	0	544
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	253	645	280	2	41	771	355	0	231	588	315	1	346	875	31	0	4734
APPROACH %'s :	21.44%	54.66%	23.73%	0.17%	3.51%	66.07%	30.42%	0.00%	20.35%	51.81%	27.75%	0.09%	27.64%	69.89%	2.48%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	123	321	140	2	25	395	210	0	118	298	149	0	185	436	18	0	2420
PEAK HR FACTOR :	0.668	0.779	0.921	0.250	0.781	0.890	0.808	0.000	0.922	0.760	0.760	0.000	0.925	0.916	0.563	0.000	0.934
	0.792				0.890				0.888				0.929				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Elk Grove Florin Rd & Bond Rd
City: Elk Grove
Control: Signalized

Project ID: 25-070090-002
Date: 4/15/2025

Data - Total

NS/EW Streets:	Elk Grove Florin Rd				Elk Grove Florin Rd				Bond Rd				Bond Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	1 WR	0 WU	TOTAL
7:00 AM	22	85	17	10	13	59	50	2	46	85	13	9	20	157	14	2	604
7:15 AM	25	82	18	8	13	85	57	2	47	114	13	10	37	182	16	1	710
7:30 AM	38	100	30	16	17	136	93	5	55	128	16	14	46	179	24	2	899
7:45 AM	21	86	40	18	31	154	121	3	66	145	32	16	72	207	24	3	1039
8:00 AM	30	91	65	15	40	156	122	3	86	175	26	13	97	171	40	5	1135
8:15 AM	36	105	47	23	32	132	113	4	103	120	23	15	77	154	42	4	1030
8:30 AM	50	117	46	12	26	132	80	6	65	107	23	10	47	205	33	4	963
8:45 AM	35	57	20	12	17	94	58	9	76	93	30	8	37	164	17	5	732
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	257	723	283	114	189	948	694	34	544	967	176	95	433	1419	210	26	7112
APPROACH %'s :	18.66%	52.51%	20.55%	8.28%	10.13%	50.83%	37.21%	1.82%	30.53%	54.26%	9.88%	5.33%	20.74%	67.96%	10.06%	1.25%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	137	399	198	68	129	574	436	16	320	547	104	54	293	737	139	16	4167
PEAK HR FACTOR :	0.685	0.853	0.762	0.739	0.806	0.920	0.893	0.667	0.777	0.781	0.813	0.844	0.755	0.890	0.827	0.800	0.918
	0.891				0.900				0.854				0.946				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	1 WR	0 WU	TOTAL
4:00 PM	39	132	49	17	26	163	86	15	127	189	30	5	48	173	17	6	1122
4:15 PM	42	127	29	12	50	145	117	14	82	184	35	6	44	181	30	7	1105
4:30 PM	26	125	49	6	43	180	119	12	101	185	44	2	35	177	17	6	1127
4:45 PM	40	129	48	11	38	136	94	14	87	193	30	8	41	172	17	4	1062
5:00 PM	65	135	54	15	48	163	112	12	106	216	26	5	42	183	20	5	1207
5:15 PM	40	125	43	9	23	119	60	14	112	205	49	9	43	178	25	5	1059
5:30 PM	45	100	33	20	43	140	80	9	89	232	31	9	50	176	12	8	1077
5:45 PM	29	119	44	10	33	156	77	18	80	185	26	4	41	205	11	3	1041
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	326	992	349	100	304	1202	745	108	784	1589	271	48	344	1445	149	44	8800
APPROACH %'s :	18.45%	56.14%	19.75%	5.66%	12.89%	50.95%	31.58%	4.58%	29.12%	59.03%	10.07%	1.78%	17.36%	72.91%	7.52%	2.22%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	173	516	180	44	179	624	442	52	376	778	135	21	162	713	84	22	4501
PEAK HR FACTOR :	0.665	0.956	0.833	0.733	0.895	0.867	0.929	0.929	0.887	0.900	0.767	0.656	0.920	0.974	0.700	0.786	0.932
	0.849				0.916				0.928				0.936				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Elk Grove Florin Rd & Elk Grove Blvd
City: Elk Grove
Control: Signalized

Project ID: 25-070090-003
Date: 4/15/2025

Data - Total

NS/EW Streets:	Elk Grove Florin Rd				Elk Grove Florin Rd				Elk Grove Blvd				Elk Grove Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	1	1	1	0	2	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	47	45	2	0	5	33	46	0	41	67	18	0	12	111	5	0	432
7:15 AM	62	58	15	0	7	45	41	0	63	58	28	0	22	114	5	0	518
7:30 AM	38	59	18	0	9	64	59	0	63	102	34	0	22	126	10	1	605
7:45 AM	67	95	17	0	9	95	57	0	65	86	53	0	30	112	10	0	696
8:00 AM	87	96	13	0	6	103	58	1	70	94	66	0	45	114	7	0	760
8:15 AM	102	76	20	0	17	92	53	1	52	106	57	0	39	106	3	1	725
8:30 AM	98	101	28	0	19	55	78	2	81	105	39	0	15	116	1	0	738
8:45 AM	62	47	11	0	15	47	78	0	46	106	48	0	18	142	7	0	627
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	563	577	124	0	87	534	470	4	481	724	343	0	203	941	48	2	5101
APPROACH %'s :	44.54%	45.65%	9.81%	0.00%	7.95%	48.77%	42.92%	0.37%	31.07%	46.77%	22.16%	0.00%	17.00%	78.81%	4.02%	0.17%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	354	368	78	0	51	345	246	4	268	391	215	0	129	448	21	1	2919
PEAK HR FACTOR :	0.868	0.911	0.696	0.000	0.671	0.837	0.788	0.500	0.827	0.922	0.814	0.000	0.717	0.966	0.525	0.250	0.960
	0.881				0.961				0.950				0.902				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	1	1	1	0	2	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	76	66	14	0	21	79	109	2	104	151	61	0	26	122	16	2	849
4:15 PM	60	66	22	0	31	74	106	2	105	160	74	0	21	138	11	0	870
4:30 PM	46	63	8	0	21	90	101	1	86	113	61	0	25	115	8	2	740
4:45 PM	68	77	27	0	16	89	81	1	70	185	69	0	18	130	14	1	846
5:00 PM	56	71	18	0	23	78	124	0	107	174	79	0	20	127	15	0	892
5:15 PM	58	89	19	0	18	68	72	3	106	155	66	0	26	104	16	0	800
5:30 PM	59	75	22	0	22	72	85	1	90	146	67	0	24	109	7	5	784
5:45 PM	38	62	26	0	28	85	77	0	85	147	59	0	12	122	16	2	759
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	461	569	156	0	180	635	755	10	753	1231	536	0	172	967	103	12	6540
APPROACH %'s :	38.87%	47.98%	13.15%	0.00%	11.39%	40.19%	47.78%	0.63%	29.88%	48.85%	21.27%	0.00%	13.72%	77.11%	8.21%	0.96%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	230	277	75	0	91	331	412	4	368	632	283	0	84	510	48	3	3348
PEAK HR FACTOR :	0.846	0.899	0.694	0.000	0.734	0.919	0.831	0.500	0.860	0.854	0.896	0.000	0.840	0.924	0.800	0.375	0.938
	0.846				0.931				0.891				0.949				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Bradshaw Rd & Elk Grove Blvd
City: Elk Grove
Control: 4-Way Stop

Project ID: 25-070090-004
Date: 4/15/2025

Data - Total

NS/EW Streets:	Bradshaw Rd				Bradshaw Rd				Elk Grove Blvd				Elk Grove Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	67	0	0	0	74	12	0	24	23	3	0	1	14	0	0	220
7:15 AM	2	87	0	0	1	52	8	0	29	23	5	0	0	22	0	0	229
7:30 AM	1	80	1	0	0	74	4	0	34	18	6	0	0	23	4	0	245
7:45 AM	1	57	0	0	4	96	13	0	34	13	7	0	0	29	1	0	255
8:00 AM	6	57	1	0	2	74	10	0	48	16	4	0	0	21	12	0	251
8:15 AM	3	63	0	0	1	79	22	0	30	27	11	0	1	32	3	0	272
8:30 AM	3	68	1	0	1	82	11	0	20	19	6	0	1	29	2	0	243
8:45 AM	2	42	0	0	3	77	15	0	11	17	4	0	0	29	2	0	202
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	20	521	3	0	12	608	95	0	230	156	46	0	3	199	24	0	1917
APPROACH %'s :	3.68%	95.77%	0.55%	0.00%	1.68%	85.03%	13.29%	0.00%	53.24%	36.11%	10.65%	0.00%	1.33%	88.05%	10.62%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	11	257	2	0	7	323	49	0	146	74	28	0	1	105	20	0	1023
PEAK HR FACTOR :	0.458	0.803	0.500	0.000	0.438	0.841	0.557	0.000	0.760	0.685	0.636	0.000	0.250	0.820	0.417	0.000	0.940
	0.823				0.838				0.912				0.875				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	4	80	0	0	1	106	17	0	23	26	4	0	3	24	3	0	291
4:15 PM	8	88	0	0	0	115	27	0	26	15	4	0	3	32	5	0	323
4:30 PM	11	81	1	0	2	104	19	0	28	18	11	0	2	31	4	0	312
4:45 PM	6	113	1	0	1	104	31	0	16	28	4	0	1	25	3	0	333
5:00 PM	7	89	0	0	1	102	30	0	30	37	6	0	0	25	1	0	328
5:15 PM	3	95	0	0	5	88	21	0	25	26	3	0	0	31	0	0	297
5:30 PM	6	102	1	0	2	96	22	0	19	22	5	0	2	28	2	0	307
5:45 PM	5	52	0	0	2	92	24	0	23	14	5	0	4	35	3	0	259
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	50	700	3	0	14	807	191	0	190	186	42	0	15	231	21	0	2450
APPROACH %'s :	6.64%	92.96%	0.40%	0.00%	1.38%	79.74%	18.87%	0.00%	45.45%	44.50%	10.05%	0.00%	5.62%	86.52%	7.87%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	32	371	2	0	4	425	107	0	100	98	25	0	6	113	13	0	1296
PEAK HR FACTOR :	0.727	0.821	0.500	0.000	0.500	0.924	0.863	0.000	0.833	0.662	0.568	0.000	0.500	0.883	0.650	0.000	0.973
	0.844				0.944				0.764				0.825				

Prepared by National Data & Surveying Services

VOLUME

Waterman Rd Bet Sheldon Rd & Bond Rd

Day: Tuesday
Date: 4/15/2025

City: Elk Grove
Project #: CA25_070091_001

DAILY TOTALS	NB	SB	EB	WB	Total
	6,969	7,068	0	0	14,037

DAILY TOTALS

15-Minutes Interval

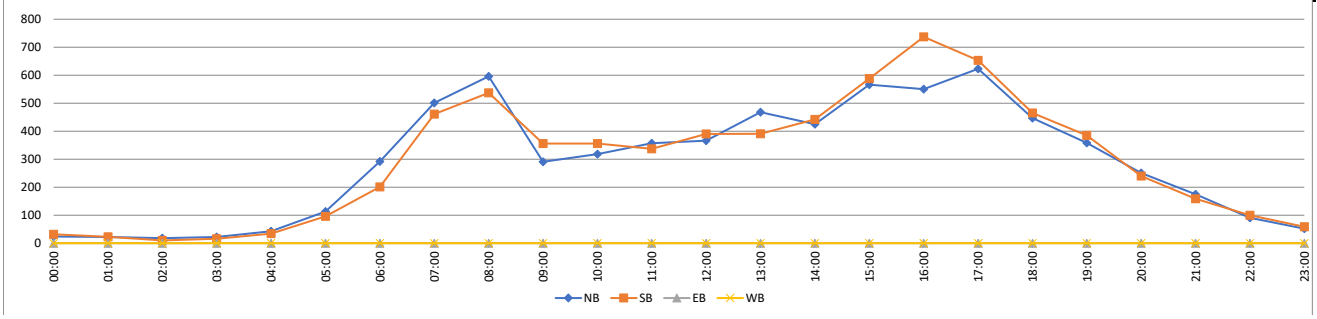
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL
0:00	6	9			15	12:00	77	89			166
0:15	8	12			20	12:15	74	100			174
0:30	6	4			10	12:30	79	106			185
0:45	4	7			11	12:45	136	95			231
1:00	4	8			12	13:00	170	114			284
1:15	6	3			9	13:15	120	88			208
1:30	6	9			15	13:30	88	85			173
1:45	6	3			9	13:45	90	104			194
2:00	5	4			9	14:00	93	86			179
2:15	4	3			7	14:15	111	115			226
2:30	5	1			6	14:30	109	125			234
2:45	4	2			6	14:45	112	116			228
3:00	6	4			10	15:00	150	127			277
3:15	8	2			10	15:15	117	154			271
3:30	3	6			9	15:30	140	134			274
3:45	5	4			9	15:45	159	173			332
4:00	3	8			11	16:00	121	189			310
4:15	7	4			11	16:15	139	173			312
4:30	14	11			25	16:30	137	181			318
4:45	19	11			30	16:45	153	194			347
5:00	14	11			25	17:00	175	150			325
5:15	16	20			36	17:15	160	188			348
5:30	42	29			71	17:30	150	156			306
5:45	41	36			77	17:45	138	159			297
6:00	53	39			92	18:00	113	125			238
6:15	70	40			110	18:15	112	117			229
6:30	80	44			124	18:30	101	121			222
6:45	89	78			167	18:45	121	102			223
7:00	82	78			160	19:00	94	110			204
7:15	130	111			241	19:15	84	85			169
7:30	154	119			273	19:30	94	100			194
7:45	135	153			288	19:45	86	90			176
8:00	145	172			317	20:00	71	74			145
8:15	192	156			348	20:15	73	68			141
8:30	151	116			267	20:30	51	55			106
8:45	108	93			201	20:45	56	43			99
9:00	86	91			177	21:00	57	40			97
9:15	69	96			165	21:15	45	52			97
9:30	64	87			151	21:30	36	20			56
9:45	72	82			154	21:45	37	47			84
10:00	83	78			161	22:00	28	28			56
10:15	67	105			172	22:15	28	30			58
10:30	76	81			157	22:30	13	21			34
10:45	92	92			184	22:45	22	21			43
11:00	77	79			156	23:00	17	17			34
11:15	80	99			179	23:15	16	12			28
11:30	113	83			196	23:30	12	12			24
11:45	87	76			163	23:45	7	18			25
TOTALS	2597	2459	0	0	5056	TOTALS	4372	4609	0	0	8981
SPLIT %	51%	49%	0%	0%	36%	SPLIT %	49%	51%	0%	0%	64%

Hourly Intervals

TIME		NB	SB	EB	WB	TOTAL
00:00	01:00	24	32			56
01:00	02:00	22	23			45
02:00	03:00	18	10			28
03:00	04:00	22	16			38
04:00	05:00	43	34			77
05:00	06:00	113	96			209
06:00	07:00	292	201			493
07:00	08:00	501	461			962
08:00	09:00	596	537			1133
09:00	10:00	291	356			647
10:00	11:00	318	356			674
11:00	12:00	357	337			694
12:00	13:00	366	390			756
13:00	14:00	468	391			859
14:00	15:00	425	442			867
15:00	16:00	566	588			1154
16:00	17:00	550	737			1287
17:00	18:00	623	653			1276
18:00	19:00	447	465			912
19:00	20:00	358	385			743
20:00	21:00	251	240			491
21:00	22:00	175	159			334
22:00	23:00	91	100			191
23:00	00:00	52	59			111

STATISTICS

	NB	SB	EB	WB	TOTAL
Peak Period	00:00	to	12:00		
Volume	2597	2459			5056
Peak Hour	7:30	7:30			7:30
Peak Volume	626	600			1226
Peak Hour Factor	0.815	0.872			0.881
Peak Period	12:00	to	00:00		
Volume	4372	4609			8981
Peak Hour	16:45	16:00			16:30
Peak Volume	638	737			1338
Peak Hour Factor	0.911	0.950			0.961
Peak Period	07:00	to	09:00		
Volume	1097	998			2095
Peak Hour	7:30	7:30			7:30
Peak Volume	626	600			1226
Peak Hour Factor	0.815	0.872			0.881
Peak Period	16:00	to	18:00		
Volume	1173	1390			2563
Peak Hour	16:45	16:00			16:30
Peak Volume	638	737			1338
Peak Hour Factor	0.911	0.950			0.961



Prepared by National Data & Surveying Services

VOLUME

Waterman Rd Bet Elk Grove Blvd & Bond Rd

Day: Tuesday
Date: 4/22/2025

City: Elk Grove
Project #: CA25_070091_002

DAILY TOTALS	NB	SB	EB	WB	Total
	6,791	7,171	0	0	13,962

DAILY TOTALS

15-Minutes Interval

TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL
0:00	8	17			25	12:00	109	111			220
0:15	4	8			12	12:15	114	108			222
0:30	9	6			15	12:30	103	87			190
0:45	13	4			17	12:45	91	109			200
1:00	4	3			7	13:00	91	133			224
1:15	6	5			11	13:15	118	110			228
1:30	3	3			6	13:30	120	108			228
1:45	4	5			9	13:45	104	96			200
2:00	3	8			11	14:00	121	110			231
2:15	6	4			10	14:15	141	91			232
2:30	7	1			8	14:30	139	115			254
2:45	3	0			3	14:45	105	219			324
3:00	5	2			7	15:00	118	157			275
3:15	5	4			9	15:15	123	172			295
3:30	5	2			7	15:30	150	144			294
3:45	8	4			12	15:45	120	180			300
4:00	12	3			15	16:00	125	156			281
4:15	10	7			17	16:15	132	156			288
4:30	15	4			19	16:30	146	152			298
4:45	12	9			21	16:45	168	150			318
5:00	21	12			33	17:00	147	147			294
5:15	10	18			28	17:15	128	168			296
5:30	33	24			57	17:30	132	149			281
5:45	30	25			55	17:45	120	159			279
6:00	43	36			79	18:00	122	130			252
6:15	49	31			80	18:15	100	143			243
6:30	56	49			105	18:30	101	109			210
6:45	79	62			141	18:45	98	110			208
7:00	76	47			123	19:00	82	96			178
7:15	93	91			184	19:15	91	102			193
7:30	144	90			234	19:30	75	80			155
7:45	206	144			350	19:45	81	87			168
8:00	224	167			391	20:00	85	72			157
8:15	96	220			316	20:15	67	60			127
8:30	90	161			251	20:30	57	57			114
8:45	87	92			179	20:45	58	55			113
9:00	79	73			152	21:00	53	47			100
9:15	54	86			140	21:15	56	38			94
9:30	76	87			163	21:30	21	37			58
9:45	78	99			177	21:45	33	33			66
10:00	83	71			154	22:00	29	40			69
10:15	80	87			167	22:15	32	36			68
10:30	83	76			159	22:30	19	17			36
10:45	97	86			183	22:45	28	42			70
11:00	96	103			199	23:00	19	16			35
11:15	98	88			186	23:15	9	15			24
11:30	108	90			198	23:30	11	12			23
11:45	81	124			205	23:45	7	12			19
TOTALS	2492	2438	0	0	4930	TOTALS	4299	4733	0	0	9032
SPLIT %	51%	49%	0%	0%	35%	SPLIT %	48%	52%	0%	0%	65%

Hourly Intervals

TIME		NB	SB	EB	WB	TOTAL
00:00	01:00	34	35			69
01:00	02:00	17	16			33
02:00	03:00	19	13			32
03:00	04:00	23	12			35
04:00	05:00	49	23			72
05:00	06:00	94	79			173
06:00	07:00	227	178			405
07:00	08:00	519	372			891
08:00	09:00	497	640			1137
09:00	10:00	287	345			632
10:00	11:00	343	320			663
11:00	12:00	383	405			788
12:00	13:00	417	415			832
13:00	14:00	433	447			880
14:00	15:00	506	535			1041
15:00	16:00	511	653			1164
16:00	17:00	571	614			1185
17:00	18:00	527	623			1150
18:00	19:00	421	492			913
19:00	20:00	329	365			694
20:00	21:00	267	244			511
21:00	22:00	163	155			318
22:00	23:00	108	135			243
23:00	00:00	46	55			101

STATISTICS

	NB	SB	EB	WB	TOTAL
Peak Period	00:00	to	12:00		
Volume	2492	2438			4930
Peak Hour	7:30	7:45			7:45
Peak Volume	670	692			1308
Peak Hour Factor	0.748	0.786			0.836
Peak Period	12:00	to	00:00		
Volume	4299	4733			9032
Peak Hour	16:15	14:45			16:30
Peak Volume	593	692			1206
Peak Hour Factor	0.882	0.790			0.948
Peak Period	07:00	to	09:00		
Volume	1016	1012			2028
Peak Hour	7:30	7:45			7:45
Peak Volume	670	692			1308
Peak Hour Factor	0.748	0.786			0.836
Peak Period	16:00	to	18:00		
Volume	1098	1237			2335
Peak Hour	16:15	17:00			16:30
Peak Volume	593	623			1206
Peak Hour Factor	0.882	0.927			0.948

Prepared by National Data & Surveying Services

VOLUME

Waterman Rd Bet Mainline Dr/Dino Dr & Elk Grove Blvd

Day: Tuesday
Date: 4/15/2025

City: Elk Grove
Project #: CA25_070091_003

DAILY TOTALS	NB	SB	EB	WB	Total
	5,274	5,479	0	0	10,753

DAILY TOTALS

15-Minutes Interval

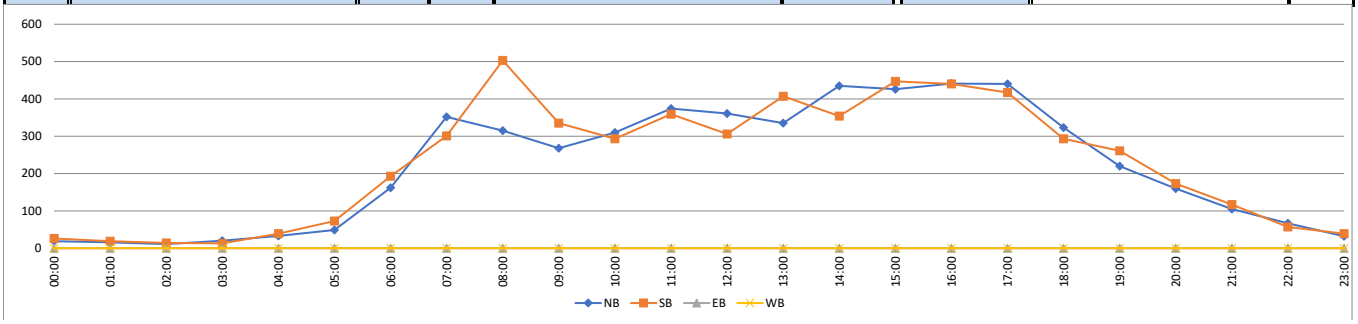
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL
0:00	5	7			12	12:00	88	70			158
0:15	3	4			7	12:15	82	81			163
0:30	8	9			17	12:30	96	72			168
0:45	3	6			9	12:45	95	83			178
1:00	3	5			8	13:00	91	84			175
1:15	5	7			12	13:15	85	113			198
1:30	4	3			7	13:30	77	97			174
1:45	4	4			8	13:45	82	113			195
2:00	3	3			6	14:00	107	90			197
2:15	3	5			8	14:15	115	85			200
2:30	3	2			5	14:30	118	82			200
2:45	2	4			6	14:45	95	97			192
3:00	8	6			14	15:00	110	110			220
3:15	7	4			11	15:15	106	103			209
3:30	1	1			2	15:30	105	111			216
3:45	4	2			6	15:45	105	123			228
4:00	6	11			17	16:00	107	132			239
4:15	7	9			16	16:15	96	109			205
4:30	7	8			15	16:30	125	103			228
4:45	13	11			24	16:45	113	96			209
5:00	9	15			24	17:00	124	110			234
5:15	10	10			20	17:15	110	102			212
5:30	14	22			36	17:30	93	97			190
5:45	16	26			42	17:45	113	108			221
6:00	32	40			72	18:00	96	72			168
6:15	38	39			77	18:15	75	75			150
6:30	41	45			86	18:30	67	73			140
6:45	51	69			120	18:45	85	73			158
7:00	57	58			115	19:00	73	68			141
7:15	73	76			149	19:15	53	70			123
7:30	90	78			168	19:30	46	67			113
7:45	132	89			221	19:45	48	56			104
8:00	125	129			254	20:00	52	63			115
8:15	71	139			210	20:15	38	43			81
8:30	67	142			209	20:30	42	33			75
8:45	52	93			145	20:45	28	34			62
9:00	65	100			165	21:00	23	43			66
9:15	56	86			142	21:15	27	27			54
9:30	63	77			140	21:30	27	23			50
9:45	84	72			156	21:45	28	24			52
10:00	70	84			154	22:00	18	17			35
10:15	75	79			154	22:15	21	15			36
10:30	93	59			152	22:30	11	11			22
10:45	72	71			143	22:45	17	14			31
11:00	86	84			170	23:00	10	16			26
11:15	88	94			182	23:15	10	9			19
11:30	103	84			187	23:30	7	7			14
11:45	97	97			194	23:45	5	7			12
TOTALS	1929	2168	0	0	4097	TOTALS	3345	3311	0	0	6656
SPLIT %	47%	53%	0%	0%	38%	SPLIT %	50%	50%	0%	0%	62%

Hourly Intervals

TIME		NB	SB	EB	WB	TOTAL
00:00	01:00	19	26			45
01:00	02:00	16	19			35
02:00	03:00	11	14			25
03:00	04:00	20	13			33
04:00	05:00	33	39			72
05:00	06:00	49	73			122
06:00	07:00	162	193			355
07:00	08:00	352	301			653
08:00	09:00	315	503			818
09:00	10:00	268	335			603
10:00	11:00	310	293			603
11:00	12:00	374	359			733
12:00	13:00	361	306			667
13:00	14:00	335	407			742
14:00	15:00	435	354			789
15:00	16:00	426	447			873
16:00	17:00	441	440			881
17:00	18:00	440	417			857
18:00	19:00	323	293			616
19:00	20:00	220	261			481
20:00	21:00	160	173			333
21:00	22:00	105	117			222
22:00	23:00	67	57			124
23:00	00:00	32	39			71

STATISTICS

	NB	SB	EB	WB	TOTAL
Peak Period	00:00	to	12:00		
Volume	1929	2168			4097
Peak Hour	7:15	8:00			7:45
Peak Volume	420	503			894
Peak Hour Factor	0.795	0.886			0.880
Peak Period	12:00	to	00:00		
Volume	3345	3311			6656
Peak Hour	16:30	15:30			15:45
Peak Volume	472	475			900
Peak Hour Factor	0.944	0.900			0.941
Peak Period	07:00	to	09:00		
Volume	667	804			1471
Peak Hour	7:15	8:00			7:45
Peak Volume	420	503			894
Peak Hour Factor	0.795	0.886			0.880
Peak Period	16:00	to	18:00		
Volume	881	857			1738
Peak Hour	16:30	16:00			16:30
Peak Volume	472	440			883
Peak Hour Factor	0.944	0.833			0.943



Prepared by National Data & Surveying Services

VOLUME

Bond Rd Bet E Stockton Blvd & Elk Grove Florin Rd

Day: Tuesday
Date: 4/15/2025

City: Elk Grove
Project #: CA25_070091_004

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	17,147	17,891	35,038

DAILY TOTALS

15-Minutes Interval

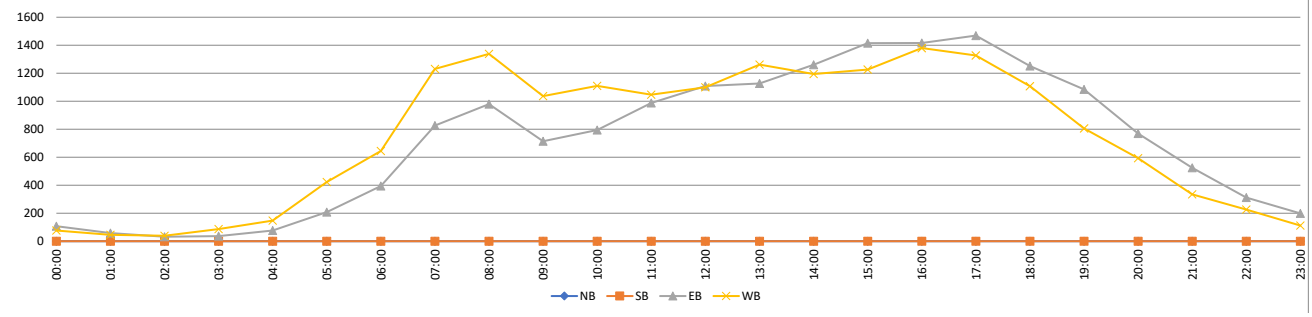
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL
0:00			33	18	51	12:00			265	255	520
0:15			29	22	51	12:15			259	278	537
0:30			31	18	49	12:30			305	268	573
0:45			14	18	32	12:45			280	298	578
1:00			19	11	30	13:00			299	341	640
1:15			12	14	26	13:15			294	329	623
1:30			15	8	23	13:30			260	294	554
1:45			12	13	25	13:45			274	298	572
2:00			16	5	21	14:00			282	268	550
2:15			5	13	18	14:15			353	304	657
2:30			7	6	13	14:30			309	309	618
2:45			4	15	19	14:45			317	313	630
3:00			10	17	27	15:00			312	304	616
3:15			6	12	18	15:15			314	277	591
3:30			12	24	36	15:30			394	317	711
3:45			8	34	42	15:45			395	328	723
4:00			12	17	29	16:00			367	305	672
4:15			17	31	48	16:15			333	372	705
4:30			20	39	59	16:30			363	347	710
4:45			27	60	87	16:45			353	356	709
5:00			33	79	112	17:00			392	348	740
5:15			41	90	131	17:15			399	327	726
5:30			58	122	180	17:30			360	310	670
5:45			76	132	208	17:45			318	342	660
6:00			95	127	222	18:00			331	277	608
6:15			83	120	203	18:15			321	331	652
6:30			108	199	307	18:30			303	246	549
6:45			108	198	306	18:45			296	253	549
7:00			167	266	433	19:00			299	256	555
7:15			186	272	458	19:15			281	206	487
7:30			199	346	545	19:30			284	209	493
7:45			274	347	621	19:45			220	135	355
8:00			309	372	681	20:00			202	191	393
8:15			246	346	592	20:15			200	152	352
8:30			202	304	506	20:30			179	117	296
8:45			222	316	538	20:45			188	133	321
9:00			173	254	427	21:00			126	100	226
9:15			158	237	395	21:15			168	85	253
9:30			196	270	466	21:30			128	76	204
9:45			187	275	462	21:45			102	74	176
10:00			176	259	435	22:00			90	73	163
10:15			195	252	447	22:15			82	43	125
10:30			203	282	485	22:30			71	51	122
10:45			220	317	537	22:45			69	59	128
11:00			224	258	482	23:00			56	32	88
11:15			247	278	525	23:15			49	29	78
11:30			278	269	547	23:30			57	29	86
11:45			238	242	480	23:45			37	22	59
TOTALS	0	0	5211	7224	12435	TOTALS	0	0	11936	10667	22603
SPLIT %	0%	0%	42%	58%	35%	SPLIT %	0%	0%	53%	47%	65%

Hourly Intervals

TIME		NB	SB	EB	WB	TOTAL
00:00	01:00			107	76	183
01:00	02:00			58	46	104
02:00	03:00			32	39	71
03:00	04:00			36	87	123
04:00	05:00			76	147	223
05:00	06:00			208	423	631
06:00	07:00			394	644	1038
07:00	08:00			826	1231	2057
08:00	09:00			979	1338	2317
09:00	10:00			714	1036	1750
10:00	11:00			794	1110	1904
11:00	12:00			987	1047	2034
12:00	13:00			1109	1099	2208
13:00	14:00			1127	1262	2389
14:00	15:00			1261	1194	2455
15:00	16:00			1415	1226	2641
16:00	17:00			1416	1380	2796
17:00	18:00			1469	1327	2796
18:00	19:00			1251	1107	2358
19:00	20:00			1084	806	1890
20:00	21:00			769	593	1362
21:00	22:00			524	335	859
22:00	23:00			312	226	538
23:00	00:00			199	112	311

STATISTICS

	NB	SB	EB	WB	TOTAL
Peak Period	00:00	to	12:00		
Volume			5211	7224	12435
Peak Hour			7:45	7:30	7:30
Peak Volume			1031	1411	2439
Peak Hour Factor			0.834	0.948	0.895
Peak Period	12:00	to	00:00		
Volume			11936	10667	22603
Peak Hour			16:30	16:15	16:30
Peak Volume			1507	1423	2885
Peak Hour Factor			0.944	0.956	0.975
Peak Period	07:00	to	09:00		
Volume			1805	2569	4374
Peak Hour			7:45	7:30	7:30
Peak Volume			1031	1411	2439
Peak Hour Factor			0.834	0.948	0.895
Peak Period	16:00	to	18:00		
Volume			2885	2707	5592
Peak Hour			16:30	16:15	16:30
Peak Volume			1507	1423	2885
Peak Hour Factor			0.944	0.956	0.975



Prepared by National Data & Surveying Services

VOLUME

Bond Rd Bet Elk Grove Florin Rd & Waterman Rd

Day: Tuesday
Date: 4/15/2025

City: Elk Grove
Project #: CA25_070091_005

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	11,547	11,075	22,622

DAILY TOTALS

15-Minutes Interval

TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL
0:00			24	13	37	12:00			196	151	347
0:15			23	11	34	12:15			196	156	352
0:30			17	10	27	12:30			203	144	347
0:45			12	13	25	12:45			192	226	418
1:00			8	9	17	13:00			145	309	454
1:15			11	6	17	13:15			225	212	437
1:30			8	9	17	13:30			213	163	376
1:45			15	6	21	13:45			184	165	349
2:00			7	1	8	14:00			166	175	341
2:15			1	7	8	14:15			209	183	392
2:30			5	3	8	14:30			165	190	355
2:45			4	5	9	14:45			248	199	447
3:00			7	9	16	15:00			190	185	375
3:15			3	8	11	15:15			181	171	352
3:30			8	17	25	15:30			262	207	469
3:45			8	11	19	15:45			271	193	464
4:00			6	14	20	16:00			222	190	412
4:15			12	14	26	16:15			227	239	466
4:30			14	25	39	16:30			260	211	471
4:45			14	35	49	16:45			235	215	450
5:00			21	57	78	17:00			264	188	452
5:15			29	50	79	17:15			241	227	468
5:30			47	74	121	17:30			260	217	477
5:45			54	71	125	17:45			230	215	445
6:00			74	61	135	18:00			185	180	365
6:15			65	79	144	18:15			260	177	437
6:30			87	119	206	18:30			210	170	380
6:45			83	128	211	18:45			191	141	332
7:00			101	154	255	19:00			225	136	361
7:15			130	195	325	19:15			209	122	331
7:30			148	232	380	19:30			170	128	298
7:45			185	218	403	19:45			199	111	310
8:00			259	206	465	20:00			160	92	252
8:15			197	232	429	20:15			142	92	234
8:30			168	184	352	20:30			120	81	201
8:45			120	192	312	20:45			101	74	175
9:00			114	157	271	21:00			100	70	170
9:15			101	167	268	21:15			104	61	165
9:30			98	159	257	21:30			86	43	129
9:45			134	167	301	21:45			73	43	116
10:00			117	148	265	22:00			57	39	96
10:15			117	159	276	22:15			48	26	74
10:30			127	181	308	22:30			52	26	78
10:45			138	163	301	22:45			40	20	60
11:00			123	163	286	23:00			40	18	58
11:15			124	164	288	23:15			29	14	43
11:30			163	169	332	23:30			35	13	48
11:45			170	178	348	23:45			25	14	39
TOTALS	0	0	3501	4453	7954	TOTALS	0	0	8046	6622	14668
SPLIT %	0%	0%	44%	56%	35%	SPLIT %	0%	0%	55%	45%	65%

Hourly Intervals

TIME		NB	SB	EB	WB	TOTAL
00:00	01:00			76	47	123
01:00	02:00			42	30	72
02:00	03:00			17	16	33
03:00	04:00			26	45	71
04:00	05:00			46	88	134
05:00	06:00			151	252	403
06:00	07:00			309	387	696
07:00	08:00			564	799	1363
08:00	09:00			744	814	1558
09:00	10:00			447	650	1097
10:00	11:00			499	651	1150
11:00	12:00			580	674	1254
12:00	13:00			787	677	1464
13:00	14:00			767	849	1616
14:00	15:00			788	747	1535
15:00	16:00			904	756	1660
16:00	17:00			944	855	1799
17:00	18:00			995	847	1842
18:00	19:00			846	668	1514
19:00	20:00			803	497	1300
20:00	21:00			523	339	862
21:00	22:00			363	217	580
22:00	23:00			197	111	308
23:00	00:00			129	59	188

STATISTICS

	NB	SB	EB	WB	TOTAL
Peak Period	00:00	to	12:00		
Volume			3501	4453	7954
Peak Hour			7:45	7:30	7:30
Peak Volume			809	888	1677
Peak Hour Factor			0.781	0.957	0.902
Peak Period	12:00	to	00:00		
Volume			8046	6622	14668
Peak Hour			16:30	12:45	16:45
Peak Volume			1000	910	1847
Peak Hour Factor			0.947	0.736	0.968
Peak Period	07:00	to	09:00		
Volume			1308	1613	2921
Peak Hour			7:45	7:30	7:30
Peak Volume			809	888	1677
Peak Hour Factor			0.781	0.957	0.902
Peak Period	16:00	to	18:00		
Volume			1939	1702	3641
Peak Hour			16:30	16:00	16:45
Peak Volume			1000	855	1847
Peak Hour Factor			0.947	0.894	0.968

Prepared by National Data & Surveying Services

VOLUME

Bond Rd Bet Waterman Rd & Bradshaw Rd

Day: Tuesday
Date: 4/15/2025

City: Elk Grove
Project #: CA25_070091_006

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	7,256	7,489	14,745

DAILY TOTALS

15-Minutes Interval

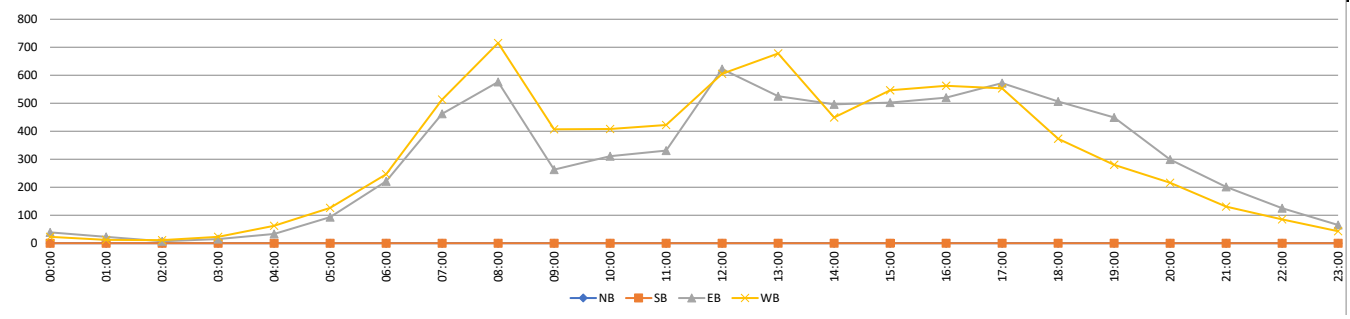
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL
0:00			10	12	22	12:00			136	99	235
0:15			13	4	17	12:15			147	103	250
0:30			9	4	13	12:30			188	97	285
0:45			7	3	10	12:45			151	306	457
1:00			8	4	12	13:00			121	298	419
1:15			8	3	11	13:15			162	180	342
1:30			3	4	7	13:30			110	108	218
1:45			4	1	5	13:45			132	92	224
2:00			3	1	4	14:00			105	108	213
2:15			2	5	7	14:15			135	114	249
2:30			1	2	3	14:30			119	100	219
2:45			1	3	4	14:45			137	127	264
3:00			3	5	8	15:00			106	132	238
3:15			2	4	6	15:15			117	118	235
3:30			6	9	15	15:30			133	139	272
3:45			4	5	9	15:45			146	157	303
4:00			4	8	12	16:00			128	147	275
4:15			6	9	15	16:15			107	147	254
4:30			10	14	24	16:30			156	127	283
4:45			13	31	44	16:45			129	141	270
5:00			14	31	45	17:00			159	139	298
5:15			21	24	45	17:15			158	138	296
5:30			32	44	76	17:30			125	143	268
5:45			26	27	53	17:45			130	133	263
6:00			54	31	85	18:00			109	105	214
6:15			47	61	108	18:15			148	87	235
6:30			50	72	122	18:30			137	92	229
6:45			70	82	152	18:45			112	89	201
7:00			75	89	164	19:00			133	73	206
7:15			102	139	241	19:15			120	65	185
7:30			122	158	280	19:30			88	78	166
7:45			163	127	290	19:45			108	64	172
8:00			207	169	376	20:00			81	77	158
8:15			185	246	431	20:15			79	48	127
8:30			106	186	292	20:30			77	51	128
8:45			78	114	192	20:45			62	40	102
9:00			65	100	165	21:00			49	47	96
9:15			58	98	156	21:15			68	26	94
9:30			77	113	190	21:30			38	35	73
9:45			63	96	159	21:45			46	23	69
10:00			73	97	170	22:00			39	27	66
10:15			78	90	168	22:15			30	20	50
10:30			82	111	193	22:30			31	14	45
10:45			78	110	188	22:45			25	24	49
11:00			60	100	160	23:00			19	16	35
11:15			90	108	198	23:15			15	8	23
11:30			75	107	182	23:30			18	6	24
11:45			106	107	213	23:45			13	13	26
TOTALS	0	0	2374	2968	5342	TOTALS	0	0	4882	4521	9403
SPLIT %	0%	0%	44%	56%	36%	SPLIT %	0%	0%	52%	48%	64%

Hourly Intervals

TIME		NB	SB	EB	WB	TOTAL
00:00	01:00			39	23	62
01:00	02:00			23	12	35
02:00	03:00			7	11	18
03:00	04:00			15	23	38
04:00	05:00			33	62	95
05:00	06:00			93	126	219
06:00	07:00			221	246	467
07:00	08:00			462	513	975
08:00	09:00			576	715	1291
09:00	10:00			263	407	670
10:00	11:00			311	408	719
11:00	12:00			331	422	753
12:00	13:00			622	605	1227
13:00	14:00			525	678	1203
14:00	15:00			496	449	945
15:00	16:00			502	546	1048
16:00	17:00			520	562	1082
17:00	18:00			572	553	1125
18:00	19:00			506	373	879
19:00	20:00			449	280	729
20:00	21:00			299	216	515
21:00	22:00			201	131	332
22:00	23:00			125	85	210
23:00	00:00			65	43	108

STATISTICS

	NB	SB	EB	WB	TOTAL
Peak Period	00:00	to	12:00		
Volume			2374	2968	5342
Peak Hour			7:30	7:45	7:45
Peak Volume			677	728	1389
Peak Hour Factor			0.818	0.740	0.806
Peak Period	12:00	to	00:00		
Volume			4882	4521	9403
Peak Hour			12:00	12:45	12:30
Peak Volume			622	892	1503
Peak Hour Factor			0.827	0.729	0.822
Peak Period	07:00	to	09:00		
Volume			1038	1228	2266
Peak Hour			7:30	7:45	7:45
Peak Volume			677	728	1389
Peak Hour Factor			0.818	0.740	0.806
Peak Period	16:00	to	18:00		
Volume			1092	1115	2207
Peak Hour			16:30	16:00	16:30
Peak Volume			602	562	1147
Peak Hour Factor			0.947	0.956	0.962



Prepared by National Data & Surveying Services

VOLUME

Elk Grove Florin Rd Bet Sheldon Rd & Bond Rd

Day: Tuesday
Date: 4/15/2025

City: Elk Grove
Project #: CA25_070091_007

DAILY TOTALS	NB	SB	EB	WB	Total
	11,082	12,077	0	0	23,159

DAILY TOTALS

15-Minutes Interval

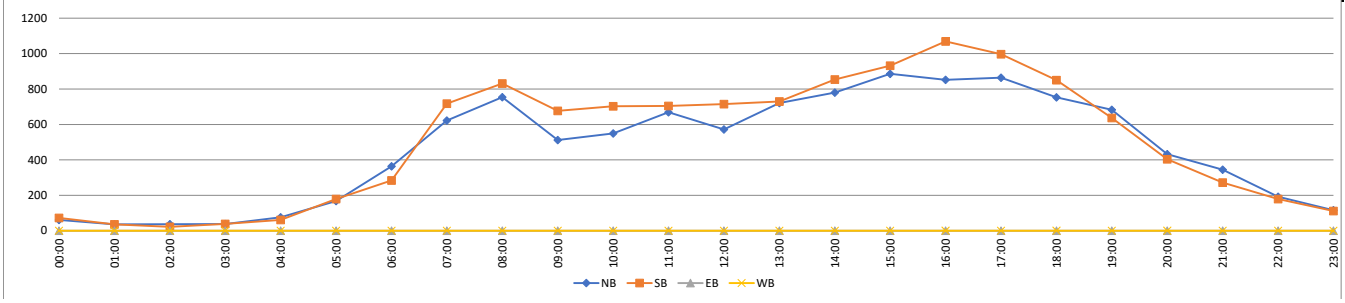
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL
0:00	19	18			37	12:00	155	173			328
0:15	17	34			51	12:15	157	171			328
0:30	13	10			23	12:30	125	194			319
0:45	12	10			22	12:45	135	177			312
1:00	10	17			27	13:00	181	170			351
1:15	10	7			17	13:15	187	181			368
1:30	9	3			12	13:30	156	169			325
1:45	7	9			16	13:45	197	210			407
2:00	13	4			17	14:00	169	206			375
2:15	9	9			18	14:15	221	198			419
2:30	9	3			12	14:30	192	241			433
2:45	6	6			12	14:45	198	209			407
3:00	3	6			9	15:00	202	189			391
3:15	9	8			17	15:15	239	255			494
3:30	13	7			20	15:30	192	214			406
3:45	13	18			31	15:45	253	274			527
4:00	17	4			21	16:00	246	239			485
4:15	13	11			24	16:15	194	306			500
4:30	25	16			41	16:30	202	250			452
4:45	21	30			51	16:45	210	274			484
5:00	31	34			65	17:00	236	292			528
5:15	38	33			71	17:15	252	186			438
5:30	58	57			115	17:30	188	272			460
5:45	41	55			96	17:45	188	247			435
6:00	82	63			145	18:00	169	224			393
6:15	80	61			141	18:15	225	229			454
6:30	111	70			181	18:30	168	189			357
6:45	91	90			181	18:45	191	208			399
7:00	138	101			239	19:00	195	188			383
7:15	157	155			312	19:15	179	141			320
7:30	143	195			338	19:30	153	158			311
7:45	184	267			451	19:45	156	150			306
8:00	200	254			454	20:00	128	135			263
8:15	224	236			460	20:15	112	113			225
8:30	184	180			364	20:30	110	67			177
8:45	146	161			307	20:45	82	89			171
9:00	124	175			299	21:00	119	90			209
9:15	128	135			263	21:15	84	68			152
9:30	148	190			338	21:30	60	65			125
9:45	112	177			289	21:45	82	49			131
10:00	128	148			276	22:00	69	55			124
10:15	115	161			276	22:15	49	43			92
10:30	153	200			353	22:30	36	53			89
10:45	153	194			347	22:45	38	28			66
11:00	161	169			330	23:00	40	32			72
11:15	170	194			364	23:15	35	27			62
11:30	172	147			319	23:30	15	35			50
11:45	166	195			361	23:45	26	17			43
TOTALS	3886	4327	0	0	8213	TOTALS	7196	7750	0	0	14946
SPLIT %	47%	53%	0%	0%	35%	SPLIT %	48%	52%	0%	0%	65%

Hourly Intervals

TIME		NB	SB	EB	WB	TOTAL
00:00	01:00	61	72			133
01:00	02:00	36	36			72
02:00	03:00	37	22			59
03:00	04:00	38	39			77
04:00	05:00	76	61			137
05:00	06:00	168	179			347
06:00	07:00	364	284			648
07:00	08:00	622	718			1340
08:00	09:00	754	831			1585
09:00	10:00	512	677			1189
10:00	11:00	549	703			1252
11:00	12:00	669	705			1374
12:00	13:00	572	715			1287
13:00	14:00	721	730			1451
14:00	15:00	780	854			1634
15:00	16:00	886	932			1818
16:00	17:00	852	1069			1921
17:00	18:00	864	997			1861
18:00	19:00	753	850			1603
19:00	20:00	683	637			1320
20:00	21:00	432	404			836
21:00	22:00	345	272			617
22:00	23:00	192	179			371
23:00	00:00	116	111			227

STATISTICS

	NB	SB	EB	WB	TOTAL
Peak Period	00:00	to	12:00		
Volume	3886	4327			8213
Peak Hour	7:45	7:30			7:45
Peak Volume	792	952			1729
Peak Hour Factor	0.884	0.891			0.940
Peak Period	12:00	to	00:00		
Volume	7196	7750			14946
Peak Hour	15:15	16:15			15:45
Peak Volume	930	1122			1964
Peak Hour Factor	0.919	0.917			0.932
Peak Period	07:00	to	09:00		
Volume	1376	1549			2925
Peak Hour	7:45	7:30			7:45
Peak Volume	792	952			1729
Peak Hour Factor	0.884	0.891			0.940
Peak Period	16:00	to	18:00		
Volume	1716	2066			3782
Peak Hour	16:30	16:15			16:15
Peak Volume	900	1122			1964
Peak Hour Factor	0.893	0.917			0.930



Prepared by National Data & Surveying Services

VOLUME

Elk Grove Florin Rd Bet Bond Rd & Elk Grove Blvd

Day: Tuesday
Date: 4/15/2025

City: Elk Grove
Project #: CA25_070091_008

DAILY TOTALS	NB	SB	EB	WB	Total
	9,508	9,486	0	0	18,994

DAILY TOTALS

15-Minutes Interval

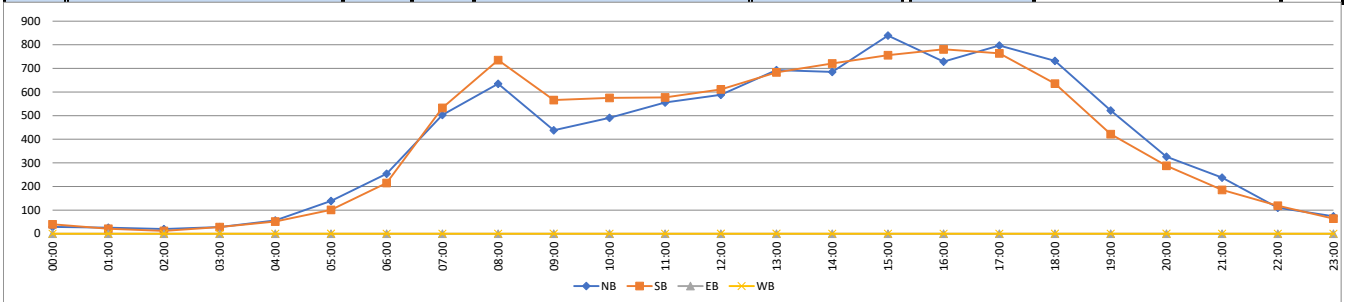
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL
0:00	7	8			15	12:00	179	147			326
0:15	10	17			27	12:15	149	135			284
0:30	8	8			16	12:30	129	151			280
0:45	4	7			11	12:45	131	178			309
1:00	2	9			11	13:00	143	186			329
1:15	10	6			16	13:15	214	187			401
1:30	5	2			7	13:30	170	154			324
1:45	9	4			13	13:45	166	156			322
2:00	9	4			13	14:00	170	151			321
2:15	8	4			12	14:15	166	158			324
2:30	1	2			3	14:30	164	180			344
2:45	2	2			4	14:45	185	232			417
3:00	4	5			9	15:00	217	195			412
3:15	7	7			14	15:15	237	136			373
3:30	8	7			15	15:30	202	199			401
3:45	9	9			18	15:45	183	226			409
4:00	7	7			14	16:00	201	218			419
4:15	11	6			17	16:15	172	159			331
4:30	20	14			34	16:30	162	211			373
4:45	18	25			43	16:45	194	193			387
5:00	18	20			38	17:00	252	186			438
5:15	33	18			51	17:15	197	171			368
5:30	53	29			82	17:30	182	206			388
5:45	35	34			69	17:45	166	201			367
6:00	37	43			80	18:00	178	145			323
6:15	61	42			103	18:15	189	180			369
6:30	73	57			130	18:30	177	170			347
6:45	83	73			156	18:45	188	141			329
7:00	101	71			172	19:00	138	139			277
7:15	124	99			223	19:15	124	103			227
7:30	129	153			282	19:30	137	87			224
7:45	149	210			359	19:45	123	93			216
8:00	189	225			414	20:00	105	91			196
8:15	152	195			347	20:15	88	67			155
8:30	185	165			350	20:30	72	66			138
8:45	109	150			259	20:45	61	64			125
9:00	103	128			231	21:00	88	69			157
9:15	114	143			257	21:15	71	39			110
9:30	121	130			251	21:30	41	41			82
9:45	100	165			265	21:45	38	37			75
10:00	122	147			269	22:00	33	27			60
10:15	112	135			247	22:15	31	40			71
10:30	121	151			272	22:30	24	32			56
10:45	136	142			278	22:45	22	20			42
11:00	138	131			269	23:00	23	18			41
11:15	125	143			268	23:15	23	16			39
11:30	150	140			290	23:30	15	21			36
11:45	143	163			306	23:45	13	9			22
TOTALS	3175	3455	0	0	6630	TOTALS	6333	6031	0	0	12364
SPLIT %	48%	52%	0%	0%	35%	SPLIT %	51%	49%	0%	0%	65%

Hourly Intervals

TIME		NB	SB	EB	WB	TOTAL
00:00	01:00	29	40			69
01:00	02:00	26	21			47
02:00	03:00	20	12			32
03:00	04:00	28	28			56
04:00	05:00	56	52			108
05:00	06:00	139	101			240
06:00	07:00	254	215			469
07:00	08:00	503	533			1036
08:00	09:00	635	735			1370
09:00	10:00	438	566			1004
10:00	11:00	491	575			1066
11:00	12:00	556	577			1133
12:00	13:00	588	611			1199
13:00	14:00	693	683			1376
14:00	15:00	685	721			1406
15:00	16:00	839	756			1595
16:00	17:00	729	781			1510
17:00	18:00	797	764			1561
18:00	19:00	732	636			1368
19:00	20:00	522	422			944
20:00	21:00	326	288			614
21:00	22:00	238	186			424
22:00	23:00	110	119			229
23:00	00:00	74	64			138

STATISTICS

	NB	SB	EB	WB	TOTAL
Peak Period	00:00	to	12:00		
Volume	3175	3455			6630
Peak Hour	7:45	7:45			7:45
Peak Volume	675	795			1470
Peak Hour Factor	0.893	0.883			0.888
Peak Period	12:00	to	00:00		
Volume	6333	6031			12364
Peak Hour	14:45	15:45			14:45
Peak Volume	841	814			1603
Peak Hour Factor	0.887	0.900			0.961
Peak Period	07:00	to	09:00		
Volume	1138	1268			2406
Peak Hour	7:45	7:45			7:45
Peak Volume	675	795			1470
Peak Hour Factor	0.893	0.883			0.888
Peak Period	16:00	to	18:00		
Volume	1526	1545			3071
Peak Hour	16:45	16:00			16:45
Peak Volume	825	781			1581
Peak Hour Factor	0.818	0.896			0.902



Prepared by National Data & Surveying Services

VOLUME

Elk Grove Blvd Bet E Stockton Blvd & Elk Grove Florin Rd

Day: Tuesday
Date: 4/15/2025

City: Elk Grove
Project #: CA25_070091_009

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	18,002	18,093	36,095

DAILY TOTALS

15-Minutes Interval

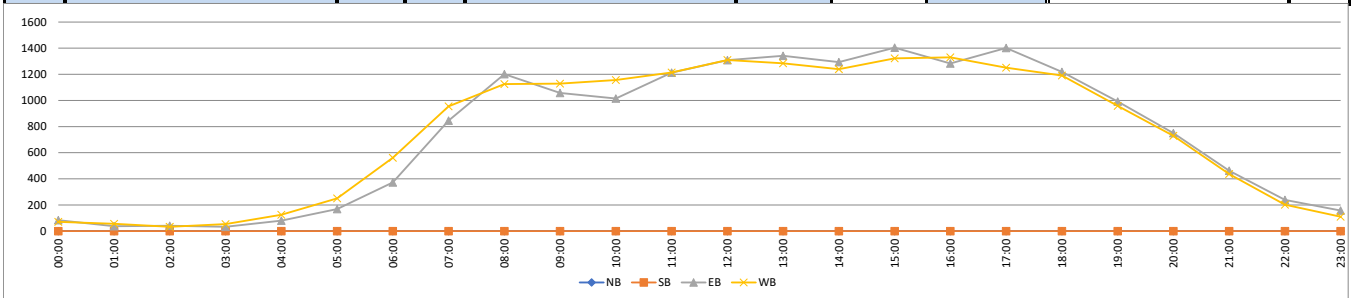
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL
0:00			28	18	46	12:00			321	346	667
0:15			25	24	49	12:15			305	312	617
0:30			17	19	36	12:30			344	319	663
0:45			14	10	24	12:45			338	332	670
1:00			13	17	30	13:00			352	289	641
1:15			9	13	22	13:15			338	328	666
1:30			6	12	18	13:30			328	365	693
1:45			10	14	24	13:45			324	302	626
2:00			18	8	26	14:00			313	313	626
2:15			10	11	21	14:15			287	344	631
2:30			8	6	14	14:30			339	286	625
2:45			5	8	13	14:45			354	296	650
3:00			7	9	16	15:00			326	351	677
3:15			8	14	22	15:15			358	301	659
3:30			9	13	22	15:30			346	339	685
3:45			9	18	27	15:45			374	331	705
4:00			11	20	31	16:00			239	379	618
4:15			13	24	37	16:15			351	341	692
4:30			22	32	54	16:30			302	337	639
4:45			34	49	83	16:45			391	273	664
5:00			28	45	73	17:00			337	389	726
5:15			23	63	86	17:15			394	307	701
5:30			39	71	110	17:30			320	309	629
5:45			79	72	151	17:45			351	246	597
6:00			82	128	210	18:00			315	273	588
6:15			85	109	194	18:15			324	306	630
6:30			85	162	247	18:30			281	296	577
6:45			121	162	283	18:45			299	316	615
7:00			159	220	379	19:00			248	300	548
7:15			188	249	437	19:15			268	234	502
7:30			221	236	457	19:30			231	197	428
7:45			278	250	528	19:45			245	228	473
8:00			315	271	586	20:00			201	222	423
8:15			335	255	590	20:15			222	167	389
8:30			264	295	559	20:30			172	174	346
8:45			287	304	591	20:45			155	166	321
9:00			250	287	537	21:00			149	171	320
9:15			268	274	542	21:15			115	111	226
9:30			241	277	518	21:30			108	75	183
9:45			299	291	590	21:45			90	80	170
10:00			226	286	512	22:00			73	60	133
10:15			263	306	569	22:15			56	71	127
10:30			277	259	536	22:30			54	39	93
10:45			249	305	554	22:45			56	32	88
11:00			292	304	596	23:00			48	34	82
11:15			310	265	575	23:15			43	31	74
11:30			302	322	624	23:30			43	22	65
11:45			309	323	632	23:45			23	23	46
TOTALS	0	0	6151	6730	12881	TOTALS	0	0	11851	11363	23214
SPLIT %	0%	0%	48%	52%	36%	SPLIT %	0%	0%	51%	49%	64%

Hourly Intervals

TIME		NB	SB	EB	WB	TOTAL
00:00	01:00			84	71	155
01:00	02:00			38	56	94
02:00	03:00			41	33	74
03:00	04:00			33	54	87
04:00	05:00			80	125	205
05:00	06:00			169	251	420
06:00	07:00			373	561	934
07:00	08:00			846	955	1801
08:00	09:00			1201	1125	2326
09:00	10:00			1058	1129	2187
10:00	11:00			1015	1156	2171
11:00	12:00			1213	1214	2427
12:00	13:00			1308	1309	2617
13:00	14:00			1342	1284	2626
14:00	15:00			1293	1239	2532
15:00	16:00			1404	1322	2726
16:00	17:00			1283	1330	2613
17:00	18:00			1402	1251	2653
18:00	19:00			1219	1191	2410
19:00	20:00			992	959	1951
20:00	21:00			750	729	1479
21:00	22:00			462	437	899
22:00	23:00			239	202	441
23:00	00:00			157	110	267

STATISTICS

	NB	SB	EB	WB	TOTAL
Peak Period	00:00	to	12:00		
Volume			6151	6730	12881
Peak Hour			11:00	11:00	11:00
Peak Volume			1213	1214	2427
Peak Hour Factor			0.978	0.940	0.960
Peak Period	12:00	to	00:00		
Volume			11851	11363	23214
Peak Hour			16:45	15:30	16:30
Peak Volume			1442	1390	2730
Peak Hour Factor			0.915	0.917	0.940
Peak Period	07:00	to	09:00		
Volume			2047	2080	4127
Peak Hour			8:00	8:00	8:00
Peak Volume			1201	1125	2326
Peak Hour Factor			0.896	0.925	0.984
Peak Period	16:00	to	18:00		
Volume			2685	2581	5266
Peak Hour			16:45	16:15	16:30
Peak Volume			1442	1340	2730
Peak Hour Factor			0.915	0.861	0.940



Prepared by National Data & Surveying Services

VOLUME

Elk Grove Blvd Bet Elk Grove Florin Rd & Waterman Rd

Day: Tuesday
Date: 4/15/2025

City: Elk Grove
Project #: CA25_070091_010

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	8,164	8,442	16,606

15-Minutes Interval

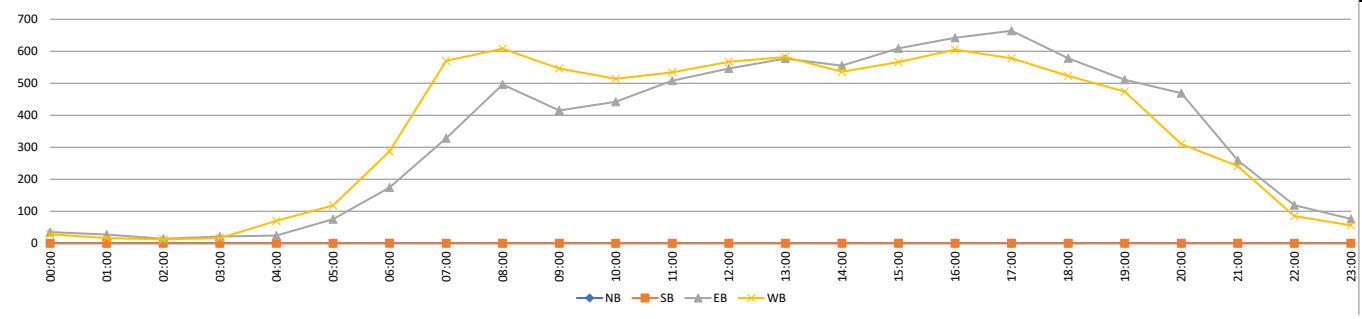
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL
0:00			9	10	19	12:00			128	159	287
0:15			11	12	23	12:15			133	109	242
0:30			8	2	10	12:30			142	145	287
0:45			7	4	11	12:45			143	154	297
1:00			8	5	13	13:00			119	151	270
1:15			8	0	8	13:15			165	156	321
1:30			3	5	8	13:30			152	138	290
1:45			8	6	14	13:45			141	137	278
2:00			7	5	12	14:00			121	128	249
2:15			1	3	4	14:15			146	151	297
2:30			3	2	5	14:30			162	139	301
2:45			3	2	5	14:45			126	118	244
3:00			3	3	6	15:00			149	156	305
3:15			11	5	16	15:15			141	112	253
3:30			5	5	10	15:30			170	147	317
3:45			2	3	5	15:45			149	151	300
4:00			4	7	11	16:00			180	147	327
4:15			5	15	20	16:15			139	159	298
4:30			6	17	23	16:30			156	151	307
4:45			9	31	40	16:45			167	148	315
5:00			14	23	37	17:00			179	162	341
5:15			13	33	46	17:15			171	149	320
5:30			17	27	44	17:30			144	138	282
5:45			31	35	66	17:45			170	129	299
6:00			27	56	83	18:00			136	143	279
6:15			39	67	106	18:15			155	139	294
6:30			44	81	125	18:30			139	122	261
6:45			64	83	147	18:45			148	119	267
7:00			75	125	200	19:00			151	154	305
7:15			81	136	217	19:15			133	103	236
7:30			89	137	226	19:30			138	125	263
7:45			83	172	255	19:45			89	92	181
8:00			104	166	270	20:00			178	87	265
8:15			143	195	338	20:15			103	87	190
8:30			150	116	266	20:30			95	73	168
8:45			99	131	230	20:45			93	63	156
9:00			104	140	244	21:00			85	102	187
9:15			105	136	241	21:15			61	62	123
9:30			104	115	219	21:30			68	38	106
9:45			102	155	257	21:45			45	39	84
10:00			119	115	234	22:00			50	29	79
10:15			94	119	213	22:15			24	28	52
10:30			108	147	255	22:30			23	16	39
10:45			121	133	254	22:45			22	12	34
11:00			116	134	250	23:00			27	17	44
11:15			119	123	242	23:15			23	16	39
11:30			135	143	278	23:30			17	15	32
11:45			138	134	272	23:45			9	8	17
TOTALS	0	0	2559	3319	5878	TOTALS	0	0	5605	5123	10728
SPLIT %	0%	0%	44%	56%	35%	SPLIT %	0%	0%	52%	48%	65%

Hourly Intervals

TIME		NB	SB	EB	WB	TOTAL
00:00	01:00			35	28	63
01:00	02:00			27	16	43
02:00	03:00			14	12	26
03:00	04:00			21	16	37
04:00	05:00			24	70	94
05:00	06:00			75	118	193
06:00	07:00			174	287	461
07:00	08:00			328	570	898
08:00	09:00			496	608	1104
09:00	10:00			415	546	961
10:00	11:00			442	514	956
11:00	12:00			508	534	1042
12:00	13:00			546	567	1113
13:00	14:00			577	582	1159
14:00	15:00			555	536	1091
15:00	16:00			609	566	1175
16:00	17:00			642	605	1247
17:00	18:00			664	578	1242
18:00	19:00			578	523	1101
19:00	20:00			511	474	985
20:00	21:00			469	310	779
21:00	22:00			259	241	500
22:00	23:00			119	85	204
23:00	00:00			76	56	132

STATISTICS

	NB	SB	EB	WB	TOTAL
Peak Period	00:00	to	12:00		
Volume			2559	3319	5878
Peak Hour			11:00	7:30	7:45
Peak Volume			508	670	1129
Peak Hour Factor			0.920	0.859	0.835
Peak Period	12:00	to	00:00		
Volume			5605	5123	10728
Peak Hour			16:30	16:15	16:30
Peak Volume			673	620	1283
Peak Hour Factor			0.940	0.957	0.941
Peak Period	07:00	to	09:00		
Volume			824	1178	2002
Peak Hour			8:00	7:30	7:45
Peak Volume			496	670	1129
Peak Hour Factor			0.827	0.859	0.835
Peak Period	16:00	to	18:00		
Volume			1306	1183	2489
Peak Hour			16:30	16:15	16:30
Peak Volume			673	620	1283
Peak Hour Factor			0.940	0.957	0.941



Prepared by National Data & Surveying Services

VOLUME

Elk Grove Blvd Bet Waterman Rd & Bradshaw Rd

Day: Tuesday
Date: 4/15/2025

City: Elk Grove
Project #: CA25_070091_011

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	3,399	3,486	6,885

DAILY TOTALS

15-Minutes Interval

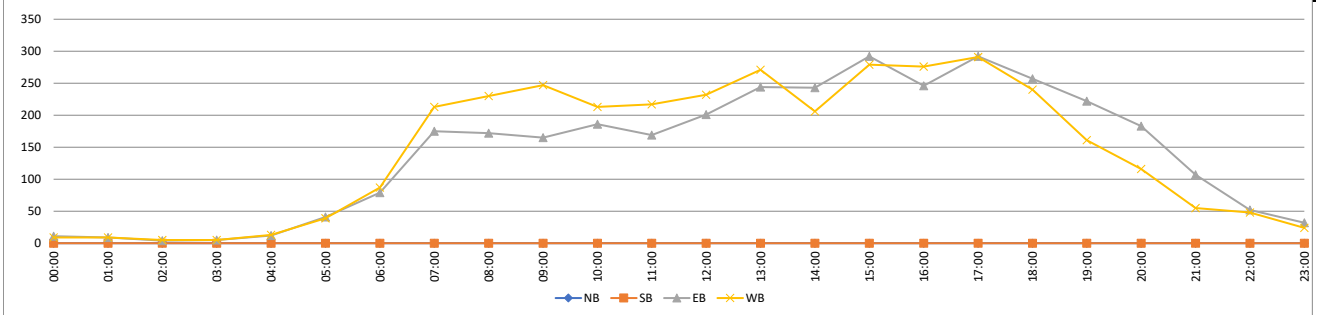
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL
0:00			1	6	7	12:00			40	61	101
0:15			4	0	4	12:15			55	47	102
0:30			1	1	2	12:30			53	54	107
0:45			5	2	7	12:45			53	70	123
1:00			3	2	5	13:00			61	90	151
1:15			3	4	7	13:15			66	58	124
1:30			2	1	3	13:30			58	52	110
1:45			1	2	3	13:45			59	71	130
2:00			0	2	2	14:00			66	39	105
2:15			1	1	2	14:15			57	56	113
2:30			3	0	3	14:30			63	70	133
2:45			0	2	2	14:45			57	41	98
3:00			1	2	3	15:00			62	66	128
3:15			1	1	2	15:15			77	63	140
3:30			2	1	3	15:30			63	70	133
3:45			1	1	2	15:45			90	80	170
4:00			3	3	6	16:00			69	64	133
4:15			0	2	2	16:15			62	82	144
4:30			5	4	9	16:30			66	63	129
4:45			4	4	8	16:45			49	67	116
5:00			4	3	7	17:00			91	79	170
5:15			7	13	20	17:15			80	68	148
5:30			17	11	28	17:30			60	64	124
5:45			13	12	25	17:45			61	80	141
6:00			10	20	30	18:00			71	76	147
6:15			17	12	29	18:15			62	48	110
6:30			22	24	46	18:30			61	63	124
6:45			30	31	61	18:45			63	53	116
7:00			45	45	90	19:00			55	41	96
7:15			51	47	98	19:15			56	52	108
7:30			48	60	108	19:30			61	30	91
7:45			31	61	92	19:45			50	38	88
8:00			47	65	112	20:00			68	30	98
8:15			47	64	111	20:15			38	31	69
8:30			47	51	98	20:30			49	32	81
8:45			31	50	81	20:45			28	23	51
9:00			31	64	95	21:00			35	19	54
9:15			47	67	114	21:15			30	11	41
9:30			45	58	103	21:30			29	15	44
9:45			42	58	100	21:45			13	10	23
10:00			39	46	85	22:00			28	24	52
10:15			53	51	104	22:15			11	7	18
10:30			48	48	96	22:30			6	8	14
10:45			46	68	114	22:45			7	9	16
11:00			45	43	88	23:00			14	7	21
11:15			48	52	100	23:15			8	9	17
11:30			36	53	89	23:30			5	7	12
11:45			40	69	109	23:45			5	1	6
TOTALS	0	0	1028	1287	2315	TOTALS	0	0	2371	2199	4570
SPLIT %	0%	0%	44%	56%	34%	SPLIT %	0%	0%	52%	48%	66%

Hourly Intervals

TIME		NB	SB	EB	WB	TOTAL
00:00	01:00			11	9	20
01:00	02:00			9	9	18
02:00	03:00			4	5	9
03:00	04:00			5	5	10
04:00	05:00			12	13	25
05:00	06:00			41	39	80
06:00	07:00			79	87	166
07:00	08:00			175	213	388
08:00	09:00			172	230	402
09:00	10:00			165	247	412
10:00	11:00			186	213	399
11:00	12:00			169	217	386
12:00	13:00			201	232	433
13:00	14:00			244	271	515
14:00	15:00			243	206	449
15:00	16:00			292	279	571
16:00	17:00			246	276	522
17:00	18:00			292	291	583
18:00	19:00			257	240	497
19:00	20:00			222	161	383
20:00	21:00			183	116	299
21:00	22:00			107	55	162
22:00	23:00			52	48	100
23:00	00:00			32	24	56

STATISTICS

	NB	SB	EB	WB	TOTAL
Peak Period	00:00	to	12:00		
Volume			1028	1287	2315
Peak Hour			10:15	7:30	7:30
Peak Volume			192	250	423
Peak Hour Factor			0.906	0.962	0.944
Peak Period	12:00	to	00:00		
Volume			2371	2199	4570
Peak Hour			15:15	15:30	17:00
Peak Volume			299	296	583
Peak Hour Factor			0.831	0.902	0.857
Peak Period	07:00	to	09:00		
Volume			347	443	790
Peak Hour			7:15	7:30	7:30
Peak Volume			177	250	423
Peak Hour Factor			0.868	0.962	0.944
Peak Period	16:00	to	18:00		
Volume			538	567	1105
Peak Hour			17:00	16:15	17:00
Peak Volume			292	291	583
Peak Hour Factor			0.802	0.887	0.857



Prepared by National Data & Surveying Services

VOLUME

Bradshaw Rd Bet Bond Rd & Elk Grove Blvd

Day: Tuesday
Date: 4/15/2025

City: Elk Grove
Project #: CA25_070091_012

DAILY TOTALS	NB	SB	EB	WB	Total
	5,849	6,016	0	0	11,865

DAILY TOTALS

15-Minutes Interval

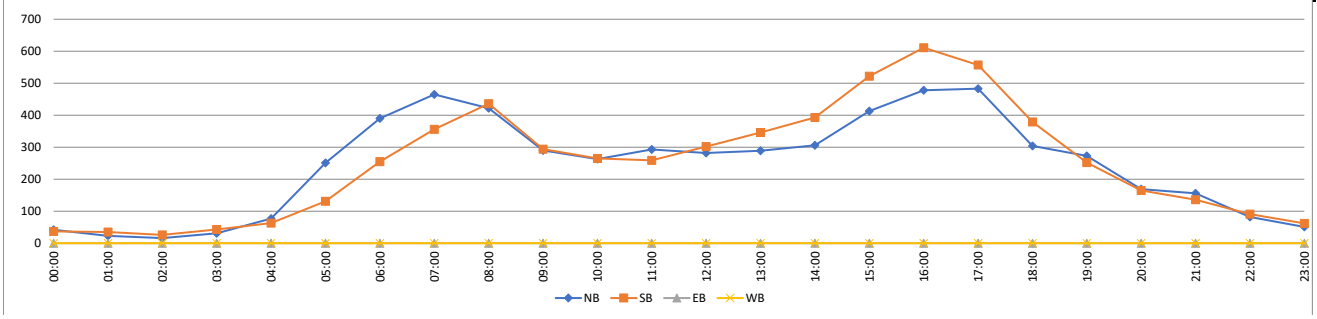
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL
0:00	10	10			20	12:00	70	56			126
0:15	12	8			20	12:15	78	73			151
0:30	13	11			24	12:30	56	86			142
0:45	7	8			15	12:45	78	87			165
1:00	7	9			16	13:00	68	125			193
1:15	8	11			19	13:15	75	63			138
1:30	4	7			11	13:30	73	71			144
1:45	4	8			12	13:45	73	87			160
2:00	4	7			11	14:00	69	79			148
2:15	5	4			9	14:15	81	77			158
2:30	4	6			10	14:30	78	107			185
2:45	3	9			12	14:45	78	130			208
3:00	4	10			14	15:00	102	126			228
3:15	7	10			17	15:15	112	130			242
3:30	7	13			20	15:30	102	144			246
3:45	13	10			23	15:45	97	122			219
4:00	12	7			19	16:00	107	165			272
4:15	11	17			28	16:15	126	156			282
4:30	23	15			38	16:30	117	139			256
4:45	31	24			55	16:45	128	151			279
5:00	35	21			56	17:00	128	136			264
5:15	62	33			95	17:15	133	138			271
5:30	74	37			111	17:30	130	150			280
5:45	80	40			120	17:45	92	133			225
6:00	76	43			119	18:00	87	135			222
6:15	88	72			160	18:15	62	99			161
6:30	121	57			178	18:30	71	84			155
6:45	105	83			188	18:45	84	61			145
7:00	100	87			187	19:00	64	75			139
7:15	129	69			198	19:15	86	63			149
7:30	122	78			200	19:30	69	59			128
7:45	114	122			236	19:45	54	55			109
8:00	130	106			236	20:00	45	42			87
8:15	127	137			264	20:15	49	49			98
8:30	100	93			193	20:30	42	47			89
8:45	65	100			165	20:45	33	27			60
9:00	68	71			139	21:00	38	47			85
9:15	64	77			141	21:15	59	34			93
9:30	91	70			161	21:30	29	34			63
9:45	67	76			143	21:45	30	21			51
10:00	56	69			125	22:00	23	27			50
10:15	69	61			130	22:15	22	24			46
10:30	70	65			135	22:30	22	19			41
10:45	68	70			138	22:45	15	21			36
11:00	82	56			138	23:00	18	24			42
11:15	73	62			135	23:15	12	18			30
11:30	72	68			140	23:30	12	10			22
11:45	66	73			139	23:45	9	10			19
TOTALS	2563	2200	0	0	4763	TOTALS	3286	3816	0	0	7102
SPLIT %	54%	46%	0%	0%	40%	SPLIT %	46%	54%	0%	0%	60%

Hourly Intervals

TIME		NB	SB	EB	WB	TOTAL
00:00	01:00	42	37			79
01:00	02:00	23	35			58
02:00	03:00	16	26			42
03:00	04:00	31	43			74
04:00	05:00	77	63			140
05:00	06:00	251	131			382
06:00	07:00	390	255			645
07:00	08:00	465	356			821
08:00	09:00	422	436			858
09:00	10:00	290	294			584
10:00	11:00	263	265			528
11:00	12:00	293	259			552
12:00	13:00	282	302			584
13:00	14:00	289	346			635
14:00	15:00	306	393			699
15:00	16:00	413	522			935
16:00	17:00	478	611			1089
17:00	18:00	483	557			1040
18:00	19:00	304	379			683
19:00	20:00	273	252			525
20:00	21:00	169	165			334
21:00	22:00	156	136			292
22:00	23:00	82	91			173
23:00	00:00	51	62			113

STATISTICS

	NB	SB	EB	WB	TOTAL
Peak Period	00:00	to	12:00		
Volume	2563	2200			4763
Peak Hour	7:15	7:45			7:30
Peak Volume	495	458			936
Peak Hour Factor	0.952	0.836			0.886
Peak Period	12:00	to	00:00		
Volume	3286	3816			7102
Peak Hour	16:45	16:00			16:45
Peak Volume	519	611			1094
Peak Hour Factor	0.976	0.926			0.977
Peak Period	07:00	to	09:00		
Volume	887	792			1679
Peak Hour	7:15	7:45			7:30
Peak Volume	495	458			936
Peak Hour Factor	0.952	0.836			0.886
Peak Period	16:00	to	18:00		
Volume	961	1168			2129
Peak Hour	16:45	16:00			16:45
Peak Volume	519	611			1094
Peak Hour Factor	0.976	0.926			0.977



Appendix B - Delay Reports

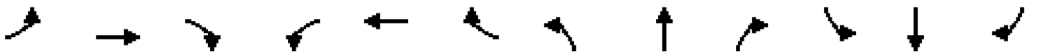
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	476	307	54	610	201	402	279	51	196	335	215
Future Volume (veh/h)	233	476	307	54	610	201	402	279	51	196	335	215
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	277	567	107	64	726	63	479	332	1	233	399	37
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	1517	675	279	1508	664	543	713	318	317	480	211
Arrive On Green	0.08	0.43	0.43	0.08	0.42	0.42	0.16	0.20	0.20	0.09	0.14	0.14
Sat Flow, veh/h	3456	3554	1581	3456	3554	1565	3456	3554	1585	3456	3554	1561
Grp Volume(v), veh/h	277	567	107	64	726	63	479	332	1	233	399	37
Grp Sat Flow(s),veh/h/ln	1728	1777	1581	1728	1777	1565	1728	1777	1585	1728	1777	1561
Q Serve(g_s), s	9.6	13.1	5.0	2.1	17.7	2.9	16.3	9.9	0.1	7.9	13.1	2.5
Cycle Q Clear(g_c), s	9.6	13.1	5.0	2.1	17.7	2.9	16.3	9.9	0.1	7.9	13.1	2.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	288	1517	675	279	1508	664	543	713	318	317	480	211
V/C Ratio(X)	0.96	0.37	0.16	0.23	0.48	0.09	0.88	0.47	0.00	0.74	0.83	0.18
Avail Cap(c_a), veh/h	288	1517	675	317	1508	664	720	888	396	547	711	312
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.8	23.4	21.1	51.7	25.0	20.7	49.5	42.3	38.4	53.1	50.6	46.0
Incr Delay (d2), s/veh	38.5	0.6	0.4	0.2	0.1	0.0	8.3	0.2	0.0	1.3	3.4	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	5.4	1.9	0.9	7.1	1.0	7.4	4.2	0.0	3.4	5.9	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	93.3	24.0	21.6	51.8	25.1	20.7	57.7	42.5	38.4	54.3	54.0	46.1
LnGrp LOS	F	C	C	D	C	C	E	D	D	D	D	D
Approach Vol, veh/h		951			853			812			669	
Approach Delay, s/veh		43.9			26.8			51.5			53.7	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.7	57.2	24.9	22.2	16.0	56.9	17.0	30.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	11.0	36.0	25.0	24.0	10.0	37.0	19.0	30.0
Max Q Clear Time (g_c+I1), s	4.1	15.1	18.3	15.1	11.6	19.7	9.9	11.9
Green Ext Time (p_c), s	0.0	2.3	0.6	1.1	0.0	2.9	0.3	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	43.3
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	208	131	44	349	160	113	296	42	114	350	162
Future Volume (veh/h)	98	208	131	44	349	160	113	296	42	114	350	162
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	105	224	141	47	375	172	122	318	45	123	376	174
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	186	565	462	132	495	404	193	884	385	193	466	388
Arrive On Green	0.11	0.30	0.30	0.07	0.27	0.27	0.11	0.25	0.25	0.11	0.25	0.25
Sat Flow, veh/h	1767	1856	1518	1767	1856	1516	1767	3526	1537	1767	1856	1547
Grp Volume(v), veh/h	105	224	141	47	375	172	122	318	45	123	376	174
Grp Sat Flow(s),veh/h/ln	1767	1856	1518	1767	1856	1516	1767	1763	1537	1767	1856	1547
Q Serve(g_s), s	4.3	7.3	5.4	1.9	14.1	7.2	5.0	5.7	1.7	5.1	14.5	7.2
Cycle Q Clear(g_c), s	4.3	7.3	5.4	1.9	14.1	7.2	5.0	5.7	1.7	5.1	14.5	7.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	186	565	462	132	495	404	193	884	385	193	466	388
V/C Ratio(X)	0.56	0.40	0.31	0.36	0.76	0.43	0.63	0.36	0.12	0.64	0.81	0.45
Avail Cap(c_a), veh/h	209	918	751	220	930	760	255	1481	646	253	777	648
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.4	21.0	20.3	33.5	25.7	23.1	32.5	23.5	22.0	32.5	26.8	24.1
Incr Delay (d2), s/veh	1.1	0.2	0.1	1.6	0.9	0.3	1.3	0.1	0.0	1.3	1.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	3.1	1.8	0.9	6.0	2.4	2.1	2.2	0.6	2.2	6.2	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.5	21.1	20.5	35.2	26.6	23.4	33.7	23.6	22.1	33.8	28.1	24.4
LnGrp LOS	C	C	C	D	C	C	C	C	C	C	C	C
Approach Vol, veh/h		470			594			485			673	
Approach Delay, s/veh		23.7			26.3			26.0			28.2	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	28.3	13.4	24.2	13.1	25.4	13.4	24.2
Change Period (Y+Rc), s	4.6	5.1	5.1	5.1	5.1	* 5.1	5.1	5.1
Max Green Setting (Gmax), s	9.5	37.7	11.0	31.9	9.0	* 38	10.9	32.0
Max Q Clear Time (g_c+I1), s	3.9	9.3	7.0	16.5	6.3	16.1	7.1	7.7
Green Ext Time (p_c), s	0.0	1.2	0.0	1.5	0.0	1.7	0.0	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	26.3
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

MOVEMENT SUMMARY

Site: 3 [Waterman & Sheldon AM Peak Hour (Site Folder: ENP)]

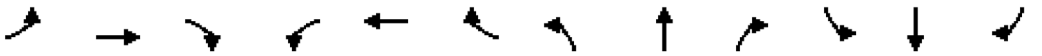
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Waterman Road															
3	L2	All MCs	214	3.0	214	3.0	0.667	12.5	LOS B	7.8	198.7	0.83	0.80	1.31	29.4
8	T1	All MCs	375	3.0	375	3.0	0.667	12.5	LOS B	7.8	198.7	0.83	0.80	1.31	29.9
18	R2	All MCs	165	3.0	165	3.0	0.667	12.5	LOS B	7.8	198.7	0.83	0.80	1.31	29.7
Approach			754	3.0	754	3.0	0.667	12.5	LOS B	7.8	198.7	0.83	0.80	1.31	29.7
East: Sheldon Road															
1	L2	All MCs	171	3.0	171	3.0	0.984	54.3	LOS F	21.0	537.4	1.00	1.87	3.64	19.2
6	T1	All MCs	457	3.0	457	3.0	0.984	54.3	LOS F	21.0	537.4	1.00	1.87	3.64	19.4
16	R2	All MCs	24	3.0	24	3.0	0.984	54.3	LOS F	21.0	537.4	1.00	1.87	3.64	19.3
Approach			652	3.0	652	3.0	0.984	54.3	LOS F	21.0	537.4	1.00	1.87	3.64	19.3
North: Waterman Road															
7	L2	All MCs	33	3.0	33	3.0	0.870	37.7	LOS E	9.6	244.7	0.95	1.33	2.31	22.4
4	T1	All MCs	472	3.0	472	3.0	0.870	37.7	LOS E	9.6	244.7	0.95	1.33	2.31	22.8
14	R2	All MCs	209	3.0	209	3.0	0.359	11.4	LOS B	1.5	39.2	0.70	0.70	0.82	30.5
Approach			714	3.0	714	3.0	0.870	30.0	LOS D	9.6	244.7	0.88	1.15	1.88	24.5
West: Sheldon Road															
5	L2	All MCs	144	3.0	144	3.0	0.770	21.5	LOS C	8.8	224.1	0.94	1.11	1.82	26.4
2	T1	All MCs	308	3.0	308	3.0	0.770	21.5	LOS C	8.8	224.1	0.94	1.11	1.82	26.8
12	R2	All MCs	158	3.0	158	3.0	0.770	21.5	LOS C	8.8	224.1	0.94	1.11	1.82	26.7
Approach			610	3.0	610	3.0	0.770	21.5	LOS C	8.8	224.1	0.94	1.11	1.82	26.7
All Vehicles			2729	3.0	2729	3.0	0.984	29.1	LOS D	21.0	537.4	0.91	1.21	2.13	24.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



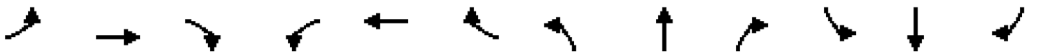
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	374	547	104	309	737	139	205	399	198	145	574	436
Future Volume (veh/h)	374	547	104	309	737	139	205	399	198	145	574	436
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	407	595	113	336	801	151	223	434	215	158	624	474
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	440	1050	467	389	983	436	303	1129	502	301	1128	495
Arrive On Green	0.13	0.30	0.30	0.11	0.28	0.28	0.09	0.32	0.32	0.09	0.32	0.32
Sat Flow, veh/h	3456	3554	1580	3456	3554	1576	3456	3554	1579	3456	3554	1561
Grp Volume(v), veh/h	407	595	113	336	801	151	223	434	215	158	624	474
Grp Sat Flow(s),veh/h/ln	1728	1777	1580	1728	1777	1576	1728	1777	1579	1728	1777	1561
Q Serve(g_s), s	14.6	17.8	6.8	12.0	26.4	9.6	7.9	11.9	13.5	5.5	18.3	37.4
Cycle Q Clear(g_c), s	14.6	17.8	6.8	12.0	26.4	9.6	7.9	11.9	13.5	5.5	18.3	37.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	440	1050	467	389	983	436	303	1129	502	301	1128	495
V/C Ratio(X)	0.92	0.57	0.24	0.86	0.81	0.35	0.74	0.38	0.43	0.52	0.55	0.96
Avail Cap(c_a), veh/h	440	1132	503	426	1118	496	303	1132	503	303	1132	497
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.2	37.5	33.6	54.8	42.4	36.3	55.9	33.3	33.9	54.8	35.5	42.0
Incr Delay (d2), s/veh	25.1	0.9	0.5	15.0	4.9	0.8	8.7	0.4	1.0	1.3	0.9	29.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	7.7	2.7	5.9	11.9	3.8	3.8	5.2	5.3	2.4	7.8	18.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	79.3	38.4	34.0	69.8	47.3	37.1	64.6	33.7	34.8	56.1	36.4	72.0
LnGrp LOS	E	D	C	E	D	D	E	C	C	E	D	E
Approach Vol, veh/h		1115			1288			872			1256	
Approach Delay, s/veh		52.9			52.0			41.9			52.3	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.7	43.1	17.0	45.9	22.0	40.8	17.0	45.9
Change Period (Y+Rc), s	5.5	6.0	6.0	6.0	6.0	* 6	6.0	6.0
Max Green Setting (Gmax), s	15.5	40.0	11.0	40.0	16.0	* 40	11.0	40.0
Max Q Clear Time (g_c+I1), s	14.0	19.8	9.9	39.4	16.6	28.4	7.5	15.5
Green Ext Time (p_c), s	0.2	6.4	0.1	0.5	0.0	6.0	0.1	6.1

Intersection Summary	
HCM 7th Control Delay, s/veh	50.3
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	268	391	215	130	448	21	354	368	78	55	345	246
Future Volume (veh/h)	268	391	215	130	448	21	354	368	78	55	345	246
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.87	1.00		0.97	1.00		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	279	407	224	135	467	22	369	383	81	57	359	256
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	329	1032	438	252	1156	54	417	989	207	139	556	426
Arrive On Green	0.10	0.29	0.29	0.14	0.34	0.34	0.12	0.34	0.34	0.08	0.30	0.30
Sat Flow, veh/h	3428	3526	1497	1767	3402	160	3428	2886	603	1767	1856	1422
Grp Volume(v), veh/h	279	407	224	135	241	248	369	232	232	57	359	256
Grp Sat Flow(s),veh/h/ln	1714	1763	1497	1767	1763	1798	1714	1763	1726	1767	1856	1422
Q Serve(g_s), s	11.2	12.9	12.7	9.9	14.6	14.8	14.8	14.0	14.3	4.3	23.5	21.5
Cycle Q Clear(g_c), s	11.2	12.9	12.7	9.9	14.6	14.8	14.8	14.0	14.3	4.3	23.5	21.5
Prop In Lane	1.00		1.00	1.00		0.09	1.00		0.35	1.00		1.00
Lane Grp Cap(c), veh/h	329	1032	438	252	599	611	417	604	592	139	556	426
V/C Ratio(X)	0.85	0.39	0.51	0.53	0.40	0.41	0.88	0.38	0.39	0.41	0.65	0.60
Avail Cap(c_a), veh/h	465	1032	438	252	599	611	490	604	592	151	556	426
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.71	0.71	0.71
Uniform Delay (d), s/veh	62.3	39.6	21.8	55.7	35.3	35.4	60.5	34.8	34.9	61.4	42.6	41.9
Incr Delay (d2), s/veh	7.3	1.1	4.2	1.2	2.0	2.0	14.2	1.8	1.9	0.5	4.1	4.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	5.9	5.1	4.6	6.8	7.0	7.3	6.4	6.4	1.9	11.4	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.6	40.7	26.0	56.9	37.3	37.4	74.7	36.7	36.9	61.9	46.6	46.3
LnGrp LOS	E	D	C	E	D	D	E	D	D	E	D	D
Approach Vol, veh/h		910			624			833			672	
Approach Delay, s/veh		45.9			41.6			53.6			47.8	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.0	46.0	22.0	47.0	18.4	52.6	16.0	53.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	19.0	41.0	20.0	40.0	19.0	41.0	12.0	48.0
Max Q Clear Time (g_c+I1), s	11.9	14.9	16.8	25.5	13.2	16.8	6.3	16.3
Green Ext Time (p_c), s	0.1	2.4	0.2	1.2	0.2	2.1	0.0	1.5

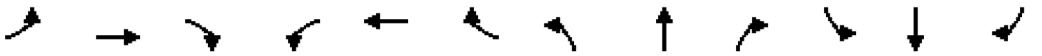
Intersection Summary	
HCM 7th Control Delay, s/veh	47.5
HCM 7th LOS	D

Intersection	
Intersection Delay, s/veh	16.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	146	74	28	1	105	20	11	257	2	7	323	49
Future Vol, veh/h	146	74	28	1	105	20	11	257	2	7	323	49
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	157	80	30	1	113	22	12	276	2	8	347	53
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay, s/veh	15.7	12.2	15.1	19.9
HCM LOS	C	B	C	C

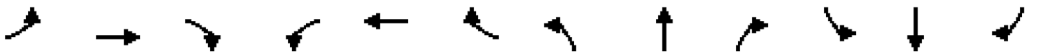
Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	4%	66%	0%	1%	2%
Vol Thru, %	95%	34%	0%	83%	85%
Vol Right, %	1%	0%	100%	16%	13%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	270	220	28	126	379
LT Vol	11	146	0	1	7
Through Vol	257	74	0	105	323
RT Vol	2	0	28	20	49
Lane Flow Rate	290	237	30	135	408
Geometry Grp	2	5	5	4a	2
Degree of Util (X)	0.495	0.477	0.052	0.255	0.667
Departure Headway (Hd)	6.142	7.252	6.197	6.776	5.889
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	586	497	577	528	619
Service Time	4.192	5.005	3.949	4.841	3.889
HCM Lane V/C Ratio	0.495	0.477	0.052	0.256	0.659
HCM Control Delay, s/veh	15.1	16.5	9.3	12.2	19.9
HCM Lane LOS	C	C	A	B	C
HCM 95th-tile Q	2.7	2.5	0.2	1	5



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	563	235	61	560	96	168	296	83	130	389	187
Future Volume (veh/h)	195	563	235	61	560	96	168	296	83	130	389	187
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	203	586	19	64	583	-54	175	308	34	135	405	3
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	316	1172	514	750	1618	722	347	505	225	343	501	223
Arrive On Green	0.09	0.33	0.33	0.22	0.45	0.00	0.10	0.14	0.14	0.10	0.14	0.14
Sat Flow, veh/h	3483	3582	1572	3483	3582	1598	3483	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	203	586	19	64	583	-54	175	308	34	135	405	3
Grp Sat Flow(s),veh/h/ln	1742	1791	1572	1742	1791	1598	1742	1791	1598	1742	1791	1598
Q Serve(g_s), s	6.2	14.5	0.6	1.6	11.7	0.0	5.2	8.9	1.3	4.0	12.1	0.2
Cycle Q Clear(g_c), s	6.2	14.5	0.6	1.6	11.7	0.0	5.2	8.9	1.3	4.0	12.1	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	316	1172	514	750	1618	722	347	505	225	343	501	223
V/C Ratio(X)	0.64	0.50	0.04	0.09	0.36	-0.07	0.50	0.61	0.15	0.39	0.81	0.01
Avail Cap(c_a), veh/h	348	1172	514	750	1618	722	348	912	407	348	912	407
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.74	0.74	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.3	29.8	12.0	34.5	19.7	0.0	47.0	44.4	16.1	46.5	45.9	40.8
Incr Delay (d2), s/veh	1.7	1.1	0.1	0.0	0.1	0.0	0.4	0.4	0.1	0.3	1.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	6.1	0.3	0.7	4.6	0.0	2.2	3.9	0.8	1.7	5.3	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.0	30.9	12.1	34.5	19.8	0.0	47.4	44.9	16.2	46.8	47.1	40.8
LnGrp LOS	D	C	B	C	B		D	D	B	D	D	D
Approach Vol, veh/h		808			593			517			543	
Approach Delay, s/veh		35.3			23.2			43.8			47.0	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.7	42.0	16.9	21.4	16.0	55.7	16.8	21.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	11.0	36.0	11.0	28.0	11.0	36.0	11.0	28.0
Max Q Clear Time (g_c+I1), s	3.6	16.5	7.2	14.1	8.2	13.7	6.0	10.9
Green Ext Time (p_c), s	0.0	2.3	0.1	1.3	0.1	2.3	0.1	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	36.7
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	364	127	64	291	101	169	320	61	177	252	96
Future Volume (veh/h)	116	364	127	64	291	101	169	320	61	177	252	96
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	125	391	137	69	313	109	182	344	66	190	271	103
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	221	513	420	176	452	373	237	696	305	238	368	300
Arrive On Green	0.12	0.27	0.27	0.10	0.24	0.24	0.13	0.19	0.19	0.13	0.20	0.20
Sat Flow, veh/h	1795	1885	1543	1795	1885	1553	1795	3582	1568	1795	1885	1540
Grp Volume(v), veh/h	125	391	137	69	313	109	182	344	66	190	271	103
Grp Sat Flow(s),veh/h/ln	1795	1885	1543	1795	1885	1553	1795	1791	1568	1795	1885	1540
Q Serve(g_s), s	4.3	12.5	4.7	2.4	10.0	3.8	6.4	5.6	2.3	6.7	8.9	3.8
Cycle Q Clear(g_c), s	4.3	12.5	4.7	2.4	10.0	3.8	6.4	5.6	2.3	6.7	8.9	3.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	221	513	420	176	452	373	237	696	305	238	368	300
V/C Ratio(X)	0.57	0.76	0.33	0.39	0.69	0.29	0.77	0.49	0.22	0.80	0.74	0.34
Avail Cap(c_a), veh/h	246	1064	870	259	1078	888	330	1743	763	314	900	735
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.2	22.0	19.1	27.8	22.8	20.4	27.6	23.6	22.3	27.7	24.9	22.8
Incr Delay (d2), s/veh	1.0	0.9	0.2	1.4	0.7	0.2	4.2	0.2	0.1	7.5	1.1	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	5.4	1.5	1.0	4.1	1.3	2.9	2.2	0.8	3.2	3.8	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.2	22.9	19.3	29.2	23.5	20.6	31.8	23.8	22.4	35.2	26.0	23.1
LnGrp LOS	C	C	B	C	C	C	C	C	C	D	C	C
Approach Vol, veh/h		653			491			592			564	
Approach Delay, s/veh		23.1			23.7			26.1			28.6	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	23.0	13.8	17.9	13.2	20.9	13.8	17.9
Change Period (Y+Rc), s	4.6	5.1	5.1	5.1	5.1	* 5.1	5.1	5.1
Max Green Setting (Gmax), s	9.5	37.1	12.1	31.4	9.0	* 38	11.5	32.0
Max Q Clear Time (g_c+I1), s	4.4	14.5	8.4	10.9	6.3	12.0	8.7	7.6
Green Ext Time (p_c), s	0.0	1.9	0.1	1.1	0.0	1.3	0.1	1.5

Intersection Summary	
HCM 7th Control Delay, s/veh	25.3
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

MOVEMENT SUMMARY

Site: 3 [Waterman & Sheldon PM Peak Hour (Site Folder: ENP)]

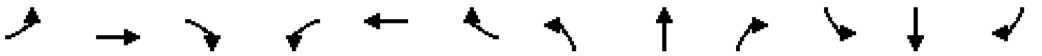
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Waterman Road															
3	L2	All MCs	133	2.0	133	2.0	0.656	13.8	LOS B	7.2	183.1	0.83	0.82	1.31	29.1
8	T1	All MCs	341	2.0	341	2.0	0.656	13.8	LOS B	7.2	183.1	0.83	0.82	1.31	29.6
18	R2	All MCs	149	2.0	149	2.0	0.656	13.8	LOS B	7.2	183.1	0.83	0.82	1.31	29.4
Approach			623	2.0	623	2.0	0.656	13.8	LOS B	7.2	183.1	0.83	0.82	1.31	29.4
East: Sheldon Road															
1	L2	All MCs	197	2.0	197	2.0	0.815	23.8	LOS C	11.9	302.2	0.98	1.20	2.07	25.7
6	T1	All MCs	464	2.0	464	2.0	0.815	23.8	LOS C	11.9	302.2	0.98	1.20	2.07	26.1
16	R2	All MCs	19	2.0	19	2.0	0.815	23.8	LOS C	11.9	302.2	0.98	1.20	2.07	26.0
Approach			680	2.0	680	2.0	0.815	23.8	LOS C	11.9	302.2	0.98	1.20	2.07	26.0
North: Waterman Road															
7	L2	All MCs	27	2.0	27	2.0	0.712	21.9	LOS C	5.6	142.4	0.86	1.01	1.52	26.6
4	T1	All MCs	420	2.0	420	2.0	0.712	21.9	LOS C	5.6	142.4	0.86	1.01	1.52	27.1
14	R2	All MCs	223	2.0	223	2.0	0.356	10.6	LOS B	1.6	39.8	0.69	0.67	0.79	30.8
Approach			670	2.0	670	2.0	0.712	18.1	LOS C	5.6	142.4	0.80	0.90	1.28	28.2
West: Sheldon Road															
5	L2	All MCs	126	2.0	126	2.0	0.541	9.6	LOS A	4.2	106.5	0.75	0.70	1.04	30.7
2	T1	All MCs	317	2.0	317	2.0	0.541	9.6	LOS A	4.2	106.5	0.75	0.70	1.04	31.3
12	R2	All MCs	159	2.0	159	2.0	0.541	9.6	LOS A	4.2	106.5	0.75	0.70	1.04	31.1
Approach			601	2.0	601	2.0	0.541	9.6	LOS A	4.2	106.5	0.75	0.70	1.04	31.1
All Vehicles			2574	2.0	2574	2.0	0.815	16.6	LOS C	11.9	302.2	0.84	0.91	1.44	28.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	397	778	135	184	713	84	217	516	180	231	624	442
Future Volume (veh/h)	397	778	135	184	713	84	217	516	180	231	624	442
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	427	837	145	198	767	90	233	555	194	248	671	475
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	489	1178	525	297	968	431	293	1186	521	305	1199	532
Arrive On Green	0.14	0.33	0.33	0.09	0.27	0.27	0.08	0.33	0.33	0.09	0.33	0.33
Sat Flow, veh/h	3483	3582	1595	3483	3582	1596	3483	3582	1573	3483	3582	1588
Grp Volume(v), veh/h	427	837	145	198	767	90	233	555	194	248	671	475
Grp Sat Flow(s),veh/h/ln	1742	1791	1595	1742	1791	1596	1742	1791	1573	1742	1791	1588
Q Serve(g_s), s	16.9	28.8	9.4	7.8	28.0	6.1	9.2	17.3	13.2	9.8	21.6	40.0
Cycle Q Clear(g_c), s	16.9	28.8	9.4	7.8	28.0	6.1	9.2	17.3	13.2	9.8	21.6	40.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	489	1178	525	297	968	431	293	1186	521	305	1199	532
V/C Ratio(X)	0.87	0.71	0.28	0.67	0.79	0.21	0.80	0.47	0.37	0.81	0.56	0.89
Avail Cap(c_a), veh/h	742	1273	567	619	1273	567	990	1527	671	619	1273	564
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.2	41.3	34.9	62.4	47.7	39.7	63.3	37.2	35.9	63.1	38.3	44.4
Incr Delay (d2), s/veh	6.5	2.1	0.5	1.9	3.4	0.4	3.7	0.5	0.8	3.9	0.8	16.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	12.7	3.8	3.5	12.6	2.5	4.2	7.7	5.2	4.5	9.4	18.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	65.7	43.4	35.3	64.4	51.1	40.1	67.0	37.7	36.7	67.0	39.1	61.3
LnGrp LOS	E	D	D	E	D	D	E	D	D	E	D	E
Approach Vol, veh/h		1409			1055			982			1394	
Approach Delay, s/veh		49.4			52.7			44.5			51.6	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.5	52.3	17.8	53.1	25.8	44.0	18.3	52.6
Change Period (Y+Rc), s	5.5	6.0	6.0	6.0	6.0	* 6	6.0	6.0
Max Green Setting (Gmax), s	25.0	50.0	40.0	50.0	30.0	* 50	25.0	60.0
Max Q Clear Time (g_c+I1), s	9.8	30.8	11.2	42.0	18.9	30.0	11.8	19.3
Green Ext Time (p_c), s	0.4	8.9	0.6	5.2	0.9	8.0	0.5	8.6

Intersection Summary	
HCM 7th Control Delay, s/veh	49.7
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	368	632	283	87	510	48	230	277	75	95	331	412
Future Volume (veh/h)	368	632	283	87	510	48	230	277	75	95	331	412
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.87	1.00		0.97	1.00		0.89
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	383	658	295	91	531	50	240	289	78	99	345	429
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	411	1446	619	111	1135	106	286	693	183	130	451	339
Arrive On Green	0.12	0.41	0.41	0.06	0.35	0.35	0.08	0.25	0.25	0.07	0.24	0.24
Sat Flow, veh/h	3428	3526	1510	1767	3212	301	3428	2736	723	1767	1856	1392
Grp Volume(v), veh/h	383	658	295	91	290	291	240	184	183	99	345	429
Grp Sat Flow(s),veh/h/ln	1714	1763	1510	1767	1763	1750	1714	1763	1696	1767	1856	1392
Q Serve(g_s), s	16.6	20.3	21.5	7.6	19.1	19.3	10.4	13.0	13.6	8.2	25.9	24.3
Cycle Q Clear(g_c), s	16.6	20.3	21.5	7.6	19.1	19.3	10.4	13.0	13.6	8.2	25.9	24.3
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.43	1.00		1.00
Lane Grp Cap(c), veh/h	411	1446	619	111	623	618	286	446	429	130	451	339
V/C Ratio(X)	0.93	0.45	0.48	0.82	0.47	0.47	0.84	0.41	0.43	0.76	0.76	1.27
Avail Cap(c_a), veh/h	411	1446	619	271	623	618	389	541	520	153	520	390
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.76	0.76	0.76
Uniform Delay (d), s/veh	65.4	32.1	32.4	69.4	37.5	37.6	67.8	46.7	46.9	68.2	52.8	25.1
Incr Delay (d2), s/veh	27.4	1.0	2.6	5.4	2.5	2.6	8.8	0.2	0.2	10.8	3.6	136.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	9.1	8.5	3.7	8.9	8.9	4.9	5.9	5.9	4.1	12.5	21.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	92.8	33.1	35.0	74.8	40.0	40.2	76.6	46.9	47.1	79.1	56.4	162.0
LnGrp LOS	F	C	D	E	D	D	E	D	D	E	E	F
Approach Vol, veh/h		1336			672			607			873	
Approach Delay, s/veh		50.6			44.8			58.7			110.9	
Approach LOS		D			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.5	66.5	17.5	41.5	23.0	58.0	16.0	43.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	23.0	48.0	17.0	42.0	18.0	53.0	13.0	46.0
Max Q Clear Time (g_c+I1), s	9.6	23.5	12.4	27.9	18.6	21.3	10.2	15.6
Green Ext Time (p_c), s	0.1	4.0	0.1	1.5	0.0	2.6	0.0	1.2

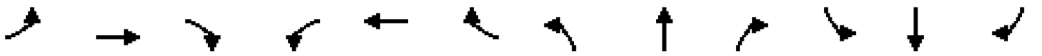
Intersection Summary	
HCM 7th Control Delay, s/veh	66.0
HCM 7th LOS	E

Intersection	
Intersection Delay, s/veh	45.4
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	100	98	25	6	113	13	32	371	2	4	425	107
Future Vol, veh/h	100	98	25	6	113	13	32	371	2	4	425	107
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	108	105	27	6	122	14	34	399	2	4	457	115
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay, s/veh	18.3	15.2	33.9	72.8
HCM LOS	C	C	D	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	8%	51%	0%	5%	1%
Vol Thru, %	92%	49%	0%	86%	79%
Vol Right, %	0%	0%	100%	10%	20%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	405	198	25	132	536
LT Vol	32	100	0	6	4
Through Vol	371	98	0	113	425
RT Vol	2	0	25	13	107
Lane Flow Rate	435	213	27	142	576
Geometry Grp	2	5	5	4a	2
Degree of Util (X)	0.818	0.495	0.055	0.321	1.035
Departure Headway (Hd)	6.897	8.516	7.53	8.341	6.464
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	527	426	478	434	565
Service Time	4.897	6.216	5.23	6.341	4.464
HCM Lane V/C Ratio	0.825	0.5	0.056	0.327	1.019
HCM Control Delay, s/veh	33.9	19.3	10.7	15.2	72.8
HCM Lane LOS	D	C	B	C	F
HCM 95th-tile Q	8	2.7	0.2	1.4	16



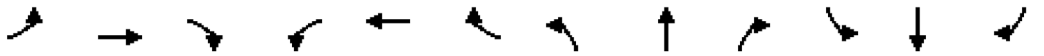
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	476	315	56	610	201	426	291	57	196	339	215
Future Volume (veh/h)	233	476	315	56	610	201	426	291	57	196	339	215
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	277	567	117	67	726	63	507	346	8	233	404	37
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	1481	658	283	1475	650	570	746	333	317	485	213
Arrive On Green	0.08	0.42	0.42	0.08	0.42	0.42	0.16	0.21	0.21	0.09	0.14	0.14
Sat Flow, veh/h	3456	3554	1580	3456	3554	1565	3456	3554	1585	3456	3554	1561
Grp Volume(v), veh/h	277	567	117	67	726	63	507	346	8	233	404	37
Grp Sat Flow(s),veh/h/ln	1728	1777	1580	1728	1777	1565	1728	1777	1585	1728	1777	1561
Q Serve(g_s), s	9.6	13.3	5.6	2.2	18.0	2.9	17.2	10.2	0.5	7.9	13.3	2.5
Cycle Q Clear(g_c), s	9.6	13.3	5.6	2.2	18.0	2.9	17.2	10.2	0.5	7.9	13.3	2.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	288	1481	658	283	1475	650	570	746	333	317	485	213
V/C Ratio(X)	0.96	0.38	0.18	0.24	0.49	0.10	0.89	0.46	0.02	0.74	0.83	0.17
Avail Cap(c_a), veh/h	288	1481	658	317	1475	650	720	888	396	547	711	312
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.8	24.3	22.1	51.6	25.8	21.4	49.0	41.5	37.6	53.1	50.5	45.8
Incr Delay (d2), s/veh	38.5	0.6	0.5	0.2	0.1	0.0	9.7	0.2	0.0	1.3	3.6	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	5.5	2.1	0.9	7.3	1.0	8.0	4.4	0.2	3.4	6.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	93.3	24.9	22.6	51.7	25.9	21.4	58.7	41.7	37.7	54.3	54.1	46.0
LnGrp LOS	F	C	C	D	C	C	E	D	D	D	D	D
Approach Vol, veh/h		961			856			861			674	
Approach Delay, s/veh		44.3			27.6			51.7			53.7	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.8	56.0	25.8	22.4	16.0	55.8	17.0	31.2
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	11.0	36.0	25.0	24.0	10.0	37.0	19.0	30.0
Max Q Clear Time (g_c+I1), s	4.2	15.3	19.2	15.3	11.6	20.0	9.9	12.2
Green Ext Time (p_c), s	0.0	2.3	0.6	1.1	0.0	2.9	0.3	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	43.8
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	102	208	131	44	349	161	113	298	42	116	356	173
Future Volume (veh/h)	102	208	131	44	349	161	113	298	42	116	356	173
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	110	224	141	47	375	173	122	320	45	125	383	186
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	187	565	462	131	494	404	192	894	390	193	472	393
Arrive On Green	0.11	0.30	0.30	0.07	0.27	0.27	0.11	0.25	0.25	0.11	0.25	0.25
Sat Flow, veh/h	1767	1856	1518	1767	1856	1516	1767	3526	1538	1767	1856	1548
Grp Volume(v), veh/h	110	224	141	47	375	173	122	320	45	125	383	186
Grp Sat Flow(s),veh/h/ln	1767	1856	1518	1767	1856	1516	1767	1763	1538	1767	1856	1548
Q Serve(g_s), s	4.6	7.3	5.5	1.9	14.3	7.3	5.1	5.7	1.7	5.2	14.9	7.8
Cycle Q Clear(g_c), s	4.6	7.3	5.5	1.9	14.3	7.3	5.1	5.7	1.7	5.2	14.9	7.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	187	565	462	131	494	404	192	894	390	193	472	393
V/C Ratio(X)	0.59	0.40	0.31	0.36	0.76	0.43	0.64	0.36	0.12	0.65	0.81	0.47
Avail Cap(c_a), veh/h	207	910	744	218	922	753	253	1467	640	251	770	642
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.8	21.1	20.5	33.9	25.9	23.4	32.8	23.6	22.1	32.8	27.0	24.3
Incr Delay (d2), s/veh	1.9	0.2	0.1	1.7	0.9	0.3	1.3	0.1	0.0	1.4	1.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	3.1	1.8	0.9	6.0	2.5	2.2	2.3	0.6	2.2	6.4	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.7	21.3	20.6	35.5	26.9	23.6	34.1	23.6	22.1	34.2	28.3	24.6
LnGrp LOS	C	C	C	D	C	C	C	C	C	C	C	C
Approach Vol, veh/h		475			595			487			694	
Approach Delay, s/veh		24.2			26.6			26.1			28.4	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	28.5	13.4	24.6	13.2	25.6	13.5	24.6
Change Period (Y+Rc), s	4.6	5.1	5.1	5.1	5.1	* 5.1	5.1	5.1
Max Green Setting (Gmax), s	9.5	37.7	11.0	31.9	9.0	* 38	10.9	32.0
Max Q Clear Time (g_c+I1), s	3.9	9.3	7.1	16.9	6.6	16.3	7.2	7.7
Green Ext Time (p_c), s	0.0	1.2	0.0	1.6	0.0	1.7	0.0	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	26.5
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

MOVEMENT SUMMARY

Site: 3 [Waterman & Sheldon AM Peak Hour (Site Folder: Existing Plus Project)]

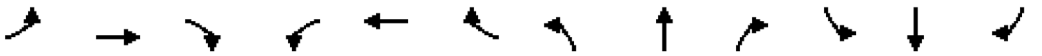
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Waterman Road															
3	L2	All MCs	215	3.0	215	3.0	0.678	12.8	LOS B	8.1	208.1	0.84	0.82	1.34	29.3
8	T1	All MCs	386	3.0	386	3.0	0.678	12.8	LOS B	8.1	208.1	0.84	0.82	1.34	29.8
18	R2	All MCs	165	3.0	165	3.0	0.678	12.8	LOS B	8.1	208.1	0.84	0.82	1.34	29.6
Approach			766	3.0	766	3.0	0.678	12.8	LOS B	8.1	208.1	0.84	0.82	1.34	29.6
East: Sheldon Road															
1	L2	All MCs	171	3.0	171	3.0	0.996	57.6	LOS F	22.1	565.1	1.00	1.93	3.82	18.6
6	T1	All MCs	457	3.0	457	3.0	0.996	57.6	LOS F	22.1	565.1	1.00	1.93	3.82	18.9
16	R2	All MCs	24	3.0	24	3.0	0.996	57.6	LOS F	22.1	565.1	1.00	1.93	3.82	18.8
Approach			652	3.0	652	3.0	0.996	57.6	LOS F	22.1	565.1	1.00	1.93	3.82	18.8
North: Waterman Road															
7	L2	All MCs	33	3.0	33	3.0	0.878	38.9	LOS E	9.9	253.9	0.96	1.35	2.38	22.2
4	T1	All MCs	476	3.0	476	3.0	0.878	38.9	LOS E	9.9	253.9	0.96	1.35	2.38	22.5
14	R2	All MCs	209	3.0	209	3.0	0.359	11.4	LOS B	1.5	39.2	0.70	0.70	0.82	30.5
Approach			718	3.0	718	3.0	0.878	30.9	LOS D	9.9	253.9	0.88	1.17	1.93	24.3
West: Sheldon Road															
5	L2	All MCs	144	3.0	144	3.0	0.774	21.8	LOS C	8.8	225.7	0.94	1.11	1.83	26.3
2	T1	All MCs	308	3.0	308	3.0	0.774	21.8	LOS C	8.8	225.7	0.94	1.11	1.83	26.8
12	R2	All MCs	158	3.0	158	3.0	0.774	21.8	LOS C	8.8	225.7	0.94	1.11	1.83	26.6
Approach			610	3.0	610	3.0	0.774	21.8	LOS C	8.8	225.7	0.94	1.11	1.83	26.6
All Vehicles			2745	3.0	2745	3.0	0.996	30.2	LOS D	22.1	565.1	0.91	1.24	2.19	24.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	374	555	104	309	760	139	205	400	198	145	574	436
Future Volume (veh/h)	374	555	104	309	760	139	205	400	198	145	574	436
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	407	603	113	336	826	151	223	435	215	158	624	474
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	437	1061	472	389	997	442	301	1124	499	300	1123	493
Arrive On Green	0.13	0.30	0.30	0.11	0.28	0.28	0.09	0.32	0.32	0.09	0.32	0.32
Sat Flow, veh/h	3456	3554	1580	3456	3554	1577	3456	3554	1579	3456	3554	1561
Grp Volume(v), veh/h	407	603	113	336	826	151	223	435	215	158	624	474
Grp Sat Flow(s),veh/h/ln	1728	1777	1580	1728	1777	1577	1728	1777	1579	1728	1777	1561
Q Serve(g_s), s	14.7	18.1	6.8	12.1	27.5	9.6	8.0	12.1	13.6	5.5	18.4	37.7
Cycle Q Clear(g_c), s	14.7	18.1	6.8	12.1	27.5	9.6	8.0	12.1	13.6	5.5	18.4	37.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	437	1061	472	389	997	442	301	1124	499	300	1123	493
V/C Ratio(X)	0.93	0.57	0.24	0.86	0.83	0.34	0.74	0.39	0.43	0.53	0.56	0.96
Avail Cap(c_a), veh/h	437	1125	500	424	1111	493	301	1125	500	301	1125	494
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.6	37.4	33.5	55.1	42.6	36.2	56.3	33.7	34.2	55.2	35.9	42.5
Incr Delay (d2), s/veh	26.4	0.9	0.4	15.3	5.5	0.8	9.0	0.4	1.0	1.4	0.9	31.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.9	7.8	2.7	6.0	12.4	3.8	3.8	5.2	5.3	2.4	7.9	18.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	81.0	38.4	33.9	70.5	48.1	36.9	65.3	34.0	35.2	56.6	36.8	73.4
LnGrp LOS	F	D	C	E	D	D	E	C	D	E	D	E
Approach Vol, veh/h		1123			1313			873			1256	
Approach Delay, s/veh		53.4			52.5			42.3			53.1	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.7	43.7	17.0	45.9	22.0	41.5	17.0	46.0
Change Period (Y+Rc), s	5.5	6.0	6.0	6.0	6.0	* 6	6.0	6.0
Max Green Setting (Gmax), s	15.5	40.0	11.0	40.0	16.0	* 40	11.0	40.0
Max Q Clear Time (g_c+I1), s	14.1	20.1	10.0	39.7	16.7	29.5	7.5	15.6
Green Ext Time (p_c), s	0.1	6.4	0.1	0.2	0.0	5.7	0.1	6.1

Intersection Summary	
HCM 7th Control Delay, s/veh	50.9
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	268	393	215	131	454	22	354	368	78	55	345	246
Future Volume (veh/h)	268	393	215	131	454	22	354	368	78	55	345	246
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.87	1.00		0.97	1.00		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	279	409	224	136	473	23	369	383	81	57	359	256
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	329	1032	438	252	1154	56	417	989	207	139	556	426
Arrive On Green	0.10	0.29	0.29	0.14	0.34	0.34	0.12	0.34	0.34	0.08	0.30	0.30
Sat Flow, veh/h	3428	3526	1497	1767	3395	164	3428	2886	603	1767	1856	1422
Grp Volume(v), veh/h	279	409	224	136	245	251	369	232	232	57	359	256
Grp Sat Flow(s),veh/h/ln	1714	1763	1497	1767	1763	1797	1714	1763	1726	1767	1856	1422
Q Serve(g_s), s	11.2	13.0	12.7	10.0	14.9	15.0	14.8	14.0	14.3	4.3	23.5	21.5
Cycle Q Clear(g_c), s	11.2	13.0	12.7	10.0	14.9	15.0	14.8	14.0	14.3	4.3	23.5	21.5
Prop In Lane	1.00		1.00	1.00		0.09	1.00		0.35	1.00		1.00
Lane Grp Cap(c), veh/h	329	1032	438	252	599	611	417	604	592	139	556	426
V/C Ratio(X)	0.85	0.40	0.51	0.54	0.41	0.41	0.88	0.38	0.39	0.41	0.65	0.60
Avail Cap(c_a), veh/h	465	1032	438	252	599	611	490	604	592	151	556	426
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.71	0.71	0.71
Uniform Delay (d), s/veh	62.3	39.6	21.8	55.7	35.4	35.5	60.5	34.8	34.9	61.4	42.6	41.9
Incr Delay (d2), s/veh	7.3	1.1	4.2	1.3	2.1	2.0	14.2	1.8	1.9	0.5	4.1	4.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	5.9	5.1	4.6	6.9	7.1	7.3	6.4	6.4	1.9	11.4	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.6	40.7	26.0	57.0	37.5	37.5	74.7	36.7	36.9	61.9	46.6	46.3
LnGrp LOS	E	D	C	E	D	D	E	D	D	E	D	D
Approach Vol, veh/h		912			632			833			672	
Approach Delay, s/veh		45.9			41.7			53.6			47.8	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.0	46.0	22.0	47.0	18.4	52.6	16.0	53.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	19.0	41.0	20.0	40.0	19.0	41.0	12.0	48.0
Max Q Clear Time (g_c+I1), s	12.0	15.0	16.8	25.5	13.2	17.0	6.3	16.3
Green Ext Time (p_c), s	0.1	2.4	0.2	1.2	0.2	2.1	0.0	1.5

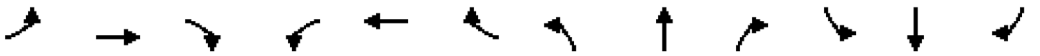
Intersection Summary	
HCM 7th Control Delay, s/veh	47.6
HCM 7th LOS	D

Intersection	
Intersection Delay, s/veh	16.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	146	76	28	1	106	20	11	257	2	7	323	49
Future Vol, veh/h	146	76	28	1	106	20	11	257	2	7	323	49
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	157	82	30	1	114	22	12	276	2	8	347	53
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay, s/veh	15.8	12.2	15.2	19.8
HCM LOS	C	B	C	C

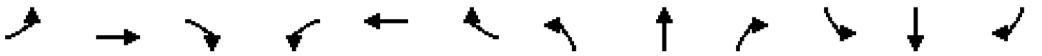
Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	4%	66%	0%	1%	2%
Vol Thru, %	95%	34%	0%	83%	85%
Vol Right, %	1%	0%	100%	16%	13%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	270	222	28	127	379
LT Vol	11	146	0	1	7
Through Vol	257	76	0	106	323
RT Vol	2	0	28	20	49
Lane Flow Rate	290	239	30	137	408
Geometry Grp	2	5	5	4a	2
Degree of Util (X)	0.497	0.481	0.052	0.257	0.664
Departure Headway (Hd)	6.159	7.256	6.203	6.788	5.866
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	584	497	577	528	615
Service Time	4.201	5.002	3.95	4.846	3.904
HCM Lane V/C Ratio	0.497	0.481	0.052	0.259	0.663
HCM Control Delay, s/veh	15.2	16.6	9.3	12.2	19.8
HCM Lane LOS	C	C	A	B	C
HCM 95th-tile Q	2.8	2.6	0.2	1	5



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	563	262	68	560	96	184	304	87	130	402	187
Future Volume (veh/h)	195	563	262	68	560	96	184	304	87	130	402	187
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	203	586	47	71	583	-54	192	317	39	135	419	3
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	316	1172	514	735	1603	715	347	520	232	343	515	230
Arrive On Green	0.09	0.33	0.33	0.21	0.45	0.00	0.10	0.15	0.15	0.10	0.14	0.14
Sat Flow, veh/h	3483	3582	1572	3483	3582	1598	3483	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	203	586	47	71	583	-54	192	317	39	135	419	3
Grp Sat Flow(s),veh/h/ln	1742	1791	1572	1742	1791	1598	1742	1791	1598	1742	1791	1598
Q Serve(g_s), s	6.2	14.5	1.6	1.8	11.8	0.0	5.8	9.1	1.5	4.0	12.5	0.2
Cycle Q Clear(g_c), s	6.2	14.5	1.6	1.8	11.8	0.0	5.8	9.1	1.5	4.0	12.5	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	316	1172	514	735	1603	715	347	520	232	343	515	230
V/C Ratio(X)	0.64	0.50	0.09	0.10	0.36	-0.08	0.55	0.61	0.17	0.39	0.81	0.01
Avail Cap(c_a), veh/h	348	1172	514	735	1603	715	348	912	407	348	912	407
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.73	0.73	0.73	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.3	29.8	12.2	35.0	20.1	0.0	47.2	44.1	16.1	46.5	45.7	40.4
Incr Delay (d2), s/veh	1.7	1.1	0.3	0.0	0.1	0.0	1.1	0.4	0.1	0.3	1.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	6.1	0.9	0.7	4.7	0.0	2.5	4.0	0.9	1.7	5.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.0	30.9	12.5	35.0	20.1	0.0	48.3	44.5	16.2	46.8	46.9	40.4
LnGrp LOS	D	C	B	C	C		D	D	B	D	D	D
Approach Vol, veh/h		836			600			548			557	
Approach Delay, s/veh		34.5			23.7			43.8			46.8	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.2	42.0	17.0	21.8	16.0	55.2	16.8	22.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	11.0	36.0	11.0	28.0	11.0	36.0	11.0	28.0
Max Q Clear Time (g_c+I1), s	3.8	16.5	7.8	14.5	8.2	13.8	6.0	11.1
Green Ext Time (p_c), s	0.0	2.3	0.1	1.3	0.1	2.3	0.1	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	36.6
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	128	364	127	64	291	103	169	327	61	178	256	103
Future Volume (veh/h)	128	364	127	64	291	103	169	327	61	178	256	103
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	138	391	137	69	313	111	182	352	66	191	275	111
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	225	517	423	175	451	372	235	703	308	236	371	303
Arrive On Green	0.13	0.27	0.27	0.10	0.24	0.24	0.13	0.20	0.20	0.13	0.20	0.20
Sat Flow, veh/h	1795	1885	1543	1795	1885	1553	1795	3582	1568	1795	1885	1540
Grp Volume(v), veh/h	138	391	137	69	313	111	182	352	66	191	275	111
Grp Sat Flow(s),veh/h/ln	1795	1885	1543	1795	1885	1553	1795	1791	1568	1795	1885	1540
Q Serve(g_s), s	4.8	12.6	4.7	2.4	10.0	3.9	6.5	5.8	2.3	6.9	9.1	4.1
Cycle Q Clear(g_c), s	4.8	12.6	4.7	2.4	10.0	3.9	6.5	5.8	2.3	6.9	9.1	4.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	225	517	423	175	451	372	235	703	308	236	371	303
V/C Ratio(X)	0.61	0.76	0.32	0.39	0.69	0.30	0.77	0.50	0.21	0.81	0.74	0.37
Avail Cap(c_a), veh/h	244	1055	863	257	1069	881	328	1729	757	311	893	729
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.5	22.0	19.2	28.1	23.0	20.7	27.9	23.8	22.4	28.0	25.0	23.0
Incr Delay (d2), s/veh	2.5	0.9	0.2	1.4	0.7	0.2	4.6	0.2	0.1	8.4	1.1	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	5.4	1.6	1.0	4.2	1.3	2.9	2.3	0.8	3.3	3.9	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	30.0	22.9	19.3	29.5	23.7	20.8	32.4	24.0	22.5	36.4	26.1	23.3
LnGrp LOS	C	C	B	C	C	C	C	C	C	D	C	C
Approach Vol, veh/h		666			493			600			577	
Approach Delay, s/veh		23.6			23.9			26.4			29.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	23.3	13.8	18.2	13.4	21.0	13.8	18.1
Change Period (Y+Rc), s	4.6	5.1	5.1	5.1	5.1	* 5.1	5.1	5.1
Max Green Setting (Gmax), s	9.5	37.1	12.1	31.4	9.0	* 38	11.5	32.0
Max Q Clear Time (g_c+I1), s	4.4	14.6	8.5	11.1	6.8	12.0	8.9	7.8
Green Ext Time (p_c), s	0.0	1.9	0.1	1.1	0.0	1.3	0.1	1.5

Intersection Summary	
HCM 7th Control Delay, s/veh	25.7
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

MOVEMENT SUMMARY

Site: 3 [Waterman & Sheldon PM Peak Hour (Site Folder: Existing Plus Project)]

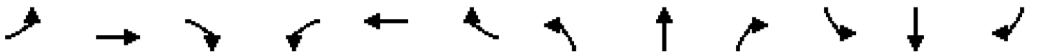
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Waterman Road															
3	L2	All MCs	135	3.0	135	3.0	0.689	15.2	LOS C	8.1	207.5	0.86	0.88	1.44	28.5
8	T1	All MCs	353	3.0	353	3.0	0.689	15.2	LOS C	8.1	207.5	0.86	0.88	1.44	29.0
18	R2	All MCs	151	3.0	151	3.0	0.689	15.2	LOS C	8.1	207.5	0.86	0.88	1.44	28.8
Approach			639	3.0	639	3.0	0.689	15.2	LOS C	8.1	207.5	0.86	0.88	1.44	28.9
East: Sheldon Road															
1	L2	All MCs	199	3.0	199	3.0	0.857	28.5	LOS D	13.7	350.2	1.00	1.33	2.34	24.4
6	T1	All MCs	469	3.0	469	3.0	0.857	28.5	LOS D	13.7	350.2	1.00	1.33	2.34	24.8
16	R2	All MCs	19	3.0	19	3.0	0.857	28.5	LOS D	13.7	350.2	1.00	1.33	2.34	24.6
Approach			687	3.0	687	3.0	0.857	28.5	LOS D	13.7	350.2	1.00	1.33	2.34	24.7
North: Waterman Road															
7	L2	All MCs	27	3.0	27	3.0	0.767	26.2	LOS D	6.5	167.4	0.89	1.10	1.72	25.3
4	T1	All MCs	437	3.0	437	3.0	0.767	26.2	LOS D	6.5	167.4	0.89	1.10	1.72	25.7
14	R2	All MCs	226	3.0	226	3.0	0.374	11.3	LOS B	1.6	42.2	0.70	0.69	0.83	30.5
Approach			689	3.0	689	3.0	0.767	21.3	LOS C	6.5	167.4	0.83	0.96	1.43	27.1
West: Sheldon Road															
5	L2	All MCs	127	3.0	127	3.0	0.572	10.6	LOS B	4.6	117.6	0.78	0.75	1.13	30.3
2	T1	All MCs	320	3.0	320	3.0	0.572	10.6	LOS B	4.6	117.6	0.78	0.75	1.13	30.9
12	R2	All MCs	161	3.0	161	3.0	0.572	10.6	LOS B	4.6	117.6	0.78	0.75	1.13	30.6
Approach			609	3.0	609	3.0	0.572	10.6	LOS B	4.6	117.6	0.78	0.75	1.13	30.7
All Vehicles			2624	3.0	2624	3.0	0.857	19.2	LOS C	13.7	350.2	0.87	0.99	1.60	27.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	397	804	135	184	729	84	217	516	180	231	625	442
Future Volume (veh/h)	397	804	135	184	729	84	217	516	180	231	625	442
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	427	865	145	198	784	90	233	555	194	248	672	475
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	489	1194	531	294	981	437	292	1181	519	305	1193	529
Arrive On Green	0.14	0.33	0.33	0.08	0.27	0.27	0.08	0.33	0.33	0.09	0.33	0.33
Sat Flow, veh/h	3483	3582	1595	3483	3582	1596	3483	3582	1573	3483	3582	1588
Grp Volume(v), veh/h	427	865	145	198	784	90	233	555	194	248	672	475
Grp Sat Flow(s),veh/h/ln	1742	1791	1595	1742	1791	1596	1742	1791	1573	1742	1791	1588
Q Serve(g_s), s	17.1	30.2	9.5	7.8	28.9	6.2	9.3	17.5	13.4	9.9	21.9	40.5
Cycle Q Clear(g_c), s	17.1	30.2	9.5	7.8	28.9	6.2	9.3	17.5	13.4	9.9	21.9	40.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	489	1194	531	294	981	437	292	1181	519	305	1193	529
V/C Ratio(X)	0.87	0.72	0.27	0.67	0.80	0.21	0.80	0.47	0.37	0.81	0.56	0.90
Avail Cap(c_a), veh/h	735	1260	561	613	1260	561	980	1512	664	613	1260	558
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.9	41.7	34.8	63.2	48.0	39.7	63.9	37.8	36.4	63.7	38.9	45.1
Incr Delay (d2), s/veh	6.7	2.4	0.5	2.0	3.7	0.4	3.7	0.5	0.8	4.0	0.8	17.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	13.4	3.8	3.5	13.1	2.5	4.3	7.8	5.3	4.5	9.5	18.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	66.6	44.0	35.2	65.2	51.7	40.1	67.7	38.3	37.2	67.7	39.7	62.7
LnGrp LOS	E	D	D	E	D	D	E	D	D	E	D	E
Approach Vol, veh/h		1437			1072			982			1395	
Approach Delay, s/veh		49.8			53.2			45.1			52.5	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.5	53.4	17.9	53.4	25.9	44.9	18.4	52.9
Change Period (Y+Rc), s	5.5	6.0	6.0	6.0	6.0	* 6	6.0	6.0
Max Green Setting (Gmax), s	25.0	50.0	40.0	50.0	30.0	* 50	25.0	60.0
Max Q Clear Time (g_c+I1), s	9.8	32.2	11.3	42.5	19.1	30.9	11.9	19.5
Green Ext Time (p_c), s	0.4	8.8	0.6	4.9	0.9	8.0	0.5	8.6

Intersection Summary	
HCM 7th Control Delay, s/veh	50.4
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	368	639	283	88	514	49	230	277	76	96	331	412
Future Volume (veh/h)	368	639	283	88	514	49	230	277	76	96	331	412
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.87	1.00		0.97	1.00		0.89
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	383	666	295	92	535	51	240	289	79	100	345	429
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	411	1444	618	113	1133	107	286	691	185	130	451	339
Arrive On Green	0.12	0.41	0.41	0.06	0.35	0.35	0.08	0.25	0.25	0.07	0.24	0.24
Sat Flow, veh/h	3428	3526	1510	1767	3207	304	3428	2728	729	1767	1856	1392
Grp Volume(v), veh/h	383	666	295	92	293	293	240	185	183	100	345	429
Grp Sat Flow(s),veh/h/ln	1714	1763	1510	1767	1763	1749	1714	1763	1694	1767	1856	1392
Q Serve(g_s), s	16.6	20.6	21.5	7.7	19.3	19.5	10.4	13.1	13.6	8.3	25.9	24.3
Cycle Q Clear(g_c), s	16.6	20.6	21.5	7.7	19.3	19.5	10.4	13.1	13.6	8.3	25.9	24.3
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.43	1.00		1.00
Lane Grp Cap(c), veh/h	411	1444	618	113	623	618	286	446	429	130	451	339
V/C Ratio(X)	0.93	0.46	0.48	0.82	0.47	0.47	0.84	0.41	0.43	0.77	0.76	1.27
Avail Cap(c_a), veh/h	411	1444	618	271	623	618	389	541	520	153	520	390
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.76	0.76	0.76
Uniform Delay (d), s/veh	65.4	32.2	32.5	69.4	37.6	37.7	67.8	46.7	46.9	68.3	52.8	25.1
Incr Delay (d2), s/veh	27.4	1.1	2.6	5.4	2.5	2.6	8.8	0.2	0.3	11.6	3.6	136.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	9.2	8.5	3.7	9.0	9.0	4.9	5.9	5.9	4.2	12.5	21.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	92.8	33.3	35.1	74.7	40.1	40.3	76.6	46.9	47.2	79.9	56.4	162.0
LnGrp LOS	F	C	D	E	D	D	E	D	D	E	E	F
Approach Vol, veh/h		1344			678			608			874	
Approach Delay, s/veh		50.6			44.9			58.7			110.9	
Approach LOS		D			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.6	66.4	17.5	41.5	23.0	58.0	16.0	43.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	23.0	48.0	17.0	42.0	18.0	53.0	13.0	46.0
Max Q Clear Time (g_c+I1), s	9.7	23.5	12.4	27.9	18.6	21.5	10.3	15.6
Green Ext Time (p_c), s	0.1	4.0	0.1	1.5	0.0	2.7	0.0	1.2

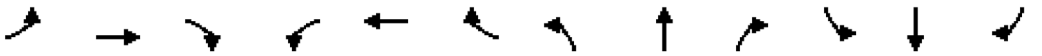
Intersection Summary	
HCM 7th Control Delay, s/veh	66.0
HCM 7th LOS	E

Intersection	
Intersection Delay, s/veh	46
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	100	99	25	6	115	13	32	371	2	4	425	107
Future Vol, veh/h	100	99	25	6	115	13	32	371	2	4	425	107
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	108	106	27	6	124	14	34	399	2	4	457	115
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay, s/veh	18.4	15.4	34.3	74
HCM LOS	C	C	D	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	8%	50%	0%	4%	1%
Vol Thru, %	92%	50%	0%	86%	79%
Vol Right, %	0%	0%	100%	10%	20%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	405	199	25	134	536
LT Vol	32	100	0	6	4
Through Vol	371	99	0	115	425
RT Vol	2	0	25	13	107
Lane Flow Rate	435	214	27	144	576
Geometry Grp	2	5	5	4a	2
Degree of Util (X)	0.821	0.498	0.055	0.327	1.039
Departure Headway (Hd)	6.925	8.539	7.553	8.363	6.489
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	527	426	477	432	565
Service Time	4.925	6.239	5.253	6.363	4.489
HCM Lane V/C Ratio	0.825	0.502	0.057	0.333	1.019
HCM Control Delay, s/veh	34.3	19.4	10.7	15.4	74
HCM Lane LOS	D	C	B	C	F
HCM 95th-tile Q	8.1	2.7	0.2	1.4	16.1



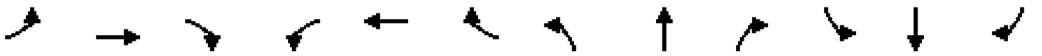
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	241	531	321	54	631	213	407	285	51	229	352	218
Future Volume (veh/h)	241	531	321	54	631	213	407	285	51	229	352	218
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	287	632	124	64	751	78	485	339	1	273	419	41
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	1491	663	279	1482	653	549	721	322	334	500	220
Arrive On Green	0.08	0.42	0.42	0.08	0.42	0.42	0.16	0.20	0.20	0.10	0.14	0.14
Sat Flow, veh/h	3456	3554	1581	3456	3554	1565	3456	3554	1585	3456	3554	1561
Grp Volume(v), veh/h	287	632	124	64	751	78	485	339	1	273	419	41
Grp Sat Flow(s),veh/h/ln	1728	1777	1581	1728	1777	1565	1728	1777	1585	1728	1777	1561
Q Serve(g_s), s	10.0	15.1	5.9	2.1	18.7	3.7	16.5	10.1	0.1	9.3	13.8	2.8
Cycle Q Clear(g_c), s	10.0	15.1	5.9	2.1	18.7	3.7	16.5	10.1	0.1	9.3	13.8	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	288	1491	663	279	1482	653	549	721	322	334	500	220
V/C Ratio(X)	1.00	0.42	0.19	0.23	0.51	0.12	0.88	0.47	0.00	0.82	0.84	0.19
Avail Cap(c_a), veh/h	288	1491	663	317	1482	653	720	888	396	547	711	312
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	0.84	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.0	24.6	21.9	51.7	25.9	21.5	49.4	42.1	38.1	53.2	50.2	45.5
Incr Delay (d2), s/veh	47.6	0.7	0.5	0.2	0.1	0.0	8.6	0.2	0.0	1.9	4.3	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	6.2	2.2	0.9	7.6	1.3	7.6	4.3	0.0	4.0	6.3	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	102.6	25.3	22.5	51.8	26.0	21.5	57.9	42.3	38.1	55.0	54.5	45.6
LnGrp LOS	F	C	C	D	C	C	E	D	D	E	D	D
Approach Vol, veh/h		1043			893			825			733	
Approach Delay, s/veh		46.3			27.4			51.5			54.2	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.7	56.4	25.1	22.9	16.0	56.0	17.6	30.4
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	11.0	36.0	25.0	24.0	10.0	37.0	19.0	30.0
Max Q Clear Time (g_c+I1), s	4.1	17.1	18.5	15.8	12.0	20.7	11.3	12.1
Green Ext Time (p_c), s	0.0	2.6	0.6	1.1	0.0	3.0	0.3	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	44.3
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	208	131	44	349	161	113	303	42	117	369	170
Future Volume (veh/h)	101	208	131	44	349	161	113	303	42	117	369	170
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	109	224	141	47	375	173	122	326	45	126	397	183
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	185	562	460	130	493	402	190	915	399	191	483	403
Arrive On Green	0.10	0.30	0.30	0.07	0.27	0.27	0.11	0.26	0.26	0.11	0.26	0.26
Sat Flow, veh/h	1767	1856	1518	1767	1856	1516	1767	3526	1538	1767	1856	1548
Grp Volume(v), veh/h	109	224	141	47	375	173	122	326	45	126	397	183
Grp Sat Flow(s),veh/h/ln	1767	1856	1518	1767	1856	1516	1767	1763	1538	1767	1856	1548
Q Serve(g_s), s	4.6	7.4	5.6	2.0	14.5	7.4	5.2	5.9	1.7	5.3	15.7	7.7
Cycle Q Clear(g_c), s	4.6	7.4	5.6	2.0	14.5	7.4	5.2	5.9	1.7	5.3	15.7	7.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	185	562	460	130	493	402	190	915	399	191	483	403
V/C Ratio(X)	0.59	0.40	0.31	0.36	0.76	0.43	0.64	0.36	0.11	0.66	0.82	0.45
Avail Cap(c_a), veh/h	204	899	735	216	911	744	250	1449	632	247	761	635
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.2	21.5	20.9	34.3	26.3	23.7	33.3	23.5	22.0	33.3	27.1	24.1
Incr Delay (d2), s/veh	2.0	0.2	0.1	1.7	0.9	0.3	1.4	0.1	0.0	1.8	2.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	3.2	1.9	0.9	6.1	2.5	2.2	2.3	0.6	2.3	6.8	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	35.2	21.7	21.0	36.0	27.2	24.0	34.7	23.6	22.0	35.1	29.1	24.4
LnGrp LOS	D	C	C	D	C	C	C	C	C	D	C	C
Approach Vol, veh/h		474			595			493			706	
Approach Delay, s/veh		24.6			27.0			26.2			29.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	28.7	13.5	25.4	13.2	25.8	13.5	25.3
Change Period (Y+Rc), s	4.6	5.1	5.1	5.1	5.1	* 5.1	5.1	5.1
Max Green Setting (Gmax), s	9.5	37.7	11.0	31.9	9.0	* 38	10.9	32.0
Max Q Clear Time (g_c+I1), s	4.0	9.4	7.2	17.7	6.6	16.5	7.3	7.9
Green Ext Time (p_c), s	0.0	1.2	0.0	1.6	0.0	1.7	0.0	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	26.9
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

MOVEMENT SUMMARY

Site: 3 [Waterman & Sheldon AM Peak Hour (Site Folder: EAP)]

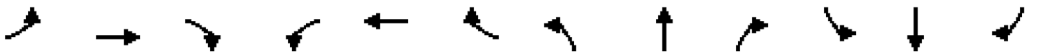
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Waterman Road															
3	L2	All MCs	217	3.0	217	3.0	0.681	12.9	LOS B	8.2	210.8	0.84	0.82	1.35	29.2
8	T1	All MCs	384	3.0	384	3.0	0.681	12.9	LOS B	8.2	210.8	0.84	0.82	1.35	29.8
18	R2	All MCs	168	3.0	168	3.0	0.681	12.9	LOS B	8.2	210.8	0.84	0.82	1.35	29.6
Approach			769	3.0	769	3.0	0.681	12.9	LOS B	8.2	210.8	0.84	0.82	1.35	29.6
East: Sheldon Road															
1	L2	All MCs	172	3.0	172	3.0	0.998	58.0	LOS F	22.3	570.1	1.00	1.94	3.85	18.6
6	T1	All MCs	457	3.0	457	3.0	0.998	58.0	LOS F	22.3	570.1	1.00	1.94	3.85	18.8
16	R2	All MCs	24	3.0	24	3.0	0.998	58.0	LOS F	22.3	570.1	1.00	1.94	3.85	18.7
Approach			653	3.0	653	3.0	0.998	58.0	LOS F	22.3	570.1	1.00	1.94	3.85	18.7
North: Waterman Road															
7	L2	All MCs	33	3.0	33	3.0	0.879	39.2	LOS E	9.9	254.1	0.96	1.36	2.39	22.1
4	T1	All MCs	475	3.0	475	3.0	0.879	39.2	LOS E	9.9	254.1	0.96	1.36	2.39	22.5
14	R2	All MCs	209	3.0	209	3.0	0.361	11.4	LOS B	1.5	39.4	0.70	0.70	0.83	30.5
Approach			717	3.0	717	3.0	0.879	31.1	LOS D	9.9	254.1	0.88	1.17	1.93	24.3
West: Sheldon Road															
5	L2	All MCs	144	3.0	144	3.0	0.775	21.9	LOS C	8.9	227.0	0.94	1.12	1.84	26.3
2	T1	All MCs	308	3.0	308	3.0	0.775	21.9	LOS C	8.9	227.0	0.94	1.12	1.84	26.7
12	R2	All MCs	159	3.0	159	3.0	0.775	21.9	LOS C	8.9	227.0	0.94	1.12	1.84	26.5
Approach			611	3.0	611	3.0	0.775	21.9	LOS C	8.9	227.0	0.94	1.12	1.84	26.6
All Vehicles			2749	3.0	2749	3.0	0.998	30.4	LOS D	22.3	570.1	0.91	1.24	2.20	24.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	374	579	104	334	823	164	205	399	207	154	574	436
Future Volume (veh/h)	374	579	104	334	823	164	205	399	207	154	574	436
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	407	629	113	363	895	178	223	434	225	167	624	474
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	431	1066	474	412	1032	458	296	1109	493	296	1108	487
Arrive On Green	0.12	0.30	0.30	0.12	0.29	0.29	0.09	0.31	0.31	0.09	0.31	0.31
Sat Flow, veh/h	3456	3554	1580	3456	3554	1577	3456	3554	1579	3456	3554	1561
Grp Volume(v), veh/h	407	629	113	363	895	178	223	434	225	167	624	474
Grp Sat Flow(s),veh/h/ln	1728	1777	1580	1728	1777	1577	1728	1777	1579	1728	1777	1561
Q Serve(g_s), s	15.0	19.3	6.9	13.3	30.6	11.6	8.1	12.3	14.7	6.0	18.8	38.5
Cycle Q Clear(g_c), s	15.0	19.3	6.9	13.3	30.6	11.6	8.1	12.3	14.7	6.0	18.8	38.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	431	1066	474	412	1032	458	296	1109	493	296	1108	487
V/C Ratio(X)	0.94	0.59	0.24	0.88	0.87	0.39	0.75	0.39	0.46	0.56	0.56	0.97
Avail Cap(c_a), veh/h	431	1108	493	418	1095	486	296	1109	493	296	1108	487
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.7	38.2	33.8	55.6	43.2	36.4	57.3	34.6	35.4	56.3	36.8	43.6
Incr Delay (d2), s/veh	29.4	1.1	0.4	18.7	7.8	0.9	9.9	0.4	1.1	2.1	0.9	34.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.1	8.3	2.7	6.7	14.1	4.6	3.9	5.4	5.8	2.6	8.1	19.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	85.1	39.3	34.3	74.3	50.9	37.3	67.2	35.0	36.5	58.4	37.8	77.7
LnGrp LOS	F	D	C	E	D	D	E	C	D	E	D	E
Approach Vol, veh/h		1149			1436			882			1265	
Approach Delay, s/veh		55.0			55.1			43.5			55.5	
Approach LOS		E			E			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.8	44.5	17.0	46.0	22.0	43.2	17.0	46.0
Change Period (Y+Rc), s	5.5	6.0	6.0	6.0	6.0	* 6	6.0	6.0
Max Green Setting (Gmax), s	15.5	40.0	11.0	40.0	16.0	* 40	11.0	40.0
Max Q Clear Time (g_c+I1), s	15.3	21.3	10.1	40.5	17.0	32.6	8.0	16.7
Green Ext Time (p_c), s	0.0	6.5	0.1	0.0	0.0	4.5	0.1	6.1

Intersection Summary	
HCM 7th Control Delay, s/veh	53.0
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	271	391	215	130	448	22	354	373	78	58	359	254
Future Volume (veh/h)	271	391	215	130	448	22	354	373	78	58	359	254
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.87	1.00		0.97	1.00		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	282	407	224	135	467	23	369	389	81	60	374	265
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	332	1032	438	252	1150	56	417	992	204	139	556	426
Arrive On Green	0.10	0.29	0.29	0.14	0.34	0.34	0.12	0.34	0.34	0.08	0.30	0.30
Sat Flow, veh/h	3428	3526	1497	1767	3392	166	3428	2895	596	1767	1856	1422
Grp Volume(v), veh/h	282	407	224	135	242	248	369	235	235	60	374	265
Grp Sat Flow(s),veh/h/ln	1714	1763	1497	1767	1763	1796	1714	1763	1728	1767	1856	1422
Q Serve(g_s), s	11.3	12.9	12.7	9.9	14.7	14.8	14.8	14.2	14.5	4.5	24.7	22.4
Cycle Q Clear(g_c), s	11.3	12.9	12.7	9.9	14.7	14.8	14.8	14.2	14.5	4.5	24.7	22.4
Prop In Lane	1.00		1.00	1.00		0.09	1.00		0.34	1.00		1.00
Lane Grp Cap(c), veh/h	332	1032	438	252	598	609	417	604	592	139	556	426
V/C Ratio(X)	0.85	0.39	0.51	0.53	0.40	0.41	0.88	0.39	0.40	0.43	0.67	0.62
Avail Cap(c_a), veh/h	465	1032	438	252	598	609	490	604	592	151	556	426
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.69	0.69	0.69
Uniform Delay (d), s/veh	62.2	39.6	21.8	55.7	35.4	35.5	60.5	34.9	35.0	61.5	43.0	42.2
Incr Delay (d2), s/veh	7.6	1.1	4.2	1.2	2.0	2.0	14.2	1.9	2.0	0.5	4.4	4.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	5.9	5.1	4.6	6.8	7.0	7.3	6.5	6.5	2.1	12.0	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.9	40.7	26.0	56.9	37.5	37.5	74.7	36.8	37.0	62.1	47.4	46.8
LnGrp LOS	E	D	C	E	D	D	E	D	D	E	D	D
Approach Vol, veh/h		913			625			839			699	
Approach Delay, s/veh		46.1			41.7			53.5			48.5	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.0	46.0	22.0	47.0	18.5	52.5	16.0	53.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	19.0	41.0	20.0	40.0	19.0	41.0	12.0	48.0
Max Q Clear Time (g_c+I1), s	11.9	14.9	16.8	26.7	13.3	16.8	6.5	16.5
Green Ext Time (p_c), s	0.1	2.4	0.2	1.3	0.2	2.1	0.0	1.6

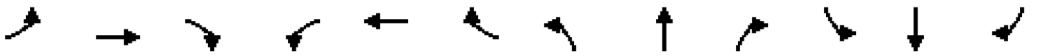
Intersection Summary	
HCM 7th Control Delay, s/veh	47.8
HCM 7th LOS	D

Intersection	
Intersection Delay, s/veh	17.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	146	77	28	1	106	20	14	257	2	7	331	49
Future Vol, veh/h	146	77	28	1	106	20	14	257	2	7	331	49
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	157	83	30	1	114	22	15	276	2	8	356	53
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay, s/veh	16	12.3	15.4	20.6
HCM LOS	C	B	C	C

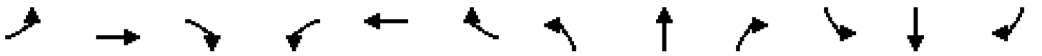
Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	5%	65%	0%	1%	2%
Vol Thru, %	94%	35%	0%	83%	86%
Vol Right, %	1%	0%	100%	16%	13%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	273	223	28	127	387
LT Vol	14	146	0	1	7
Through Vol	257	77	0	106	331
RT Vol	2	0	28	20	49
Lane Flow Rate	294	240	30	137	416
Geometry Grp	2	5	5	4a	2
Degree of Util (X)	0.505	0.486	0.052	0.26	0.681
Departure Headway (Hd)	6.198	7.304	6.253	6.85	5.893
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	581	494	572	523	612
Service Time	4.243	5.05	3.999	4.906	3.932
HCM Lane V/C Ratio	0.506	0.486	0.052	0.262	0.68
HCM Control Delay, s/veh	15.4	16.8	9.3	12.3	20.6
HCM Lane LOS	C	C	A	B	C
HCM 95th-tile Q	2.8	2.6	0.2	1	5.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	201	600	244	61	622	133	183	315	83	152	400	196
Future Volume (veh/h)	201	600	244	61	622	133	183	315	83	152	400	196
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	209	625	28	64	648	-15	191	328	34	158	417	12
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	316	1172	514	737	1605	716	347	515	230	346	514	229
Arrive On Green	0.09	0.33	0.33	0.21	0.45	0.00	0.10	0.14	0.14	0.10	0.14	0.14
Sat Flow, veh/h	3483	3582	1572	3483	3582	1598	3483	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	209	625	28	64	648	-15	191	328	34	158	417	12
Grp Sat Flow(s),veh/h/ln	1742	1791	1572	1742	1791	1598	1742	1791	1598	1742	1791	1598
Q Serve(g_s), s	6.4	15.6	0.9	1.6	13.4	0.0	5.7	9.5	1.3	4.7	12.4	0.7
Cycle Q Clear(g_c), s	6.4	15.6	0.9	1.6	13.4	0.0	5.7	9.5	1.3	4.7	12.4	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	316	1172	514	737	1605	716	347	515	230	346	514	229
V/C Ratio(X)	0.66	0.53	0.05	0.09	0.40	-0.02	0.55	0.64	0.15	0.46	0.81	0.05
Avail Cap(c_a), veh/h	348	1172	514	737	1605	716	348	912	407	348	912	407
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.68	0.68	0.68	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.4	30.2	12.1	34.8	20.5	0.0	47.2	44.4	16.1	46.7	45.7	40.7
Incr Delay (d2), s/veh	2.0	1.2	0.1	0.0	0.1	0.0	1.1	0.5	0.1	0.4	1.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	6.6	0.5	0.7	5.3	0.0	2.5	4.1	0.8	2.0	5.4	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.3	31.3	12.2	34.9	20.5	0.0	48.2	44.9	16.2	47.1	46.9	40.7
LnGrp LOS	D	C	B	C	C		D	D	B	D	D	D
Approach Vol, veh/h		862			697			553			587	
Approach Delay, s/veh		35.3			22.3			44.3			46.8	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.3	42.0	17.0	21.8	16.0	55.3	16.9	21.8
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	11.0	36.0	11.0	28.0	11.0	36.0	11.0	28.0
Max Q Clear Time (g_c+I1), s	3.6	17.6	7.7	14.4	8.4	15.4	6.7	11.5
Green Ext Time (p_c), s	0.0	2.4	0.1	1.4	0.1	2.5	0.1	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	36.3
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	364	127	64	291	104	169	342	61	179	265	102
Future Volume (veh/h)	125	364	127	64	291	104	169	342	61	179	265	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	134	391	137	69	313	112	182	368	66	192	285	110
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	222	514	421	175	450	371	234	719	315	235	381	311
Arrive On Green	0.12	0.27	0.27	0.10	0.24	0.24	0.13	0.20	0.20	0.13	0.20	0.20
Sat Flow, veh/h	1795	1885	1543	1795	1885	1553	1795	3582	1568	1795	1885	1540
Grp Volume(v), veh/h	134	391	137	69	313	112	182	368	66	192	285	110
Grp Sat Flow(s),veh/h/ln	1795	1885	1543	1795	1885	1553	1795	1791	1568	1795	1885	1540
Q Serve(g_s), s	4.7	12.7	4.7	2.4	10.1	3.9	6.6	6.1	2.3	6.9	9.5	4.1
Cycle Q Clear(g_c), s	4.7	12.7	4.7	2.4	10.1	3.9	6.6	6.1	2.3	6.9	9.5	4.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	222	514	421	175	450	371	234	719	315	235	381	311
V/C Ratio(X)	0.60	0.76	0.33	0.39	0.69	0.30	0.78	0.51	0.21	0.82	0.75	0.35
Avail Cap(c_a), veh/h	242	1047	857	255	1061	875	325	1716	752	309	886	724
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.7	22.3	19.4	28.3	23.2	20.8	28.1	23.8	22.3	28.2	25.1	22.9
Incr Delay (d2), s/veh	2.2	0.9	0.2	1.4	0.7	0.2	4.9	0.2	0.1	9.2	1.1	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	5.5	1.6	1.0	4.2	1.3	3.0	2.4	0.8	3.4	4.1	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	29.9	23.2	19.5	29.7	23.9	21.0	33.0	24.0	22.4	37.4	26.2	23.2
LnGrp LOS	C	C	B	C	C	C	C	C	C	D	C	C
Approach Vol, veh/h		662			494			616			587	
Approach Delay, s/veh		23.8			24.1			26.5			29.3	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	23.3	13.8	18.6	13.4	21.1	13.9	18.5
Change Period (Y+Rc), s	4.6	5.1	5.1	5.1	5.1	* 5.1	5.1	5.1
Max Green Setting (Gmax), s	9.5	37.1	12.1	31.4	9.0	* 38	11.5	32.0
Max Q Clear Time (g_c+I1), s	4.4	14.7	8.6	11.5	6.7	12.1	8.9	8.1
Green Ext Time (p_c), s	0.0	1.9	0.1	1.1	0.0	1.3	0.1	1.6

Intersection Summary	
HCM 7th Control Delay, s/veh	25.9
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

MOVEMENT SUMMARY

Site: 3 [Waterman & Sheldon PM Peak Hour (Site Folder: EAP)]

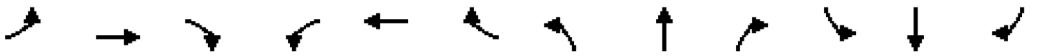
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Waterman Road															
3	L2	All MCs	135	2.0	135	2.0	0.667	14.1	LOS B	7.6	192.0	0.84	0.84	1.35	28.9
8	T1	All MCs	348	2.0	348	2.0	0.667	14.1	LOS B	7.6	192.0	0.84	0.84	1.35	29.5
18	R2	All MCs	151	2.0	151	2.0	0.667	14.1	LOS B	7.6	192.0	0.84	0.84	1.35	29.3
Approach			634	2.0	634	2.0	0.667	14.1	LOS B	7.6	192.0	0.84	0.84	1.35	29.3
East: Sheldon Road															
1	L2	All MCs	200	2.0	200	2.0	0.826	24.9	LOS C	12.3	312.9	0.99	1.23	2.14	25.4
6	T1	All MCs	464	2.0	464	2.0	0.826	24.9	LOS C	12.3	312.9	0.99	1.23	2.14	25.8
16	R2	All MCs	19	2.0	19	2.0	0.826	24.9	LOS C	12.3	312.9	0.99	1.23	2.14	25.6
Approach			683	2.0	683	2.0	0.826	24.9	LOS C	12.3	312.9	0.99	1.23	2.14	25.7
North: Waterman Road															
7	L2	All MCs	27	2.0	27	2.0	0.731	23.1	LOS C	6.0	151.3	0.87	1.04	1.58	26.3
4	T1	All MCs	430	2.0	430	2.0	0.731	23.1	LOS C	6.0	151.3	0.87	1.04	1.58	26.7
14	R2	All MCs	223	2.0	223	2.0	0.358	10.7	LOS B	1.6	40.0	0.69	0.68	0.80	30.8
Approach			680	2.0	680	2.0	0.731	19.0	LOS C	6.0	151.3	0.81	0.92	1.33	27.9
West: Sheldon Road															
5	L2	All MCs	126	2.0	126	2.0	0.550	9.9	LOS A	4.3	109.5	0.76	0.71	1.06	30.6
2	T1	All MCs	317	2.0	317	2.0	0.550	9.9	LOS A	4.3	109.5	0.76	0.71	1.06	31.2
12	R2	All MCs	162	2.0	162	2.0	0.550	9.9	LOS A	4.3	109.5	0.76	0.71	1.06	31.0
Approach			604	2.0	604	2.0	0.550	9.9	LOS A	4.3	109.5	0.76	0.71	1.06	31.0
All Vehicles			2601	2.0	2601	2.0	0.826	17.2	LOS C	12.3	312.9	0.85	0.93	1.48	28.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



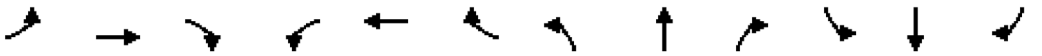
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	397	874	135	201	771	101	217	516	208	259	624	442
Future Volume (veh/h)	397	874	135	201	771	101	217	516	208	259	624	442
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	427	940	145	216	829	109	233	555	224	278	671	475
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	487	1234	549	287	1015	452	291	1134	498	334	1178	522
Arrive On Green	0.14	0.34	0.34	0.08	0.28	0.28	0.08	0.32	0.32	0.10	0.33	0.33
Sat Flow, veh/h	3483	3582	1595	3483	3582	1596	3483	3582	1573	3483	3582	1587
Grp Volume(v), veh/h	427	940	145	216	829	109	233	555	224	278	671	475
Grp Sat Flow(s),veh/h/ln	1742	1791	1595	1742	1791	1596	1742	1791	1573	1742	1791	1587
Q Serve(g_s), s	17.5	34.0	9.6	8.9	31.5	7.7	9.6	18.3	16.6	11.4	22.6	41.8
Cycle Q Clear(g_c), s	17.5	34.0	9.6	8.9	31.5	7.7	9.6	18.3	16.6	11.4	22.6	41.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	487	1234	549	287	1015	452	291	1134	498	334	1178	522
V/C Ratio(X)	0.88	0.76	0.26	0.75	0.82	0.24	0.80	0.49	0.45	0.83	0.57	0.91
Avail Cap(c_a), veh/h	716	1234	549	597	1228	547	955	1473	647	597	1228	544
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.5	42.5	34.5	65.5	48.7	40.2	65.7	40.3	39.7	64.8	40.4	46.9
Incr Delay (d2), s/veh	7.5	3.2	0.4	3.0	4.4	0.5	3.9	0.6	1.1	4.1	0.9	19.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.1	15.2	3.8	4.0	14.4	3.1	4.4	8.2	6.6	5.2	9.9	19.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.0	45.7	34.9	68.5	53.1	40.7	69.5	40.9	40.8	68.9	41.3	66.6
LnGrp LOS	E	D	C	E	D	D	E	D	D	E	D	E
Approach Vol, veh/h		1512			1154			1012			1424	
Approach Delay, s/veh		51.2			54.8			47.5			55.1	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.5	56.2	18.2	54.0	26.4	47.3	20.0	52.2
Change Period (Y+Rc), s	5.5	6.0	6.0	6.0	6.0	* 6	6.0	6.0
Max Green Setting (Gmax), s	25.0	50.0	40.0	50.0	30.0	* 50	25.0	60.0
Max Q Clear Time (g_c+I1), s	10.9	36.0	11.6	43.8	19.5	33.5	13.4	20.3
Green Ext Time (p_c), s	0.4	8.0	0.6	4.2	0.9	7.9	0.5	8.9

Intersection Summary	
HCM 7th Control Delay, s/veh	52.4
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	377	632	283	87	510	51	230	292	75	97	340	418
Future Volume (veh/h)	377	632	283	87	510	51	230	292	75	97	340	418
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.87	1.00		0.97	1.00		0.89
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	393	658	295	91	531	53	240	304	78	101	354	435
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	411	1446	619	111	1127	112	286	704	177	130	453	340
Arrive On Green	0.12	0.41	0.41	0.06	0.35	0.35	0.08	0.25	0.25	0.07	0.24	0.24
Sat Flow, veh/h	3428	3526	1510	1767	3191	317	3428	2768	696	1767	1856	1392
Grp Volume(v), veh/h	393	658	295	91	292	292	240	191	191	101	354	435
Grp Sat Flow(s),veh/h/ln	1714	1763	1510	1767	1763	1745	1714	1763	1702	1767	1856	1392
Q Serve(g_s), s	17.1	20.3	21.5	7.6	19.3	19.5	10.4	13.6	14.1	8.4	26.7	24.4
Cycle Q Clear(g_c), s	17.1	20.3	21.5	7.6	19.3	19.5	10.4	13.6	14.1	8.4	26.7	24.4
Prop In Lane	1.00		1.00	1.00		0.18	1.00		0.41	1.00		1.00
Lane Grp Cap(c), veh/h	411	1446	619	111	623	616	286	448	433	130	453	340
V/C Ratio(X)	0.96	0.45	0.48	0.82	0.47	0.47	0.84	0.43	0.44	0.78	0.78	1.28
Avail Cap(c_a), veh/h	411	1446	619	271	623	616	389	541	522	153	520	390
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.73	0.73	0.73
Uniform Delay (d), s/veh	65.6	32.1	32.4	69.4	37.6	37.7	67.8	46.8	47.0	68.3	52.9	25.1
Incr Delay (d2), s/veh	32.7	1.0	2.6	5.4	2.5	2.6	8.8	0.2	0.3	11.9	4.1	141.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	9.1	8.5	3.7	8.9	8.9	4.9	6.1	6.1	4.2	12.9	21.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	98.3	33.1	35.0	74.8	40.1	40.3	76.6	47.0	47.2	80.2	57.0	166.4
LnGrp LOS	F	C	D	E	D	D	E	D	D	F	E	F
Approach Vol, veh/h		1346			675			622			890	
Approach Delay, s/veh		52.6			44.9			58.5			113.1	
Approach LOS		D			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.5	66.5	17.5	41.6	23.0	58.0	16.0	43.1
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	23.0	48.0	17.0	42.0	18.0	53.0	13.0	46.0
Max Q Clear Time (g_c+I1), s	9.6	23.5	12.4	28.7	19.1	21.5	10.4	16.1
Green Ext Time (p_c), s	0.1	4.0	0.1	1.5	0.0	2.6	0.0	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	67.4
HCM 7th LOS	E

Intersection	
Intersection Delay, s/veh	47
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	100	100	25	6	116	13	41	371	2	4	431	107
Future Vol, veh/h	100	100	25	6	116	13	41	371	2	4	431	107
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	108	108	27	6	125	14	44	399	2	4	463	115
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay, s/veh	18.4	15.4	35.6	75.5
HCM LOS	C	C	E	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	10%	50%	0%	4%	1%
Vol Thru, %	90%	50%	0%	86%	80%
Vol Right, %	0%	0%	100%	10%	20%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	414	200	25	135	542
LT Vol	41	100	0	6	4
Through Vol	371	100	0	116	431
RT Vol	2	0	25	13	107
Lane Flow Rate	445	215	27	145	583
Geometry Grp	2	5	5	4a	2
Degree of Util (X)	0.832	0.497	0.055	0.326	1.044
Departure Headway (Hd)	6.931	8.561	7.577	8.394	6.449
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	525	424	476	431	565
Service Time	4.931	6.261	5.277	6.394	4.501
HCM Lane V/C Ratio	0.848	0.507	0.057	0.336	1.032
HCM Control Delay, s/veh	35.6	19.4	10.7	15.4	75.5
HCM Lane LOS	E	C	B	C	F
HCM 95th-tile Q	8.4	2.7	0.2	1.4	16.3

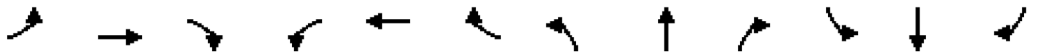
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	241	531	329	56	631	213	431	297	57	229	356	218
Future Volume (veh/h)	241	531	329	56	631	213	431	297	57	229	356	218
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	287	632	134	67	751	78	513	354	8	273	424	41
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	1455	647	283	1449	638	576	754	336	334	505	222
Arrive On Green	0.08	0.41	0.41	0.08	0.41	0.41	0.17	0.21	0.21	0.10	0.14	0.14
Sat Flow, veh/h	3456	3554	1580	3456	3554	1565	3456	3554	1585	3456	3554	1561
Grp Volume(v), veh/h	287	632	134	67	751	78	513	354	8	273	424	41
Grp Sat Flow(s),veh/h/ln	1728	1777	1580	1728	1777	1565	1728	1777	1585	1728	1777	1561
Q Serve(g_s), s	10.0	15.3	6.6	2.2	19.0	3.7	17.4	10.5	0.5	9.3	13.9	2.8
Cycle Q Clear(g_c), s	10.0	15.3	6.6	2.2	19.0	3.7	17.4	10.5	0.5	9.3	13.9	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	288	1455	647	283	1449	638	576	754	336	334	505	222
V/C Ratio(X)	1.00	0.43	0.21	0.24	0.52	0.12	0.89	0.47	0.02	0.82	0.84	0.18
Avail Cap(c_a), veh/h	288	1455	647	317	1449	638	720	888	396	547	711	312
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	0.84	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.0	25.5	22.9	51.6	26.7	22.1	48.9	41.4	37.4	53.2	50.1	45.3
Incr Delay (d2), s/veh	47.6	0.8	0.6	0.2	0.2	0.0	10.0	0.2	0.0	1.9	4.5	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	6.3	2.5	0.9	7.7	1.3	8.1	4.5	0.2	4.0	6.3	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	102.6	26.3	23.5	51.7	26.8	22.2	58.9	41.5	37.4	55.0	54.6	45.5
LnGrp LOS	F	C	C	D	C	C	E	D	D	E	D	D
Approach Vol, veh/h		1053			896			875			738	
Approach Delay, s/veh		46.7			28.3			51.7			54.3	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.8	55.1	26.0	23.1	16.0	54.9	17.6	31.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	11.0	36.0	25.0	24.0	10.0	37.0	19.0	30.0
Max Q Clear Time (g_c+I1), s	4.2	17.3	19.4	15.9	12.0	21.0	11.3	12.5
Green Ext Time (p_c), s	0.0	2.6	0.6	1.1	0.0	2.9	0.3	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	44.9
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	208	131	44	349	162	113	305	42	119	375	181
Future Volume (veh/h)	105	208	131	44	349	162	113	305	42	119	375	181
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	113	224	141	47	375	174	122	328	45	128	403	195
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	186	562	460	130	492	402	189	924	403	190	488	407
Arrive On Green	0.10	0.30	0.30	0.07	0.27	0.27	0.11	0.26	0.26	0.11	0.26	0.26
Sat Flow, veh/h	1767	1856	1518	1767	1856	1516	1767	3526	1538	1767	1856	1549
Grp Volume(v), veh/h	113	224	141	47	375	174	122	328	45	128	403	195
Grp Sat Flow(s),veh/h/ln	1767	1856	1518	1767	1856	1516	1767	1763	1538	1767	1856	1549
Q Serve(g_s), s	4.8	7.5	5.6	2.0	14.6	7.5	5.2	5.9	1.7	5.5	16.0	8.3
Cycle Q Clear(g_c), s	4.8	7.5	5.6	2.0	14.6	7.5	5.2	5.9	1.7	5.5	16.0	8.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	186	562	460	130	492	402	189	924	403	190	488	407
V/C Ratio(X)	0.61	0.40	0.31	0.36	0.76	0.43	0.65	0.35	0.11	0.67	0.83	0.48
Avail Cap(c_a), veh/h	203	892	730	214	904	738	248	1439	628	246	755	630
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	21.7	21.0	34.6	26.5	23.9	33.6	23.5	22.0	33.7	27.2	24.4
Incr Delay (d2), s/veh	2.8	0.2	0.1	1.7	0.9	0.3	1.4	0.1	0.0	2.3	2.4	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	3.2	1.9	0.9	6.2	2.6	2.2	2.4	0.6	2.4	7.0	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.3	21.8	21.1	36.3	27.5	24.2	35.0	23.6	22.0	35.9	29.6	24.7
LnGrp LOS	D	C	C	D	C	C	C	C	C	D	C	C
Approach Vol, veh/h		478			596			495			726	
Approach Delay, s/veh		25.1			27.2			26.3			29.4	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	28.9	13.5	25.7	13.3	25.9	13.5	25.7
Change Period (Y+Rc), s	4.6	5.1	5.1	5.1	5.1	* 5.1	5.1	5.1
Max Green Setting (Gmax), s	9.5	37.7	11.0	31.9	9.0	* 38	10.9	32.0
Max Q Clear Time (g_c+I1), s	4.0	9.5	7.2	18.0	6.8	16.6	7.5	7.9
Green Ext Time (p_c), s	0.0	1.2	0.0	1.6	0.0	1.7	0.0	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	27.3
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

MOVEMENT SUMMARY

Site: 3 [Waterman & Sheldon AM Peak Hour (Site Folder: EAPP)]

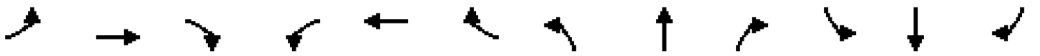
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Waterman Road															
3	L2	All MCs	218	3.0	218	3.0	0.691	13.3	LOS B	8.6	220.8	0.85	0.84	1.39	29.1
8	T1	All MCs	395	3.0	395	3.0	0.691	13.3	LOS B	8.6	220.8	0.85	0.84	1.39	29.7
18	R2	All MCs	168	3.0	168	3.0	0.691	13.3	LOS B	8.6	220.8	0.85	0.84	1.39	29.4
Approach			781	3.0	781	3.0	0.691	13.3	LOS B	8.6	220.8	0.85	0.84	1.39	29.5
East: Sheldon Road															
1	L2	All MCs	172	3.0	172	3.0	1.011	61.6	LOS F	23.3	596.8	1.00	2.01	4.05	18.1
6	T1	All MCs	457	3.0	457	3.0	1.011	61.6	LOS F	23.3	596.8	1.00	2.01	4.05	18.3
16	R2	All MCs	24	3.0	24	3.0	1.011	61.6	LOS F	23.3	596.8	1.00	2.01	4.05	18.2
Approach			653	3.0	653	3.0	1.011	61.6	LOS F	23.3	596.8	1.00	2.01	4.05	18.2
North: Waterman Road															
7	L2	All MCs	33	3.0	33	3.0	0.881	39.3	LOS E	10.1	259.0	0.96	1.37	2.41	22.1
4	T1	All MCs	480	3.0	480	3.0	0.881	39.3	LOS E	10.1	259.0	0.96	1.37	2.41	22.4
14	R2	All MCs	209	3.0	209	3.0	0.359	11.3	LOS B	1.5	39.1	0.70	0.70	0.82	30.5
Approach			722	3.0	722	3.0	0.881	31.2	LOS D	10.1	259.0	0.88	1.17	1.95	24.2
West: Sheldon Road															
5	L2	All MCs	144	3.0	144	3.0	0.777	22.1	LOS C	8.9	227.9	0.94	1.12	1.84	26.2
2	T1	All MCs	308	3.0	308	3.0	0.777	22.1	LOS C	8.9	227.9	0.94	1.12	1.84	26.7
12	R2	All MCs	159	3.0	159	3.0	0.777	22.1	LOS C	8.9	227.9	0.94	1.12	1.84	26.5
Approach			611	3.0	611	3.0	0.777	22.1	LOS C	8.9	227.9	0.94	1.12	1.84	26.5
All Vehicles			2766	3.0	2766	3.0	1.011	31.3	LOS D	23.3	596.8	0.91	1.26	2.26	24.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



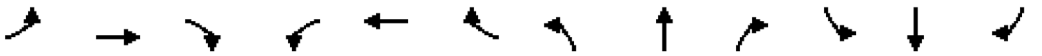
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	374	587	104	334	846	164	205	400	207	154	574	436
Future Volume (veh/h)	374	587	104	334	846	164	205	400	207	154	574	436
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	407	638	113	363	920	178	223	435	225	167	624	474
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	429	1074	478	412	1042	462	295	1105	491	294	1104	485
Arrive On Green	0.12	0.30	0.30	0.12	0.29	0.29	0.09	0.31	0.31	0.09	0.31	0.31
Sat Flow, veh/h	3456	3554	1580	3456	3554	1577	3456	3554	1579	3456	3554	1561
Grp Volume(v), veh/h	407	638	113	363	920	178	223	435	225	167	624	474
Grp Sat Flow(s),veh/h/ln	1728	1777	1580	1728	1777	1577	1728	1777	1579	1728	1777	1561
Q Serve(g_s), s	15.1	19.7	6.9	13.3	31.8	11.6	8.1	12.4	14.7	6.0	18.9	38.7
Cycle Q Clear(g_c), s	15.1	19.7	6.9	13.3	31.8	11.6	8.1	12.4	14.7	6.0	18.9	38.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	429	1074	478	412	1042	462	295	1105	491	294	1104	485
V/C Ratio(X)	0.95	0.59	0.24	0.88	0.88	0.38	0.76	0.39	0.46	0.57	0.57	0.98
Avail Cap(c_a), veh/h	429	1104	491	416	1090	484	295	1105	491	295	1104	485
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.0	38.2	33.8	55.8	43.4	36.2	57.6	34.8	35.7	56.6	37.1	43.9
Incr Delay (d2), s/veh	30.3	1.1	0.4	18.9	8.9	0.9	10.2	0.4	1.1	2.1	1.0	35.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	8.5	2.7	6.7	14.8	4.6	3.9	5.4	5.8	2.6	8.1	19.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	86.3	39.3	34.2	74.8	52.3	37.1	67.7	35.2	36.8	58.8	38.1	79.0
LnGrp LOS	F	D	C	E	D	D	E	D	D	E	D	E
Approach Vol, veh/h		1158			1461			883			1265	
Approach Delay, s/veh		55.3			56.0			43.8			56.2	
Approach LOS		E			E			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.8	44.9	17.0	46.0	22.0	43.8	17.0	46.0
Change Period (Y+Rc), s	5.5	6.0	6.0	6.0	6.0	* 6	6.0	6.0
Max Green Setting (Gmax), s	15.5	40.0	11.0	40.0	16.0	* 40	11.0	40.0
Max Q Clear Time (g_c+I1), s	15.3	21.7	10.1	40.7	17.1	33.8	8.0	16.7
Green Ext Time (p_c), s	0.0	6.5	0.1	0.0	0.0	4.0	0.1	6.1

Intersection Summary	
HCM 7th Control Delay, s/veh	53.6
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	271	393	215	131	454	23	354	373	78	58	359	254
Future Volume (veh/h)	271	393	215	131	454	23	354	373	78	58	359	254
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.87	1.00		0.97	1.00		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	282	409	224	136	473	24	369	389	81	60	374	265
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	332	1032	438	252	1148	58	417	992	204	139	556	426
Arrive On Green	0.10	0.29	0.29	0.14	0.34	0.34	0.12	0.34	0.34	0.08	0.30	0.30
Sat Flow, veh/h	3428	3526	1497	1767	3386	171	3428	2895	596	1767	1856	1422
Grp Volume(v), veh/h	282	409	224	136	245	252	369	235	235	60	374	265
Grp Sat Flow(s),veh/h/ln	1714	1763	1497	1767	1763	1794	1714	1763	1728	1767	1856	1422
Q Serve(g_s), s	11.3	13.0	12.7	10.0	15.0	15.1	14.8	14.2	14.5	4.5	24.7	22.4
Cycle Q Clear(g_c), s	11.3	13.0	12.7	10.0	15.0	15.1	14.8	14.2	14.5	4.5	24.7	22.4
Prop In Lane	1.00		1.00	1.00		0.10	1.00		0.34	1.00		1.00
Lane Grp Cap(c), veh/h	332	1032	438	252	598	608	417	604	592	139	556	426
V/C Ratio(X)	0.85	0.40	0.51	0.54	0.41	0.41	0.88	0.39	0.40	0.43	0.67	0.62
Avail Cap(c_a), veh/h	465	1032	438	252	598	608	490	604	592	151	556	426
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.68	0.68	0.68
Uniform Delay (d), s/veh	62.2	39.6	21.8	55.7	35.5	35.6	60.5	34.9	35.0	61.5	43.0	42.2
Incr Delay (d2), s/veh	7.6	1.1	4.2	1.3	2.1	2.1	14.2	1.9	2.0	0.5	4.4	4.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	5.9	5.1	4.6	6.9	7.1	7.3	6.5	6.5	2.1	12.0	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.9	40.7	26.0	57.0	37.6	37.6	74.7	36.8	37.0	62.1	47.4	46.8
LnGrp LOS	E	D	C	E	D	D	E	D	D	E	D	D
Approach Vol, veh/h		915			633			839			699	
Approach Delay, s/veh		46.1			41.8			53.5			48.4	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.0	46.0	22.0	47.0	18.5	52.5	16.0	53.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	19.0	41.0	20.0	40.0	19.0	41.0	12.0	48.0
Max Q Clear Time (g_c+I1), s	12.0	15.0	16.8	26.7	13.3	17.1	6.5	16.5
Green Ext Time (p_c), s	0.1	2.4	0.2	1.3	0.2	2.1	0.0	1.6

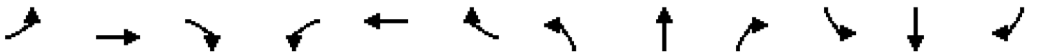
Intersection Summary	
HCM 7th Control Delay, s/veh	47.8
HCM 7th LOS	D

Intersection	
Intersection Delay, s/veh	17.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	146	79	28	1	107	20	14	257	2	7	331	49
Future Vol, veh/h	146	79	28	1	107	20	14	257	2	7	331	49
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	157	85	30	1	115	22	15	276	2	8	356	53
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay, s/veh	16.1	12.4	15.5	20.8
HCM LOS	C	B	C	C

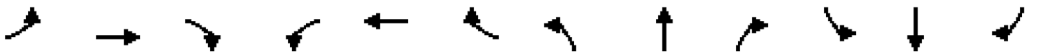
Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	5%	65%	0%	1%	2%
Vol Thru, %	94%	35%	0%	84%	86%
Vol Right, %	1%	0%	100%	16%	13%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	273	225	28	128	387
LT Vol	14	146	0	1	7
Through Vol	257	79	0	107	331
RT Vol	2	0	28	20	49
Lane Flow Rate	294	242	30	138	416
Geometry Grp	2	5	5	4a	2
Degree of Util (X)	0.507	0.491	0.052	0.262	0.683
Departure Headway (Hd)	6.216	7.311	6.262	6.863	5.909
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	578	494	571	522	612
Service Time	4.261	5.057	4.009	4.923	3.949
HCM Lane V/C Ratio	0.509	0.49	0.053	0.264	0.68
HCM Control Delay, s/veh	15.5	16.9	9.4	12.4	20.8
HCM Lane LOS	C	C	A	B	C
HCM 95th-tile Q	2.9	2.7	0.2	1	5.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	201	600	271	68	622	133	199	323	87	152	413	196
Future Volume (veh/h)	201	600	271	68	622	133	199	323	87	152	413	196
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	209	625	56	71	648	-15	207	336	39	158	430	12
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	316	1172	514	723	1591	709	348	529	236	346	527	235
Arrive On Green	0.09	0.33	0.33	0.21	0.44	0.00	0.10	0.15	0.15	0.10	0.15	0.15
Sat Flow, veh/h	3483	3582	1572	3483	3582	1598	3483	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	209	625	56	71	648	-15	207	336	39	158	430	12
Grp Sat Flow(s),veh/h/ln	1742	1791	1572	1742	1791	1598	1742	1791	1598	1742	1791	1598
Q Serve(g_s), s	6.4	15.6	1.9	1.8	13.5	0.0	6.3	9.7	1.5	4.7	12.8	0.7
Cycle Q Clear(g_c), s	6.4	15.6	1.9	1.8	13.5	0.0	6.3	9.7	1.5	4.7	12.8	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	316	1172	514	723	1591	709	348	529	236	346	527	235
V/C Ratio(X)	0.66	0.53	0.11	0.10	0.41	-0.02	0.60	0.63	0.17	0.46	0.82	0.05
Avail Cap(c_a), veh/h	348	1172	514	723	1591	709	348	912	407	348	912	407
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.67	0.67	0.67	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.4	30.2	12.3	35.3	20.8	0.0	47.4	44.1	16.2	46.7	45.5	40.3
Incr Delay (d2), s/veh	1.9	1.2	0.3	0.0	0.1	0.0	1.9	0.5	0.1	0.4	1.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	6.6	1.0	0.7	5.3	0.0	2.7	4.2	0.9	2.0	5.6	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.3	31.3	12.6	35.3	20.8	0.0	49.3	44.6	16.3	47.1	46.7	40.3
LnGrp LOS	D	C	B	D	C		D	D	B	D	D	D
Approach Vol, veh/h		890			704			582			600	
Approach Delay, s/veh		34.6			22.7			44.3			46.6	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.8	42.0	17.0	22.2	16.0	54.8	16.9	22.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	11.0	36.0	11.0	28.0	11.0	36.0	11.0	28.0
Max Q Clear Time (g_c+I1), s	3.8	17.6	8.3	14.8	8.4	15.5	6.7	11.7
Green Ext Time (p_c), s	0.0	2.4	0.1	1.4	0.1	2.5	0.1	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	36.2
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	364	127	64	291	106	169	349	61	180	269	109
Future Volume (veh/h)	137	364	127	64	291	106	169	349	61	180	269	109
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	147	391	137	69	313	114	182	375	66	194	289	117
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	225	517	423	174	450	371	232	719	315	237	384	314
Arrive On Green	0.13	0.27	0.27	0.10	0.24	0.24	0.13	0.20	0.20	0.13	0.20	0.20
Sat Flow, veh/h	1795	1885	1543	1795	1885	1553	1795	3582	1568	1795	1885	1541
Grp Volume(v), veh/h	147	391	137	69	313	114	182	375	66	194	289	117
Grp Sat Flow(s),veh/h/ln	1795	1885	1543	1795	1885	1553	1795	1791	1568	1795	1885	1541
Q Serve(g_s), s	5.2	12.8	4.8	2.4	10.2	4.1	6.6	6.3	2.4	7.1	9.7	4.4
Cycle Q Clear(g_c), s	5.2	12.8	4.8	2.4	10.2	4.1	6.6	6.3	2.4	7.1	9.7	4.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	225	517	423	174	450	371	232	719	315	237	384	314
V/C Ratio(X)	0.65	0.76	0.32	0.40	0.70	0.31	0.78	0.52	0.21	0.82	0.75	0.37
Avail Cap(c_a), veh/h	240	1039	851	253	1053	868	323	1703	746	307	880	719
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.0	22.4	19.4	28.5	23.4	21.1	28.4	24.0	22.4	28.4	25.2	23.1
Incr Delay (d2), s/veh	4.2	0.9	0.2	1.5	0.7	0.2	5.3	0.2	0.1	9.8	1.1	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	5.5	1.6	1.1	4.3	1.4	3.0	2.5	0.8	3.5	4.1	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.3	23.2	19.6	30.0	24.1	21.2	33.7	24.2	22.6	38.2	26.3	23.4
LnGrp LOS	C	C	B	C	C	C	C	C	C	D	C	C
Approach Vol, veh/h		675			496			623			600	
Approach Delay, s/veh		24.5			24.3			26.8			29.6	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	23.6	13.8	18.8	13.5	21.2	14.0	18.6
Change Period (Y+Rc), s	4.6	5.1	5.1	5.1	5.1	* 5.1	5.1	5.1
Max Green Setting (Gmax), s	9.5	37.1	12.1	31.4	9.0	* 38	11.5	32.0
Max Q Clear Time (g_c+I1), s	4.4	14.8	8.6	11.7	7.2	12.2	9.1	8.3
Green Ext Time (p_c), s	0.0	1.9	0.1	1.2	0.0	1.3	0.1	1.6

Intersection Summary	
HCM 7th Control Delay, s/veh	26.3
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

MOVEMENT SUMMARY

Site: 3 [Waterman & Sheldon PM Peak Hour (Site Folder: EAPP)]

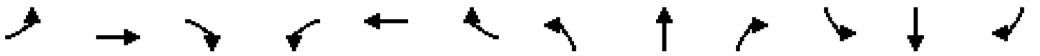
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Waterman Road															
3	L2	All MCs	136	2.0	136	2.0	0.676	14.4	LOS B	7.9	199.4	0.84	0.85	1.38	28.8
8	T1	All MCs	355	2.0	355	2.0	0.676	14.4	LOS B	7.9	199.4	0.84	0.85	1.38	29.4
18	R2	All MCs	151	2.0	151	2.0	0.676	14.4	LOS B	7.9	199.4	0.84	0.85	1.38	29.1
Approach			643	2.0	643	2.0	0.676	14.4	LOS B	7.9	199.4	0.84	0.85	1.38	29.2
East: Sheldon Road															
1	L2	All MCs	200	2.0	200	2.0	0.833	25.6	LOS D	12.5	318.6	1.00	1.25	2.18	25.2
6	T1	All MCs	464	2.0	464	2.0	0.833	25.6	LOS D	12.5	318.6	1.00	1.25	2.18	25.6
16	R2	All MCs	19	2.0	19	2.0	0.833	25.6	LOS D	12.5	318.6	1.00	1.25	2.18	25.4
Approach			683	2.0	683	2.0	0.833	25.6	LOS D	12.5	318.6	1.00	1.25	2.18	25.5
North: Waterman Road															
7	L2	All MCs	27	2.0	27	2.0	0.750	24.4	LOS C	6.4	161.9	0.88	1.07	1.65	25.9
4	T1	All MCs	441	2.0	441	2.0	0.750	24.4	LOS C	6.4	161.9	0.88	1.07	1.65	26.3
14	R2	All MCs	223	2.0	223	2.0	0.358	10.7	LOS B	1.6	40.1	0.69	0.68	0.80	30.8
Approach			691	2.0	691	2.0	0.750	20.0	LOS C	6.4	161.9	0.82	0.94	1.38	27.6
West: Sheldon Road															
5	L2	All MCs	126	2.0	126	2.0	0.556	10.1	LOS B	4.4	111.4	0.76	0.73	1.08	30.5
2	T1	All MCs	317	2.0	317	2.0	0.556	10.1	LOS B	4.4	111.4	0.76	0.73	1.08	31.1
12	R2	All MCs	163	2.0	163	2.0	0.556	10.1	LOS B	4.4	111.4	0.76	0.73	1.08	30.9
Approach			605	2.0	605	2.0	0.556	10.1	LOS B	4.4	111.4	0.76	0.73	1.08	30.9
All Vehicles			2622	2.0	2622	2.0	0.833	17.8	LOS C	12.5	318.6	0.86	0.95	1.52	28.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



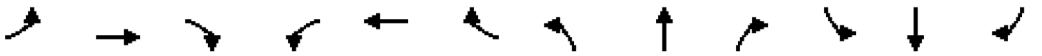
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	397	900	135	201	787	101	217	516	208	259	625	442
Future Volume (veh/h)	397	900	135	201	787	101	217	516	208	259	625	442
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	427	968	145	216	846	109	233	555	224	278	672	475
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	486	1247	555	284	1027	458	290	1128	496	333	1172	520
Arrive On Green	0.14	0.35	0.35	0.08	0.29	0.29	0.08	0.31	0.31	0.10	0.33	0.33
Sat Flow, veh/h	3483	3582	1595	3483	3582	1596	3483	3582	1573	3483	3582	1587
Grp Volume(v), veh/h	427	968	145	216	846	109	233	555	224	278	672	475
Grp Sat Flow(s),veh/h/ln	1742	1791	1595	1742	1791	1596	1742	1791	1573	1742	1791	1587
Q Serve(g_s), s	17.7	35.5	9.6	8.9	32.5	7.7	9.7	18.5	16.7	11.5	22.9	42.3
Cycle Q Clear(g_c), s	17.7	35.5	9.6	8.9	32.5	7.7	9.7	18.5	16.7	11.5	22.9	42.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	486	1247	555	284	1027	458	290	1128	496	333	1172	520
V/C Ratio(X)	0.88	0.78	0.26	0.76	0.82	0.24	0.80	0.49	0.45	0.83	0.57	0.91
Avail Cap(c_a), veh/h	710	1247	555	592	1217	542	947	1461	642	592	1217	540
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.1	42.8	34.4	66.1	49.0	40.2	66.2	40.8	40.2	65.4	41.0	47.5
Incr Delay (d2), s/veh	7.7	3.5	0.4	3.1	4.8	0.5	3.9	0.6	1.1	4.1	0.9	20.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	15.9	3.8	4.0	14.9	3.1	4.4	8.3	6.6	5.2	10.0	19.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.8	46.3	34.8	69.3	53.8	40.6	70.1	41.4	41.4	69.5	41.9	68.0
LnGrp LOS	E	D	C	E	D	D	E	D	D	E	D	E
Approach Vol, veh/h		1540			1171			1012			1425	
Approach Delay, s/veh		51.7			55.4			48.0			56.0	
Approach LOS		D			E			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.5	57.2	18.2	54.2	26.5	48.2	20.1	52.3
Change Period (Y+Rc), s	5.5	6.0	6.0	6.0	6.0	* 6	6.0	6.0
Max Green Setting (Gmax), s	25.0	50.0	40.0	50.0	30.0	* 50	25.0	60.0
Max Q Clear Time (g_c+I1), s	10.9	37.5	11.7	44.3	19.7	34.5	13.5	20.5
Green Ext Time (p_c), s	0.4	7.6	0.6	3.9	0.8	7.7	0.5	8.9

Intersection Summary	
HCM 7th Control Delay, s/veh	53.0
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	377	639	283	88	514	52	230	292	76	98	340	418
Future Volume (veh/h)	377	639	283	88	514	52	230	292	76	98	340	418
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.87	1.00		0.97	1.00		0.89
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	393	666	295	92	535	54	240	304	79	102	354	435
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	411	1444	618	113	1126	113	286	702	179	130	453	340
Arrive On Green	0.12	0.41	0.41	0.06	0.35	0.35	0.08	0.25	0.25	0.07	0.24	0.24
Sat Flow, veh/h	3428	3526	1510	1767	3186	320	3428	2760	703	1767	1856	1392
Grp Volume(v), veh/h	393	666	295	92	295	294	240	192	191	102	354	435
Grp Sat Flow(s),veh/h/ln	1714	1763	1510	1767	1763	1743	1714	1763	1700	1767	1856	1392
Q Serve(g_s), s	17.1	20.6	21.5	7.7	19.5	19.7	10.4	13.7	14.2	8.5	26.7	24.4
Cycle Q Clear(g_c), s	17.1	20.6	21.5	7.7	19.5	19.7	10.4	13.7	14.2	8.5	26.7	24.4
Prop In Lane	1.00		1.00	1.00		0.18	1.00		0.41	1.00		1.00
Lane Grp Cap(c), veh/h	411	1444	618	113	623	616	286	448	432	130	453	340
V/C Ratio(X)	0.96	0.46	0.48	0.82	0.47	0.48	0.84	0.43	0.44	0.79	0.78	1.28
Avail Cap(c_a), veh/h	411	1444	618	271	623	616	389	541	521	153	520	390
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.73	0.73	0.73
Uniform Delay (d), s/veh	65.6	32.2	32.5	69.4	37.7	37.7	67.8	46.8	47.0	68.3	52.9	25.1
Incr Delay (d2), s/veh	32.7	1.1	2.6	5.4	2.6	2.6	8.8	0.2	0.3	12.7	4.1	141.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	9.2	8.5	3.7	9.0	9.0	4.9	6.2	6.1	4.3	12.9	21.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	98.3	33.3	35.1	74.7	40.2	40.4	76.6	47.1	47.3	81.1	57.0	166.4
LnGrp LOS	F	C	D	E	D	D	E	D	D	F	E	F
Approach Vol, veh/h		1354			681			623			891	
Approach Delay, s/veh		52.6			45.0			58.5			113.2	
Approach LOS		D			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.6	66.4	17.5	41.6	23.0	58.0	16.0	43.1
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	23.0	48.0	17.0	42.0	18.0	53.0	13.0	46.0
Max Q Clear Time (g_c+I1), s	9.7	23.5	12.4	28.7	19.1	21.7	10.5	16.2
Green Ext Time (p_c), s	0.1	4.0	0.1	1.5	0.0	2.7	0.0	1.3

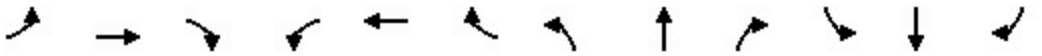
Intersection Summary	
HCM 7th Control Delay, s/veh	67.4
HCM 7th LOS	E

Intersection	
Intersection Delay, s/veh	47.5
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	100	101	25	6	118	13	41	371	2	4	431	107
Future Vol, veh/h	100	101	25	6	118	13	41	371	2	4	431	107
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	108	109	27	6	127	14	44	399	2	4	463	115
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay, s/veh	18.6	15.5	35.9	76.5
HCM LOS	C	C	E	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	10%	50%	0%	4%	1%
Vol Thru, %	90%	50%	0%	86%	80%
Vol Right, %	0%	0%	100%	9%	20%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	414	201	25	137	542
LT Vol	41	100	0	6	4
Through Vol	371	101	0	118	431
RT Vol	2	0	25	13	107
Lane Flow Rate	445	216	27	147	583
Geometry Grp	2	5	5	4a	2
Degree of Util (X)	0.834	0.5	0.055	0.331	1.047
Departure Headway (Hd)	6.955	8.578	7.595	8.412	6.47
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	525	424	474	430	559
Service Time	4.955	6.278	5.295	6.412	4.522
HCM Lane V/C Ratio	0.848	0.509	0.057	0.342	1.043
HCM Control Delay, s/veh	35.9	19.6	10.7	15.5	76.5
HCM Lane LOS	E	C	B	C	F
HCM 95th-tile Q	8.4	2.7	0.2	1.4	16.4



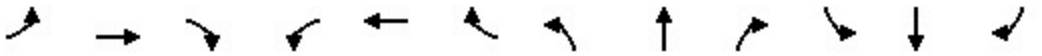
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	240	480	500	120	610	210	530	530	100	205	700	220
Future Volume (veh/h)	240	480	500	120	610	210	530	530	100	205	700	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	286	571	337	143	726	74	631	631	59	244	833	43
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	1039	462	286	996	439	675	1269	566	297	880	387
Arrive On Green	0.10	0.29	0.29	0.08	0.28	0.28	0.20	0.36	0.36	0.09	0.25	0.25
Sat Flow, veh/h	3456	3554	1579	3456	3554	1565	3456	3554	1585	3456	3554	1563
Grp Volume(v), veh/h	286	571	337	143	726	74	631	631	59	244	833	43
Grp Sat Flow(s),veh/h/ln	1728	1777	1579	1728	1777	1565	1728	1777	1585	1728	1777	1563
Q Serve(g_s), s	10.8	17.9	25.4	5.2	24.4	4.7	23.7	18.3	2.3	9.2	30.4	2.2
Cycle Q Clear(g_c), s	10.8	17.9	25.4	5.2	24.4	4.7	23.7	18.3	2.3	9.2	30.4	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	328	1039	462	286	996	439	675	1269	566	297	880	387
V/C Ratio(X)	0.87	0.55	0.73	0.50	0.73	0.17	0.93	0.50	0.10	0.82	0.95	0.11
Avail Cap(c_a), veh/h	328	1039	462	288	996	439	681	1269	566	393	888	391
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	0.84	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.9	39.4	42.0	57.9	43.0	35.9	52.3	33.2	14.3	59.3	48.8	22.7
Incr Delay (d2), s/veh	18.1	1.8	8.3	0.5	4.7	0.8	19.8	0.1	0.0	7.8	18.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	7.9	10.6	2.3	11.1	1.9	11.9	7.7	1.2	4.2	15.3	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	77.0	41.1	50.3	58.4	47.6	36.7	72.1	33.3	14.3	67.1	67.1	22.8
LnGrp LOS	E	D	D	E	D	D	E	C	B	E	E	C
Approach Vol, veh/h		1194			943			1321			1120	
Approach Delay, s/veh		52.3			48.4			51.0			65.4	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.5	43.0	31.8	38.7	16.9	44.6	17.3	53.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	12.0	37.0	26.0	33.0	11.0	38.0	15.0	44.0
Max Q Clear Time (g_c+I1), s	12.8	26.4	25.7	32.4	7.2	27.4	11.2	20.3
Green Ext Time (p_c), s	0.0	2.4	0.1	0.3	0.1	2.3	0.2	2.6

Intersection Summary	
HCM 7th Control Delay, s/veh	54.3
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	280	180	55	430	160	185	640	50	115	950	230
Future Volume (veh/h)	130	280	180	55	430	160	185	640	50	115	950	230
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	140	301	194	59	462	172	199	688	54	124	1022	247
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	164	359	297	392	1138	491	223	1247	545	148	1097	486
Arrive On Green	0.09	0.19	0.19	0.22	0.32	0.32	0.13	0.35	0.35	0.08	0.31	0.31
Sat Flow, veh/h	1767	1856	1532	1767	3526	1522	1767	3526	1542	1767	3526	1560
Grp Volume(v), veh/h	140	301	194	59	462	172	199	688	54	124	1022	247
Grp Sat Flow(s),veh/h/ln	1767	1856	1532	1767	1763	1522	1767	1763	1542	1767	1763	1560
Q Serve(g_s), s	10.5	21.1	15.8	3.6	13.8	11.6	15.0	21.2	1.7	9.3	38.0	13.2
Cycle Q Clear(g_c), s	10.5	21.1	15.8	3.6	13.8	11.6	15.0	21.2	1.7	9.3	38.0	13.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	164	359	297	392	1138	491	223	1247	545	148	1097	486
V/C Ratio(X)	0.86	0.84	0.65	0.15	0.41	0.35	0.89	0.55	0.10	0.84	0.93	0.51
Avail Cap(c_a), veh/h	182	579	478	392	1138	491	247	1247	545	233	1146	507
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.4	52.4	50.2	42.3	35.6	34.9	58.1	35.0	8.7	61.0	45.1	21.7
Incr Delay (d2), s/veh	26.6	20.2	10.7	0.2	1.1	2.0	27.5	0.3	0.0	7.9	12.6	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	11.9	6.9	1.6	6.1	4.6	8.4	9.1	1.2	4.5	18.3	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	87.0	72.6	61.0	42.5	36.7	36.9	85.6	35.4	8.7	68.9	57.7	22.0
LnGrp LOS	F	E	E	D	D	D	F	D	A	E	E	C
Approach Vol, veh/h		635			693			941			1393	
Approach Delay, s/veh		72.2			37.2			44.5			52.4	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	34.5	31.3	22.1	47.1	17.6	48.2	16.4	52.8
Change Period (Y+Rc), s	4.6	5.1	5.1	5.1	5.1	4.6	5.1	5.1
Max Green Setting (Gmax), s	10.2	42.1	18.9	43.9	13.9	38.4	17.8	45.0
Max Q Clear Time (g_c+I1), s	5.6	23.1	17.0	40.0	12.5	15.8	11.3	23.2
Green Ext Time (p_c), s	0.0	1.5	0.1	2.1	0.0	2.2	0.1	3.2

Intersection Summary	
HCM 7th Control Delay, s/veh	50.9
HCM 7th LOS	D

MOVEMENT SUMMARY

Site: 3 [Waterman & Sheldon AM Peak Hour (Site Folder: CNP)]

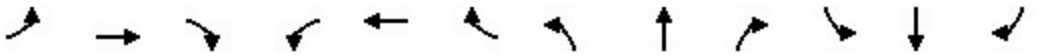
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Waterman Road															
3	L2	All MCs	215	3.0	215	3.0	0.921	30.5	LOS D	24.1	615.9	1.00	1.60	2.81	23.9
8	T1	All MCs	602	3.0	602	3.0	0.921	30.5	LOS D	24.1	615.9	1.00	1.60	2.81	24.3
18	R2	All MCs	172	3.0	172	3.0	0.921	30.5	LOS D	24.1	615.9	1.00	1.60	2.81	24.2
Approach			989	3.0	989	3.0	0.921	30.5	LOS D	24.1	615.9	1.00	1.60	2.81	24.2
East: Sheldon Road															
1	L2	All MCs	194	3.0	194	3.0	1.686	334.7	LOS F	117.1	2996.8	1.00	5.37	15.35	5.7
6	T1	All MCs	613	3.0	613	3.0	1.686	334.7	LOS F	117.1	2996.8	1.00	5.37	15.35	5.7
16	R2	All MCs	65	3.0	65	3.0	1.686	334.7	LOS F	117.1	2996.8	1.00	5.37	15.35	5.7
Approach			871	3.0	871	3.0	1.686	334.7	LOS F	117.1	2996.8	1.00	5.37	15.35	5.7
North: Waterman Road															
7	L2	All MCs	43	3.0	43	3.0	0.987	54.5	LOS F	21.8	557.3	1.00	1.90	3.73	19.3
4	T1	All MCs	624	3.0	624	3.0	0.987	54.5	LOS F	21.8	557.3	1.00	1.90	3.73	19.5
14	R2	All MCs	215	3.0	215	3.0	0.318	9.3	LOS A	1.3	33.9	0.65	0.59	0.69	31.4
Approach			882	3.0	882	3.0	0.987	43.5	LOS E	21.8	557.3	0.92	1.58	2.99	21.4
West: Sheldon Road															
5	L2	All MCs	149	3.0	149	3.0	1.010	58.6	LOS F	24.3	622.3	1.00	2.03	4.07	18.5
2	T1	All MCs	351	3.0	351	3.0	1.010	58.6	LOS F	24.3	622.3	1.00	2.03	4.07	18.7
12	R2	All MCs	223	3.0	223	3.0	1.010	58.6	LOS F	24.3	622.3	1.00	2.03	4.07	18.6
Approach			723	3.0	723	3.0	1.010	58.6	LOS F	24.3	622.3	1.00	2.03	4.07	18.6
All Vehicles			3465	3.0	3465	3.0	1.686	116.1	LOS F	117.1	2996.8	0.98	2.63	6.27	12.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



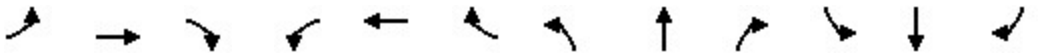
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	615	610	120	330	1040	160	230	660	200	170	930	480
Future Volume (veh/h)	615	610	120	330	1040	160	230	660	200	170	930	480
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	668	663	130	359	1130	174	250	717	217	185	1011	522
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	1287	2054	914	413	1155	513	259	927	411	271	939	412
Arrive On Green	0.37	0.58	0.58	0.12	0.32	0.32	0.08	0.26	0.26	0.08	0.26	0.26
Sat Flow, veh/h	3456	3554	1581	3456	3554	1578	3456	3554	1578	3456	3554	1560
Grp Volume(v), veh/h	668	663	130	359	1130	174	250	717	217	185	1011	522
Grp Sat Flow(s),veh/h/ln	1728	1777	1581	1728	1777	1578	1728	1777	1578	1728	1777	1560
Q Serve(g_s), s	21.1	13.6	5.8	14.3	44.1	12.5	10.1	26.2	16.5	7.3	37.0	37.0
Cycle Q Clear(g_c), s	21.1	13.6	5.8	14.3	44.1	12.5	10.1	26.2	16.5	7.3	37.0	37.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1287	2054	914	413	1155	513	259	927	411	271	939	412
V/C Ratio(X)	0.52	0.32	0.14	0.87	0.98	0.34	0.96	0.77	0.53	0.68	1.08	1.27
Avail Cap(c_a), veh/h	1287	2054	914	531	1155	513	259	927	411	272	939	412
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.54	0.54	0.54	0.70	0.70	0.70	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.2	15.3	16.6	60.5	46.8	40.7	64.6	47.9	44.4	62.8	51.5	51.5
Incr Delay (d2), s/veh	0.3	0.4	0.3	6.4	15.0	1.0	37.4	3.2	1.4	6.3	52.2	137.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	5.4	1.9	6.5	21.2	4.9	5.7	11.7	6.5	3.4	22.8	29.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.5	15.8	16.9	66.9	61.8	41.6	101.9	51.1	45.7	69.1	103.7	189.4
LnGrp LOS	C	B	B	E	E	D	F	D	D	E	F	F
Approach Vol, veh/h		1461			1663			1184			1718	
Approach Delay, s/veh		24.4			60.8			60.9			126.0	
Approach LOS		C			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.3	86.9	16.5	43.0	58.2	51.0	17.0	42.5
Change Period (Y+Rc), s	5.5	6.0	6.0	* 6	6.0	5.5	6.0	6.0
Max Green Setting (Gmax), s	21.5	49.0	10.5	* 37	25.0	45.5	11.0	35.0
Max Q Clear Time (g_c+I1), s	16.3	15.6	12.1	39.0	23.1	46.1	9.3	28.2
Green Ext Time (p_c), s	0.5	8.8	0.0	0.0	0.5	0.0	0.1	4.0

Intersection Summary	
HCM 7th Control Delay, s/veh	70.6
HCM 7th LOS	E

Notes

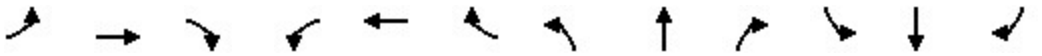
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	540	440	240	145	620	30	390	410	100	65	430	420
Future Volume (veh/h)	540	440	240	145	620	30	390	410	100	65	430	420
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.82	1.00		0.97	1.00		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	562	458	250	151	646	31	406	427	104	68	448	438
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	646	1184	505	175	834	40	451	953	230	141	536	409
Arrive On Green	0.19	0.34	0.34	0.10	0.25	0.25	0.13	0.34	0.34	0.08	0.29	0.29
Sat Flow, veh/h	3428	3526	1503	1767	3386	162	3428	2799	675	1767	1856	1417
Grp Volume(v), veh/h	562	458	250	151	336	341	406	267	264	68	448	438
Grp Sat Flow(s),veh/h/ln	1714	1763	1503	1767	1763	1786	1714	1763	1711	1767	1856	1417
Q Serve(g_s), s	22.0	13.7	18.3	11.6	24.5	24.6	16.1	16.3	16.6	5.1	31.2	25.2
Cycle Q Clear(g_c), s	22.0	13.7	18.3	11.6	24.5	24.6	16.1	16.3	16.6	5.1	31.2	25.2
Prop In Lane	1.00		1.00	1.00		0.09	1.00		0.39	1.00		1.00
Lane Grp Cap(c), veh/h	646	1184	505	175	434	440	451	600	583	141	536	409
V/C Ratio(X)	0.87	0.39	0.50	0.86	0.77	0.78	0.90	0.45	0.45	0.48	0.84	1.07
Avail Cap(c_a), veh/h	646	1184	505	256	434	440	472	600	583	141	536	409
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.25	0.25	0.25
Uniform Delay (d), s/veh	54.4	35.0	36.5	61.3	48.4	48.4	59.0	35.4	35.5	60.8	46.0	19.7
Incr Delay (d2), s/veh	11.8	1.0	3.4	13.2	12.6	12.6	18.7	2.4	2.5	0.2	4.1	44.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	6.2	7.3	5.9	12.4	12.6	8.2	7.5	7.5	2.3	14.9	13.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	66.2	35.9	39.9	74.5	61.0	61.0	77.7	37.8	38.0	61.0	50.1	63.7
LnGrp LOS	E	D	D	E	E	E	E	D	D	E	D	F
Approach Vol, veh/h		1270			828			937			954	
Approach Delay, s/veh		50.1			63.5			55.1			57.1	
Approach LOS		D			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.6	51.4	23.2	44.8	31.0	39.0	16.0	52.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	20.0	40.0	19.0	39.0	26.0	34.0	11.0	47.0
Max Q Clear Time (g_c+I1), s	13.6	20.3	18.1	33.2	24.0	26.6	7.1	18.6
Green Ext Time (p_c), s	0.1	2.6	0.1	1.2	0.2	1.9	0.0	1.8

Intersection Summary	
HCM 7th Control Delay, s/veh	55.7
HCM 7th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	200	40	20	490	390	50	780	20	160	1000	60
Future Volume (veh/h)	170	200	40	20	490	390	50	780	20	160	1000	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	183	215	43	22	527	419	54	839	22	172	1075	65
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	248	1086	484	44	919	410	161	1195	533	258	1295	577
Arrive On Green	0.07	0.31	0.31	0.02	0.26	0.26	0.05	0.34	0.34	0.07	0.36	0.36
Sat Flow, veh/h	3456	3554	1585	1781	3554	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	183	215	43	22	527	419	54	839	22	172	1075	65
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1777	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	3.6	3.1	1.3	0.8	9.0	18.0	1.1	14.3	0.7	3.4	19.2	1.9
Cycle Q Clear(g_c), s	3.6	3.1	1.3	0.8	9.0	18.0	1.1	14.3	0.7	3.4	19.2	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	248	1086	484	44	919	410	161	1195	533	258	1295	577
V/C Ratio(X)	0.74	0.20	0.09	0.50	0.57	1.02	0.34	0.70	0.04	0.67	0.83	0.11
Avail Cap(c_a), veh/h	248	1086	484	128	919	410	248	1195	533	278	1295	577
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.7	17.9	17.2	33.5	22.5	25.8	32.1	20.1	15.5	31.4	20.2	14.7
Incr Delay (d2), s/veh	10.9	0.1	0.1	8.3	0.9	50.2	1.2	3.5	0.1	5.4	6.3	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	1.2	0.5	0.5	3.6	12.0	0.5	6.0	0.2	1.6	8.4	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	42.6	17.9	17.3	41.8	23.3	76.0	33.4	23.5	15.7	36.8	26.4	15.1
LnGrp LOS	D	B	B	D	C	F	C	C	B	D	C	B
Approach Vol, veh/h		441			968			915			1312	
Approach Delay, s/veh		28.1			46.5			23.9			27.2	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.7	27.9	6.2	25.8	7.7	29.9	9.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.6	23.4	5.0	18.0	5.0	24.0	5.0	18.0
Max Q Clear Time (g_c+I1), s	5.4	16.3	2.8	5.1	3.1	21.2	5.6	20.0
Green Ext Time (p_c), s	0.0	3.3	0.0	1.1	0.0	1.9	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	31.6
HCM 7th LOS	C

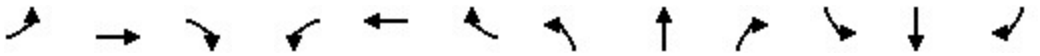
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	670	430	115	620	120	305	630	140	135	630	190
Future Volume (veh/h)	200	670	430	115	620	120	305	630	140	135	630	190
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	238	798	254	137	738	-33	363	750	107	161	750	7
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	299	1199	533	325	1226	547	424	869	387	403	846	372
Arrive On Green	0.09	0.34	0.34	0.09	0.34	0.00	0.12	0.24	0.24	0.12	0.24	0.24
Sat Flow, veh/h	3456	3554	1579	3456	3554	1585	3456	3554	1585	3456	3554	1563
Grp Volume(v), veh/h	238	798	254	137	738	-33	363	750	107	161	750	7
Grp Sat Flow(s),veh/h/ln	1728	1777	1579	1728	1777	1585	1728	1777	1585	1728	1777	1563
Q Serve(g_s), s	7.8	22.2	9.7	4.3	19.8	0.0	11.9	23.4	6.3	5.0	23.6	0.4
Cycle Q Clear(g_c), s	7.8	22.2	9.7	4.3	19.8	0.0	11.9	23.4	6.3	5.0	23.6	0.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	299	1199	533	325	1226	547	424	869	387	403	846	372
V/C Ratio(X)	0.80	0.67	0.48	0.42	0.60	-0.06	0.86	0.86	0.28	0.40	0.89	0.02
Avail Cap(c_a), veh/h	389	1199	533	329	1226	547	538	1230	548	403	1015	446
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	32.7	13.1	49.4	31.3	0.0	49.7	41.8	35.4	47.3	42.5	33.7
Incr Delay (d2), s/veh	6.3	2.9	3.0	0.3	0.6	0.0	8.9	3.5	0.1	0.2	7.5	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	9.6	3.6	1.8	8.2	0.0	5.5	10.3	2.4	2.1	10.8	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.1	35.7	16.1	49.7	31.9	0.0	58.6	45.3	35.5	47.6	50.0	33.7
LnGrp LOS	E	D	B	D	C		E	D	D	D	D	C
Approach Vol, veh/h		1290			842			1220			918	
Approach Delay, s/veh		36.0			36.0			48.4			49.5	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.9	45.0	20.2	33.5	16.0	45.9	19.5	34.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	11.0	39.0	18.0	33.0	13.0	37.0	11.0	40.0
Max Q Clear Time (g_c+I1), s	6.3	24.2	13.9	25.6	9.8	21.8	7.0	25.4
Green Ext Time (p_c), s	0.1	3.4	0.3	2.0	0.1	2.7	0.1	2.9

Intersection Summary	
HCM 7th Control Delay, s/veh	42.4
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	430	220	75	370	110	250	710	70	185	620	150
Future Volume (veh/h)	185	430	220	75	370	110	250	710	70	185	620	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	199	462	237	81	398	118	269	763	75	199	667	161
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	234	543	450	149	843	362	304	982	429	234	841	371
Arrive On Green	0.13	0.29	0.29	0.08	0.24	0.24	0.17	0.28	0.28	0.13	0.24	0.24
Sat Flow, veh/h	1767	1856	1539	1767	3526	1511	1767	3526	1539	1767	3526	1557
Grp Volume(v), veh/h	199	462	237	81	398	118	269	763	75	199	667	161
Grp Sat Flow(s),veh/h/ln	1767	1856	1539	1767	1763	1511	1767	1763	1539	1767	1763	1557
Q Serve(g_s), s	10.3	22.0	12.1	4.1	9.1	6.0	13.9	18.7	3.5	10.3	16.6	8.2
Cycle Q Clear(g_c), s	10.3	22.0	12.1	4.1	9.1	6.0	13.9	18.7	3.5	10.3	16.6	8.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	234	543	450	149	843	362	304	982	429	234	841	371
V/C Ratio(X)	0.85	0.85	0.53	0.54	0.47	0.33	0.88	0.78	0.18	0.85	0.79	0.43
Avail Cap(c_a), veh/h	338	925	767	179	1441	618	432	1314	573	358	1167	515
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.7	31.2	27.7	41.1	30.6	29.4	37.8	31.1	25.6	39.7	33.5	30.3
Incr Delay (d2), s/veh	9.5	1.5	0.4	3.1	0.2	0.2	11.3	1.4	0.1	7.2	1.7	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	9.9	4.3	1.9	3.8	2.1	6.8	7.8	1.2	4.8	7.1	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.2	32.7	28.1	44.2	30.7	29.6	49.1	32.6	25.7	47.0	35.2	30.6
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	D	C
Approach Vol, veh/h		898			597			1107			1027	
Approach Delay, s/veh		35.1			32.3			36.1			36.8	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.5	32.5	21.2	27.4	17.5	27.5	17.5	31.2
Change Period (Y+Rc), s	4.6	5.1	5.1	5.1	5.1	* 5.1	5.1	5.1
Max Green Setting (Gmax), s	9.5	46.7	22.9	31.0	17.9	* 38	19.0	34.9
Max Q Clear Time (g_c+I1), s	6.1	24.0	15.9	18.6	12.3	11.1	12.3	20.7
Green Ext Time (p_c), s	0.0	2.5	0.2	2.7	0.1	1.9	0.1	3.2

Intersection Summary	
HCM 7th Control Delay, s/veh	35.4
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

MOVEMENT SUMMARY

Site: 3 [Waterman & Sheldon PM Peak Hour (Site Folder: CNP)]

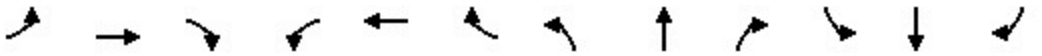
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Waterman Road															
3	L2	All MCs	207	2.0	207	2.0	1.069	70.6	LOS F	40.9	1039.2	1.00	2.49	5.11	16.8
8	T1	All MCs	511	2.0	511	2.0	1.069	70.6	LOS F	40.9	1039.2	1.00	2.49	5.11	17.0
18	R2	All MCs	170	2.0	170	2.0	1.069	70.6	LOS F	40.9	1039.2	1.00	2.49	5.11	16.9
Approach			888	2.0	888	2.0	1.069	70.6	LOS F	40.9	1039.2	1.00	2.49	5.11	17.0
East: Sheldon Road															
1	L2	All MCs	213	2.0	213	2.0	1.170	111.3	LOS F	49.2	1249.5	1.00	3.10	7.39	13.0
6	T1	All MCs	553	2.0	553	2.0	1.170	111.3	LOS F	49.2	1249.5	1.00	3.10	7.39	13.1
16	R2	All MCs	32	2.0	32	2.0	1.170	111.3	LOS F	49.2	1249.5	1.00	3.10	7.39	13.0
Approach			798	2.0	798	2.0	1.170	111.3	LOS F	49.2	1249.5	1.00	3.10	7.39	13.0
North: Waterman Road															
7	L2	All MCs	43	2.0	43	2.0	1.070	81.1	LOS F	27.8	706.5	1.00	2.30	5.16	15.7
4	T1	All MCs	596	2.0	596	2.0	1.070	81.1	LOS F	27.8	706.5	1.00	2.30	5.16	15.9
14	R2	All MCs	223	2.0	223	2.0	0.375	11.4	LOS B	1.7	42.4	0.70	0.71	0.84	30.5
Approach			862	2.0	862	2.0	1.070	63.0	LOS F	27.8	706.5	0.92	1.88	4.04	18.1
West: Sheldon Road															
5	L2	All MCs	128	2.0	128	2.0	0.768	18.0	LOS C	9.0	228.7	0.94	1.08	1.76	27.6
2	T1	All MCs	436	2.0	436	2.0	0.768	18.0	LOS C	9.0	228.7	0.94	1.08	1.76	28.1
12	R2	All MCs	202	2.0	202	2.0	0.768	18.0	LOS C	9.0	228.7	0.94	1.08	1.76	27.9
Approach			766	2.0	766	2.0	0.768	18.0	LOS C	9.0	228.7	0.94	1.08	1.76	28.0
All Vehicles			3314	2.0	3314	2.0	1.170	66.3	LOS F	49.2	1249.5	0.97	2.15	4.61	17.6

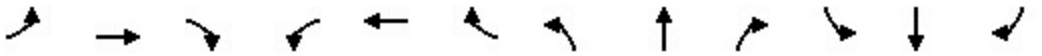
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	435	1010	150	205	780	110	245	840	220	255	870	560
Future Volume (veh/h)	435	1010	150	205	780	110	245	840	220	255	870	560
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	473	1098	163	223	848	120	266	913	239	277	946	609
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	520	1244	552	334	1053	467	312	1037	461	324	1049	461
Arrive On Green	0.15	0.35	0.35	0.10	0.30	0.30	0.09	0.29	0.29	0.09	0.30	0.30
Sat Flow, veh/h	3456	3554	1578	3456	3554	1577	3456	3554	1579	3456	3554	1560
Grp Volume(v), veh/h	473	1098	163	223	848	120	266	913	239	277	946	609
Grp Sat Flow(s),veh/h/ln	1728	1777	1578	1728	1777	1577	1728	1777	1579	1728	1777	1560
Q Serve(g_s), s	18.9	40.7	10.5	8.7	30.9	8.1	10.6	34.3	13.2	11.1	35.8	27.5
Cycle Q Clear(g_c), s	18.9	40.7	10.5	8.7	30.9	8.1	10.6	34.3	13.2	11.1	35.8	27.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	520	1244	552	334	1053	467	312	1037	461	324	1049	461
V/C Ratio(X)	0.91	0.88	0.30	0.67	0.81	0.26	0.85	0.88	0.52	0.85	0.90	1.32
Avail Cap(c_a), veh/h	543	1244	552	334	1053	467	321	1041	462	346	1066	468
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.71	0.71	0.71	0.68	0.68	0.68	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.5	42.8	33.0	61.1	45.5	37.5	62.8	47.2	23.1	62.5	47.4	21.8
Incr Delay (d2), s/veh	18.8	9.3	1.4	3.3	4.8	0.9	13.4	6.6	1.1	17.2	10.8	159.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	18.8	4.2	3.9	14.0	3.3	5.2	16.0	5.1	5.5	17.0	30.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	77.3	52.1	34.3	64.4	50.3	38.5	76.1	53.8	24.2	79.7	58.2	181.3
LnGrp LOS	E	D	C	E	D	D	E	D	C	E	E	F
Approach Vol, veh/h		1734			1191			1418			1832	
Approach Delay, s/veh		57.3			51.8			53.0			102.4	
Approach LOS		E			D			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	55.0	18.7	47.3	27.1	47.0	19.1	46.9
Change Period (Y+Rc), s	5.5	6.0	6.0	6.0	6.0	5.5	6.0	6.0
Max Green Setting (Gmax), s	12.5	49.0	13.0	42.0	22.0	39.5	14.0	41.0
Max Q Clear Time (g_c+I1), s	10.7	42.7	12.6	37.8	20.9	32.9	13.1	36.3
Green Ext Time (p_c), s	0.1	4.8	0.0	3.5	0.2	4.1	0.1	3.5

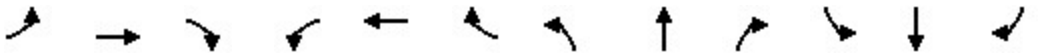
Intersection Summary	
HCM 7th Control Delay, s/veh	68.6
HCM 7th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	580	740	320	105	590	60	260	350	90	115	350	610
Future Volume (veh/h)	580	740	320	105	590	60	260	350	90	115	350	610
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.83	1.00		0.97	1.00		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	604	771	333	109	615	62	271	365	94	120	365	635
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	725	1384	592	131	808	81	315	869	221	143	563	432
Arrive On Green	0.21	0.39	0.39	0.07	0.26	0.26	0.09	0.31	0.31	0.08	0.30	0.30
Sat Flow, veh/h	3428	3526	1508	1767	3166	318	3428	2765	702	1767	1856	1424
Grp Volume(v), veh/h	604	771	333	109	341	336	271	231	228	120	365	635
Grp Sat Flow(s),veh/h/ln	1714	1763	1508	1767	1763	1722	1714	1763	1704	1767	1856	1424
Q Serve(g_s), s	24.5	24.6	25.0	8.8	25.9	26.2	11.3	15.0	15.4	9.7	24.7	26.3
Cycle Q Clear(g_c), s	24.5	24.6	25.0	8.8	25.9	26.2	11.3	15.0	15.4	9.7	24.7	26.3
Prop In Lane	1.00		1.00	1.00		0.18	1.00		0.41	1.00		1.00
Lane Grp Cap(c), veh/h	725	1384	592	131	450	439	315	554	536	143	563	432
V/C Ratio(X)	0.83	0.56	0.56	0.83	0.76	0.76	0.86	0.42	0.43	0.84	0.65	1.47
Avail Cap(c_a), veh/h	725	1384	592	195	450	439	331	554	536	219	563	432
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.50	0.50	0.50
Uniform Delay (d), s/veh	54.7	34.2	34.3	66.3	49.9	50.0	64.9	39.2	39.4	65.7	43.8	18.0
Incr Delay (d2), s/veh	7.8	1.6	3.8	11.3	11.4	11.9	18.1	2.3	2.5	5.1	2.9	217.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.5	11.1	9.9	4.4	13.0	12.8	5.8	7.0	6.9	4.6	11.8	34.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	62.5	35.8	38.1	77.6	61.3	61.9	83.0	41.5	41.8	70.7	46.7	235.8
LnGrp LOS	E	D	D	E	E	E	F	D	D	E	D	F
Approach Vol, veh/h		1708			786			730			1120	
Approach Delay, s/veh		45.7			63.8			57.0			156.5	
Approach LOS		D			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.7	61.9	18.3	49.0	35.7	42.0	16.8	50.6
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	16.0	51.0	14.0	44.0	30.0	37.0	18.0	40.0
Max Q Clear Time (g_c+I1), s	10.8	27.0	13.3	28.3	26.5	28.2	11.7	17.4
Green Ext Time (p_c), s	0.0	4.8	0.0	1.9	0.4	2.1	0.0	1.5

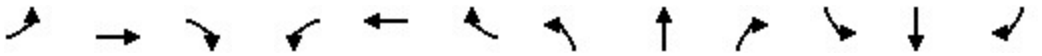
Intersection Summary	
HCM 7th Control Delay, s/veh	79.4
HCM 7th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	310	50	30	270	240	50	940	10	350	930	120
Future Volume (veh/h)	110	310	50	30	270	240	50	940	10	350	930	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	118	333	54	32	290	258	54	1011	11	376	1000	129
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	826	368	59	716	320	160	1231	549	463	1542	688
Arrive On Green	0.06	0.23	0.23	0.03	0.20	0.20	0.05	0.35	0.35	0.13	0.43	0.43
Sat Flow, veh/h	3456	3554	1585	1781	3554	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	118	333	54	32	290	258	54	1011	11	376	1000	129
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1777	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	2.3	5.6	1.9	1.3	5.0	11.0	1.1	18.4	0.3	7.5	15.7	3.5
Cycle Q Clear(g_c), s	2.3	5.6	1.9	1.3	5.0	11.0	1.1	18.4	0.3	7.5	15.7	3.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	220	826	368	59	716	320	160	1231	549	463	1542	688
V/C Ratio(X)	0.54	0.40	0.15	0.54	0.40	0.81	0.34	0.82	0.02	0.81	0.65	0.19
Avail Cap(c_a), veh/h	244	904	403	126	904	403	244	1231	549	464	1542	688
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.1	23.0	21.6	33.7	24.6	26.9	32.7	21.1	15.2	29.8	15.8	12.3
Incr Delay (d2), s/veh	2.0	0.3	0.2	7.6	0.4	9.3	1.2	6.2	0.1	10.5	2.1	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.3	0.7	0.6	2.1	4.8	0.5	8.1	0.1	3.7	6.2	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.1	23.3	21.8	41.3	24.9	36.2	33.9	27.4	15.3	40.3	17.9	12.9
LnGrp LOS	C	C	C	D	C	D	C	C	B	D	B	B
Approach Vol, veh/h		505			580			1076			1505	
Approach Delay, s/veh		25.7			30.8			27.6			23.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	29.0	6.8	20.9	7.8	35.2	9.0	18.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	9.5	24.5	5.0	18.0	5.0	29.0	5.0	18.0
Max Q Clear Time (g_c+I1), s	9.5	20.4	3.3	7.6	3.1	17.7	4.3	13.0
Green Ext Time (p_c), s	0.0	2.5	0.0	1.7	0.0	5.6	0.0	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	26.0
HCM 7th LOS	C



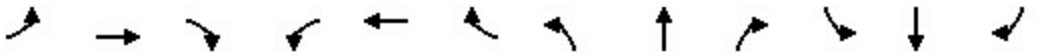
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	240	480	508	122	610	210	554	542	106	205	704	220
Future Volume (veh/h)	240	480	508	122	610	210	554	542	106	205	704	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	286	571	347	145	726	74	660	645	66	244	838	43
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	323	1007	447	287	969	427	703	1301	580	297	883	388
Arrive On Green	0.09	0.28	0.28	0.08	0.27	0.27	0.20	0.37	0.37	0.09	0.25	0.25
Sat Flow, veh/h	3456	3554	1578	3456	3554	1565	3456	3554	1585	3456	3554	1563
Grp Volume(v), veh/h	286	571	347	145	726	74	660	645	66	244	838	43
Grp Sat Flow(s),veh/h/ln	1728	1777	1578	1728	1777	1565	1728	1777	1585	1728	1777	1563
Q Serve(g_s), s	10.8	18.1	26.7	5.3	24.6	4.8	24.8	18.6	2.6	9.2	30.6	2.2
Cycle Q Clear(g_c), s	10.8	18.1	26.7	5.3	24.6	4.8	24.8	18.6	2.6	9.2	30.6	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	323	1007	447	287	969	427	703	1301	580	297	883	388
V/C Ratio(X)	0.88	0.57	0.78	0.51	0.75	0.17	0.94	0.50	0.11	0.82	0.95	0.11
Avail Cap(c_a), veh/h	323	1007	447	288	969	427	707	1301	580	393	888	391
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	0.84	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.1	40.4	43.4	57.9	43.9	36.6	51.8	32.4	13.9	59.3	48.8	22.7
Incr Delay (d2), s/veh	20.3	1.9	10.6	0.6	5.3	0.9	20.0	0.1	0.0	7.8	18.8	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	8.0	11.4	2.3	11.2	1.9	12.4	7.8	1.3	4.2	15.5	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	79.4	42.3	54.0	58.5	49.2	37.5	71.7	32.5	13.9	67.1	67.5	22.7
LnGrp LOS	E	D	D	E	D	D	E	C	B	E	E	C
Approach Vol, veh/h		1204			945			1371			1125	
Approach Delay, s/veh		54.5			49.7			50.5			65.7	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.3	42.0	32.9	38.8	16.9	43.4	17.3	54.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	12.0	36.0	27.0	33.0	11.0	37.0	15.0	45.0
Max Q Clear Time (g_c+I1), s	12.8	26.6	26.8	32.6	7.3	28.7	11.2	20.6
Green Ext Time (p_c), s	0.0	2.3	0.0	0.2	0.1	2.1	0.2	2.7

Intersection Summary	
HCM 7th Control Delay, s/veh	55.1
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	134	280	180	55	430	161	185	642	50	117	956	241
Future Volume (veh/h)	134	280	180	55	430	161	185	642	50	117	956	241
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	144	301	194	59	462	173	199	690	54	126	1028	259
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	168	360	297	394	1136	490	223	1237	541	150	1092	483
Arrive On Green	0.09	0.19	0.19	0.22	0.32	0.32	0.13	0.35	0.35	0.08	0.31	0.31
Sat Flow, veh/h	1767	1856	1532	1767	3526	1522	1767	3526	1542	1767	3526	1560
Grp Volume(v), veh/h	144	301	194	59	462	173	199	690	54	126	1028	259
Grp Sat Flow(s),veh/h/ln	1767	1856	1532	1767	1763	1522	1767	1763	1542	1767	1763	1560
Q Serve(g_s), s	10.8	21.1	15.8	3.6	13.8	11.7	15.0	21.3	1.7	9.5	38.4	14.0
Cycle Q Clear(g_c), s	10.8	21.1	15.8	3.6	13.8	11.7	15.0	21.3	1.7	9.5	38.4	14.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	168	360	297	394	1136	490	223	1237	541	150	1092	483
V/C Ratio(X)	0.86	0.84	0.65	0.15	0.41	0.35	0.89	0.56	0.10	0.84	0.94	0.54
Avail Cap(c_a), veh/h	182	592	489	394	1136	490	247	1237	541	236	1120	496
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.2	52.4	50.2	42.1	35.7	35.0	58.1	35.4	8.8	60.9	45.4	21.9
Incr Delay (d2), s/veh	28.0	20.2	10.7	0.2	1.1	2.0	27.5	0.3	0.0	8.2	14.6	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	11.9	6.9	1.6	6.1	4.6	8.4	9.2	1.2	4.6	18.7	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	88.2	72.5	60.9	42.3	36.8	37.0	85.6	35.7	8.8	69.0	60.0	22.4
LnGrp LOS	F	E	E	D	D	D	F	D	A	E	E	C
Approach Vol, veh/h		639			694			943			1413	
Approach Delay, s/veh		72.5			37.3			44.7			53.9	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	34.7	31.3	22.1	46.9	17.9	48.1	16.6	52.5
Change Period (Y+Rc), s	4.6	5.1	5.1	5.1	5.1	4.6	5.1	5.1
Max Green Setting (Gmax), s	10.2	43.1	18.9	42.9	13.9	39.4	18.0	43.8
Max Q Clear Time (g_c+I1), s	5.6	23.1	17.0	40.4	12.8	15.8	11.5	23.3
Green Ext Time (p_c), s	0.0	1.5	0.1	1.4	0.0	2.3	0.1	3.1

Intersection Summary	
HCM 7th Control Delay, s/veh	51.7
HCM 7th LOS	D

MOVEMENT SUMMARY

Site: 3 [Waterman & Sheldon AM Peak Hour (Site Folder: CPP)]

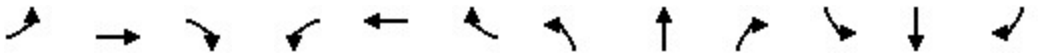
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Waterman Road															
3	L2	All MCs	216	3.0	216	3.0	0.933	32.4	LOS D	25.7	658.0	1.00	1.67	2.95	23.5
8	T1	All MCs	613	3.0	613	3.0	0.933	32.4	LOS D	25.7	658.0	1.00	1.67	2.95	23.8
18	R2	All MCs	172	3.0	172	3.0	0.933	32.4	LOS D	25.7	658.0	1.00	1.67	2.95	23.7
Approach			1001	3.0	1001	3.0	0.933	32.4	LOS D	25.7	658.0	1.00	1.67	2.95	23.7
East: Sheldon Road															
1	L2	All MCs	194	3.0	194	3.0	1.709	344.8	LOS F	119.0	3047.1	1.00	5.42	15.57	5.6
6	T1	All MCs	613	3.0	613	3.0	1.709	344.8	LOS F	119.0	3047.1	1.00	5.42	15.57	5.6
16	R2	All MCs	65	3.0	65	3.0	1.709	344.8	LOS F	119.0	3047.1	1.00	5.42	15.57	5.6
Approach			871	3.0	871	3.0	1.709	344.8	LOS F	119.0	3047.1	1.00	5.42	15.57	5.6
North: Waterman Road															
7	L2	All MCs	43	3.0	43	3.0	0.988	54.5	LOS F	22.1	564.6	1.00	1.90	3.74	19.3
4	T1	All MCs	628	3.0	628	3.0	0.988	54.5	LOS F	22.1	564.6	1.00	1.90	3.74	19.5
14	R2	All MCs	215	3.0	215	3.0	0.317	9.3	LOS A	1.3	33.6	0.65	0.59	0.68	31.4
Approach			886	3.0	886	3.0	0.988	43.5	LOS E	22.1	564.6	0.91	1.58	3.00	21.4
West: Sheldon Road															
5	L2	All MCs	151	3.0	151	3.0	1.024	62.2	LOS F	26.0	665.4	1.00	2.11	4.32	17.9
2	T1	All MCs	355	3.0	355	3.0	1.024	62.2	LOS F	26.0	665.4	1.00	2.11	4.32	18.1
12	R2	All MCs	226	3.0	226	3.0	1.024	62.2	LOS F	26.0	665.4	1.00	2.11	4.32	18.1
Approach			731	3.0	731	3.0	1.024	62.2	LOS F	26.0	665.4	1.00	2.11	4.32	18.1
All Vehicles			3489	3.0	3489	3.0	1.709	119.4	LOS F	119.0	3047.1	0.98	2.68	6.40	12.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



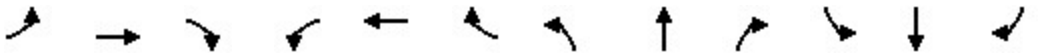
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	615	618	120	330	1063	160	230	661	200	170	930	480
Future Volume (veh/h)	615	618	120	330	1063	160	230	661	200	170	930	480
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	668	672	130	359	1155	174	250	718	217	185	1011	522
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	1287	2054	914	413	1155	513	259	927	411	271	939	412
Arrive On Green	0.37	0.58	0.58	0.12	0.32	0.32	0.08	0.26	0.26	0.08	0.26	0.26
Sat Flow, veh/h	3456	3554	1581	3456	3554	1578	3456	3554	1578	3456	3554	1560
Grp Volume(v), veh/h	668	672	130	359	1155	174	250	718	217	185	1011	522
Grp Sat Flow(s),veh/h/ln	1728	1777	1581	1728	1777	1578	1728	1777	1578	1728	1777	1560
Q Serve(g_s), s	21.1	13.8	5.8	14.3	45.5	12.5	10.1	26.2	16.5	7.3	37.0	37.0
Cycle Q Clear(g_c), s	21.1	13.8	5.8	14.3	45.5	12.5	10.1	26.2	16.5	7.3	37.0	37.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1287	2054	914	413	1155	513	259	927	411	271	939	412
V/C Ratio(X)	0.52	0.33	0.14	0.87	1.00	0.34	0.96	0.77	0.53	0.68	1.08	1.27
Avail Cap(c_a), veh/h	1287	2054	914	531	1155	513	259	927	411	272	939	412
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.52	0.52	0.52	0.70	0.70	0.70	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.2	15.4	16.6	60.5	47.3	40.7	64.6	47.9	44.4	62.8	51.5	51.5
Incr Delay (d2), s/veh	0.3	0.4	0.3	6.2	19.1	0.9	37.4	3.2	1.4	6.3	52.2	137.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	5.4	1.9	6.5	22.5	4.9	5.7	11.7	6.5	3.4	22.8	29.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.5	15.8	16.9	66.7	66.4	41.6	101.9	51.2	45.7	69.1	103.7	189.4
LnGrp LOS	C	B	B	E	F	D	F	D	D	E	F	F
Approach Vol, veh/h		1470			1688			1185			1718	
Approach Delay, s/veh		24.4			63.9			60.9			126.0	
Approach LOS		C			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.3	86.9	16.5	43.0	58.2	51.0	17.0	42.5
Change Period (Y+Rc), s	5.5	6.0	6.0	* 6	6.0	5.5	6.0	6.0
Max Green Setting (Gmax), s	21.5	49.0	10.5	* 37	25.0	45.5	11.0	35.0
Max Q Clear Time (g_c+I1), s	16.3	15.8	12.1	39.0	23.1	47.5	9.3	28.2
Green Ext Time (p_c), s	0.5	8.9	0.0	0.0	0.5	0.0	0.1	4.0

Intersection Summary	
HCM 7th Control Delay, s/veh	71.3
HCM 7th LOS	E

Notes

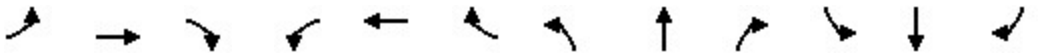
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	540	442	240	146	626	31	390	410	100	65	430	420
Future Volume (veh/h)	540	442	240	146	626	31	390	410	100	65	430	420
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.82	1.00		0.97	1.00		0.90
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	562	460	250	152	652	32	406	427	104	68	448	438
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	646	1182	504	176	833	41	451	953	230	141	536	409
Arrive On Green	0.19	0.34	0.34	0.10	0.25	0.25	0.13	0.34	0.34	0.08	0.29	0.29
Sat Flow, veh/h	3428	3526	1503	1767	3381	166	3428	2799	675	1767	1856	1417
Grp Volume(v), veh/h	562	460	250	152	339	345	406	267	264	68	448	438
Grp Sat Flow(s),veh/h/ln	1714	1763	1503	1767	1763	1784	1714	1763	1711	1767	1856	1417
Q Serve(g_s), s	22.0	13.8	18.3	11.7	24.8	24.9	16.1	16.3	16.6	5.1	31.2	25.2
Cycle Q Clear(g_c), s	22.0	13.8	18.3	11.7	24.8	24.9	16.1	16.3	16.6	5.1	31.2	25.2
Prop In Lane	1.00		1.00	1.00		0.09	1.00		0.39	1.00		1.00
Lane Grp Cap(c), veh/h	646	1182	504	176	434	440	451	600	583	141	536	409
V/C Ratio(X)	0.87	0.39	0.50	0.87	0.78	0.78	0.90	0.45	0.45	0.48	0.84	1.07
Avail Cap(c_a), veh/h	646	1182	504	256	434	440	472	600	583	141	536	409
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.25	0.25	0.25
Uniform Delay (d), s/veh	54.4	35.1	36.6	61.2	48.5	48.6	59.0	35.4	35.5	60.8	46.0	19.7
Incr Delay (d2), s/veh	11.8	1.0	3.5	13.5	13.1	13.1	18.7	2.4	2.5	0.2	4.1	44.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	6.2	7.3	6.0	12.6	12.8	8.2	7.5	7.5	2.3	14.9	13.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	66.2	36.0	40.0	74.8	61.6	61.7	77.7	37.8	38.0	61.0	50.1	63.7
LnGrp LOS	E	D	D	E	E	E	E	D	D	E	D	F
Approach Vol, veh/h		1272			836			937			954	
Approach Delay, s/veh		50.1			64.0			55.1			57.1	
Approach LOS		D			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.7	51.3	23.2	44.8	31.0	39.0	16.0	52.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	20.0	40.0	19.0	39.0	26.0	34.0	11.0	47.0
Max Q Clear Time (g_c+I1), s	13.7	20.3	18.1	33.2	24.0	26.9	7.1	18.6
Green Ext Time (p_c), s	0.1	2.6	0.1	1.2	0.2	1.8	0.0	1.8

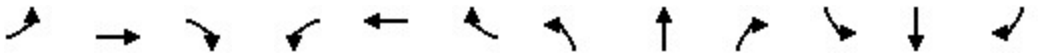
Intersection Summary	
HCM 7th Control Delay, s/veh	55.9
HCM 7th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	202	40	20	491	390	50	780	20	160	1000	60
Future Volume (veh/h)	170	202	40	20	491	390	50	780	20	160	1000	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	183	217	43	22	528	419	54	839	22	172	1075	65
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	248	1086	484	44	919	410	161	1195	533	258	1295	577
Arrive On Green	0.07	0.31	0.31	0.02	0.26	0.26	0.05	0.34	0.34	0.07	0.36	0.36
Sat Flow, veh/h	3456	3554	1585	1781	3554	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	183	217	43	22	528	419	54	839	22	172	1075	65
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1777	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	3.6	3.1	1.3	0.8	9.0	18.0	1.1	14.3	0.7	3.4	19.2	1.9
Cycle Q Clear(g_c), s	3.6	3.1	1.3	0.8	9.0	18.0	1.1	14.3	0.7	3.4	19.2	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	248	1086	484	44	919	410	161	1195	533	258	1295	577
V/C Ratio(X)	0.74	0.20	0.09	0.50	0.57	1.02	0.34	0.70	0.04	0.67	0.83	0.11
Avail Cap(c_a), veh/h	248	1086	484	128	919	410	248	1195	533	278	1295	577
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.7	17.9	17.2	33.5	22.5	25.8	32.1	20.1	15.5	31.4	20.2	14.7
Incr Delay (d2), s/veh	10.9	0.1	0.1	8.3	0.9	50.2	1.2	3.5	0.1	5.4	6.3	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	1.2	0.5	0.5	3.7	12.0	0.5	6.0	0.2	1.6	8.4	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	42.6	18.0	17.3	41.8	23.3	76.0	33.4	23.5	15.7	36.8	26.4	15.1
LnGrp LOS	D	B	B	D	C	F	C	C	B	D	C	B
Approach Vol, veh/h		443			969			915			1312	
Approach Delay, s/veh		28.1			46.5			23.9			27.2	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.7	27.9	6.2	25.8	7.7	29.9	9.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.6	23.4	5.0	18.0	5.0	24.0	5.0	18.0
Max Q Clear Time (g_c+I1), s	5.4	16.3	2.8	5.1	3.1	21.2	5.6	20.0
Green Ext Time (p_c), s	0.0	3.3	0.0	1.1	0.0	1.9	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	31.6
HCM 7th LOS	C



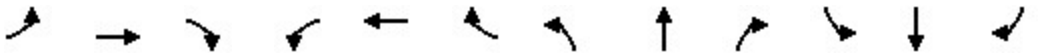
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	670	457	122	620	120	321	638	144	135	643	190
Future Volume (veh/h)	200	670	457	122	620	120	321	638	144	135	643	190
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	238	798	286	145	738	-33	382	760	111	161	765	7
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	298	1166	518	325	1194	533	444	880	393	424	860	378
Arrive On Green	0.09	0.33	0.33	0.09	0.34	0.00	0.13	0.25	0.25	0.12	0.24	0.24
Sat Flow, veh/h	3456	3554	1579	3456	3554	1585	3456	3554	1585	3456	3554	1563
Grp Volume(v), veh/h	238	798	286	145	738	-33	382	760	111	161	765	7
Grp Sat Flow(s),veh/h/ln	1728	1777	1579	1728	1777	1585	1728	1777	1585	1728	1777	1563
Q Serve(g_s), s	7.8	22.5	11.3	4.6	20.2	0.0	12.5	23.7	6.6	5.0	24.1	0.4
Cycle Q Clear(g_c), s	7.8	22.5	11.3	4.6	20.2	0.0	12.5	23.7	6.6	5.0	24.1	0.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	298	1166	518	325	1194	533	444	880	393	424	860	378
V/C Ratio(X)	0.80	0.68	0.55	0.45	0.62	-0.06	0.86	0.86	0.28	0.38	0.89	0.02
Avail Cap(c_a), veh/h	388	1166	518	328	1194	533	567	1258	561	424	1013	446
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.9	33.7	13.7	49.6	32.2	0.0	49.4	41.7	35.2	46.7	42.4	33.4
Incr Delay (d2), s/veh	6.4	3.3	4.2	0.4	0.7	0.0	8.8	3.3	0.1	0.2	8.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	9.8	4.3	2.0	8.4	0.0	5.8	10.4	2.5	2.1	11.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.3	37.0	17.9	49.9	32.9	0.0	58.2	45.0	35.4	46.9	50.4	33.4
LnGrp LOS	E	D	B	D	C		E	D	D	D	D	C
Approach Vol, veh/h		1322			850			1253			933	
Approach Delay, s/veh		36.7			37.1			48.2			49.7	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.9	44.0	20.9	34.0	16.0	44.9	20.2	34.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	11.0	38.0	19.0	33.0	13.0	36.0	11.0	41.0
Max Q Clear Time (g_c+I1), s	6.6	24.5	14.5	26.1	9.8	22.2	7.0	25.7
Green Ext Time (p_c), s	0.1	3.3	0.3	1.9	0.1	2.6	0.1	3.0

Intersection Summary	
HCM 7th Control Delay, s/veh	42.8
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	197	430	220	75	370	112	250	717	70	186	624	157
Future Volume (veh/h)	197	430	220	75	370	112	250	717	70	186	624	157
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.96	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	212	462	237	81	398	120	269	771	75	200	671	169
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	247	542	450	149	817	350	304	983	429	235	844	373
Arrive On Green	0.14	0.29	0.29	0.08	0.23	0.23	0.17	0.28	0.28	0.13	0.24	0.24
Sat Flow, veh/h	1767	1856	1539	1767	3526	1510	1767	3526	1539	1767	3526	1557
Grp Volume(v), veh/h	212	462	237	81	398	120	269	771	75	200	671	169
Grp Sat Flow(s),veh/h/ln	1767	1856	1539	1767	1763	1510	1767	1763	1539	1767	1763	1557
Q Serve(g_s), s	11.0	22.0	12.1	4.1	9.2	6.2	14.0	19.0	3.5	10.4	16.8	8.7
Cycle Q Clear(g_c), s	11.0	22.0	12.1	4.1	9.2	6.2	14.0	19.0	3.5	10.4	16.8	8.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	247	542	450	149	817	350	304	983	429	235	844	373
V/C Ratio(X)	0.86	0.85	0.53	0.54	0.49	0.34	0.88	0.78	0.17	0.85	0.80	0.45
Avail Cap(c_a), veh/h	337	923	765	179	1438	616	431	1310	572	357	1164	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.5	31.3	27.8	41.3	31.3	30.1	38.0	31.3	25.7	39.8	33.6	30.5
Incr Delay (d2), s/veh	12.0	1.5	0.4	3.1	0.2	0.2	11.4	1.6	0.1	7.5	1.8	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	9.9	4.3	1.9	3.8	2.2	6.8	8.0	1.2	4.9	7.1	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	51.5	32.8	28.2	44.3	31.4	30.3	49.4	32.9	25.7	47.3	35.4	30.8
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	D	C
Approach Vol, veh/h		911			599			1115			1040	
Approach Delay, s/veh		36.0			33.0			36.4			36.9	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.5	32.6	21.3	27.6	18.2	26.9	17.6	31.3
Change Period (Y+Rc), s	4.6	5.1	5.1	5.1	5.1	* 5.1	5.1	5.1
Max Green Setting (Gmax), s	9.5	46.7	22.9	31.0	17.9	* 38	19.0	34.9
Max Q Clear Time (g_c+I1), s	6.1	24.0	16.0	18.8	13.0	11.2	12.4	21.0
Green Ext Time (p_c), s	0.0	2.5	0.2	2.7	0.1	1.9	0.1	3.2

Intersection Summary	
HCM 7th Control Delay, s/veh	35.9
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

MOVEMENT SUMMARY

Site: 3 [Waterman & Sheldon PM Peak Hour (Site Folder: CPP)]

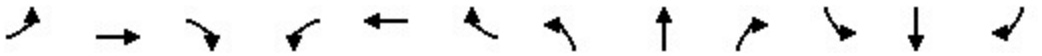
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Waterman Road															
3	L2	All MCs	209	2.0	209	2.0	1.078	73.6	LOS F	42.8	1086.1	1.00	2.56	5.31	16.5
8	T1	All MCs	518	2.0	518	2.0	1.078	73.6	LOS F	42.8	1086.1	1.00	2.56	5.31	16.6
18	R2	All MCs	170	2.0	170	2.0	1.078	73.6	LOS F	42.8	1086.1	1.00	2.56	5.31	16.6
Approach			897	2.0	897	2.0	1.078	73.6	LOS F	42.8	1086.1	1.00	2.56	5.31	16.6
East: Sheldon Road															
1	L2	All MCs	213	2.0	213	2.0	1.172	112.2	LOS F	49.5	1257.3	1.00	3.11	7.44	12.9
6	T1	All MCs	553	2.0	553	2.0	1.172	112.2	LOS F	49.5	1257.3	1.00	3.11	7.44	13.0
16	R2	All MCs	32	2.0	32	2.0	1.172	112.2	LOS F	49.5	1257.3	1.00	3.11	7.44	13.0
Approach			798	2.0	798	2.0	1.172	112.2	LOS F	49.5	1257.3	1.00	3.11	7.44	13.0
North: Waterman Road															
7	L2	All MCs	43	2.0	43	2.0	1.087	86.3	LOS F	30.3	769.2	1.00	2.41	5.52	15.2
4	T1	All MCs	607	2.0	607	2.0	1.087	86.3	LOS F	30.3	769.2	1.00	2.41	5.52	15.3
14	R2	All MCs	223	2.0	223	2.0	0.374	11.4	LOS B	1.7	42.3	0.70	0.71	0.84	30.5
Approach			873	2.0	873	2.0	1.087	67.2	LOS F	30.3	769.2	0.92	1.97	4.33	17.5
West: Sheldon Road															
5	L2	All MCs	128	2.0	128	2.0	0.770	18.2	LOS C	9.1	230.1	0.94	1.08	1.77	27.6
2	T1	All MCs	436	2.0	436	2.0	0.770	18.2	LOS C	9.1	230.1	0.94	1.08	1.77	28.1
12	R2	All MCs	203	2.0	203	2.0	0.770	18.2	LOS C	9.1	230.1	0.94	1.08	1.77	27.9
Approach			767	2.0	767	2.0	0.770	18.2	LOS C	9.1	230.1	0.94	1.08	1.77	28.0
All Vehicles			3335	2.0	3335	2.0	1.172	68.4	LOS F	49.5	1257.3	0.97	2.20	4.75	17.3

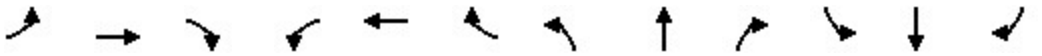
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	435	1036	150	205	796	110	245	840	220	255	871	560
Future Volume (veh/h)	435	1036	150	205	796	110	245	840	220	255	871	560
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	473	1126	163	223	865	120	266	913	239	277	947	609
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	520	1244	552	333	1052	467	312	1037	461	324	1049	461
Arrive On Green	0.15	0.35	0.35	0.10	0.30	0.30	0.09	0.29	0.29	0.09	0.30	0.30
Sat Flow, veh/h	3456	3554	1578	3456	3554	1577	3456	3554	1579	3456	3554	1560
Grp Volume(v), veh/h	473	1126	163	223	865	120	266	913	239	277	947	609
Grp Sat Flow(s),veh/h/ln	1728	1777	1578	1728	1777	1577	1728	1777	1579	1728	1777	1560
Q Serve(g_s), s	18.9	42.2	10.5	8.7	31.7	8.1	10.6	34.3	13.2	11.1	35.8	27.5
Cycle Q Clear(g_c), s	18.9	42.2	10.5	8.7	31.7	8.1	10.6	34.3	13.2	11.1	35.8	27.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	520	1244	552	333	1052	467	312	1037	461	324	1049	461
V/C Ratio(X)	0.91	0.91	0.30	0.67	0.82	0.26	0.85	0.88	0.52	0.85	0.90	1.32
Avail Cap(c_a), veh/h	543	1244	552	333	1052	467	321	1041	462	346	1066	468
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.69	0.69	0.69	0.68	0.68	0.68	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.5	43.3	33.0	61.1	45.8	37.5	62.8	47.2	23.1	62.5	47.4	21.8
Incr Delay (d2), s/veh	18.8	11.0	1.4	3.3	5.1	0.9	13.4	6.5	1.1	17.2	10.9	159.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	19.8	4.2	3.9	14.4	3.3	5.2	16.0	5.1	5.5	17.0	30.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	77.3	54.3	34.3	64.4	51.0	38.5	76.1	53.8	24.2	79.7	58.3	181.1
LnGrp LOS	E	D	C	E	D	D	E	D	C	E	E	F
Approach Vol, veh/h		1762			1208			1418			1833	
Approach Delay, s/veh		58.6			52.2			53.0			102.3	
Approach LOS		E			D			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	55.0	18.7	47.3	27.1	47.0	19.1	46.9
Change Period (Y+Rc), s	5.5	6.0	6.0	6.0	6.0	5.5	6.0	6.0
Max Green Setting (Gmax), s	12.5	49.0	13.0	42.0	22.0	39.5	14.0	41.0
Max Q Clear Time (g_c+I1), s	10.7	44.2	12.6	37.8	20.9	33.7	13.1	36.3
Green Ext Time (p_c), s	0.1	3.8	0.0	3.5	0.2	3.7	0.1	3.5

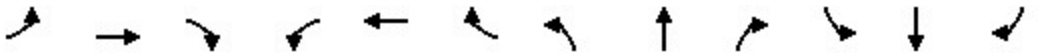
Intersection Summary	
HCM 7th Control Delay, s/veh	69.0
HCM 7th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	580	747	320	106	594	61	260	350	91	116	350	610
Future Volume (veh/h)	580	747	320	106	594	61	260	350	91	116	350	610
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.83	1.00		0.97	1.00		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	604	778	333	110	619	64	271	365	95	121	365	635
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	725	1382	591	132	805	83	315	866	222	144	563	432
Arrive On Green	0.21	0.39	0.39	0.07	0.26	0.26	0.09	0.31	0.31	0.08	0.30	0.30
Sat Flow, veh/h	3428	3526	1508	1767	3156	325	3428	2758	707	1767	1856	1424
Grp Volume(v), veh/h	604	778	333	110	345	338	271	231	229	121	365	635
Grp Sat Flow(s),veh/h/ln	1714	1763	1508	1767	1763	1719	1714	1763	1703	1767	1856	1424
Q Serve(g_s), s	24.5	25.0	25.0	8.9	26.3	26.5	11.3	15.0	15.4	9.8	24.7	26.3
Cycle Q Clear(g_c), s	24.5	25.0	25.0	8.9	26.3	26.5	11.3	15.0	15.4	9.8	24.7	26.3
Prop In Lane	1.00		1.00	1.00		0.19	1.00		0.42	1.00		1.00
Lane Grp Cap(c), veh/h	725	1382	591	132	450	439	315	553	534	144	563	432
V/C Ratio(X)	0.83	0.56	0.56	0.83	0.77	0.77	0.86	0.42	0.43	0.84	0.65	1.47
Avail Cap(c_a), veh/h	725	1382	591	195	450	439	331	553	534	219	563	432
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.50	0.50	0.50
Uniform Delay (d), s/veh	54.7	34.4	34.4	66.2	50.0	50.1	64.9	39.3	39.4	65.6	43.8	18.0
Incr Delay (d2), s/veh	7.8	1.7	3.8	11.8	11.8	12.4	18.1	2.3	2.5	5.3	2.9	217.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.5	11.2	10.0	4.5	13.2	13.0	5.8	7.0	7.0	4.6	11.8	34.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	62.5	36.0	38.2	78.0	61.8	62.4	83.0	41.6	41.9	70.9	46.7	235.8
LnGrp LOS	E	D	D	E	E	E	F	D	D	E	D	F
Approach Vol, veh/h		1715			793			731			1121	
Approach Delay, s/veh		45.8			64.3			57.1			156.4	
Approach LOS		D			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.8	61.9	18.3	49.0	35.7	42.0	16.8	50.5
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	16.0	51.0	14.0	44.0	30.0	37.0	18.0	40.0
Max Q Clear Time (g_c+I1), s	10.9	27.0	13.3	28.3	26.5	28.5	11.8	17.4
Green Ext Time (p_c), s	0.0	4.9	0.0	1.9	0.4	2.1	0.0	1.5

Intersection Summary	
HCM 7th Control Delay, s/veh	79.5
HCM 7th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	311	50	30	272	240	50	940	10	350	930	120
Future Volume (veh/h)	110	311	50	30	272	240	50	940	10	350	930	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	118	334	54	32	292	258	54	1011	11	376	1000	129
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	826	368	59	717	320	160	1230	549	463	1542	688
Arrive On Green	0.06	0.23	0.23	0.03	0.20	0.20	0.05	0.35	0.35	0.13	0.43	0.43
Sat Flow, veh/h	3456	3554	1585	1781	3554	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	118	334	54	32	292	258	54	1011	11	376	1000	129
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1777	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	2.3	5.6	1.9	1.3	5.1	11.0	1.1	18.4	0.3	7.5	15.7	3.5
Cycle Q Clear(g_c), s	2.3	5.6	1.9	1.3	5.1	11.0	1.1	18.4	0.3	7.5	15.7	3.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	220	826	368	59	717	320	160	1230	549	463	1542	688
V/C Ratio(X)	0.54	0.40	0.15	0.54	0.41	0.81	0.34	0.82	0.02	0.81	0.65	0.19
Avail Cap(c_a), veh/h	244	904	403	126	904	403	244	1230	549	464	1542	688
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.1	23.0	21.6	33.7	24.6	26.9	32.7	21.1	15.2	29.8	15.8	12.3
Incr Delay (d2), s/veh	2.0	0.3	0.2	7.6	0.4	9.3	1.2	6.3	0.1	10.5	2.1	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.3	0.7	0.6	2.1	4.8	0.5	8.1	0.1	3.7	6.2	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.1	23.3	21.8	41.3	24.9	36.2	33.9	27.4	15.3	40.3	17.9	12.9
LnGrp LOS	C	C	C	D	C	D	C	C	B	D	B	B
Approach Vol, veh/h		506			582			1076			1505	
Approach Delay, s/veh		25.7			30.8			27.6			23.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	29.0	6.8	20.9	7.8	35.2	9.0	18.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	9.5	24.5	5.0	18.0	5.0	29.0	5.0	18.0
Max Q Clear Time (g_c+I1), s	9.5	20.4	3.3	7.6	3.1	17.7	4.3	13.0
Green Ext Time (p_c), s	0.0	2.5	0.0	1.7	0.0	5.6	0.0	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	26.0
HCM 7th LOS	C

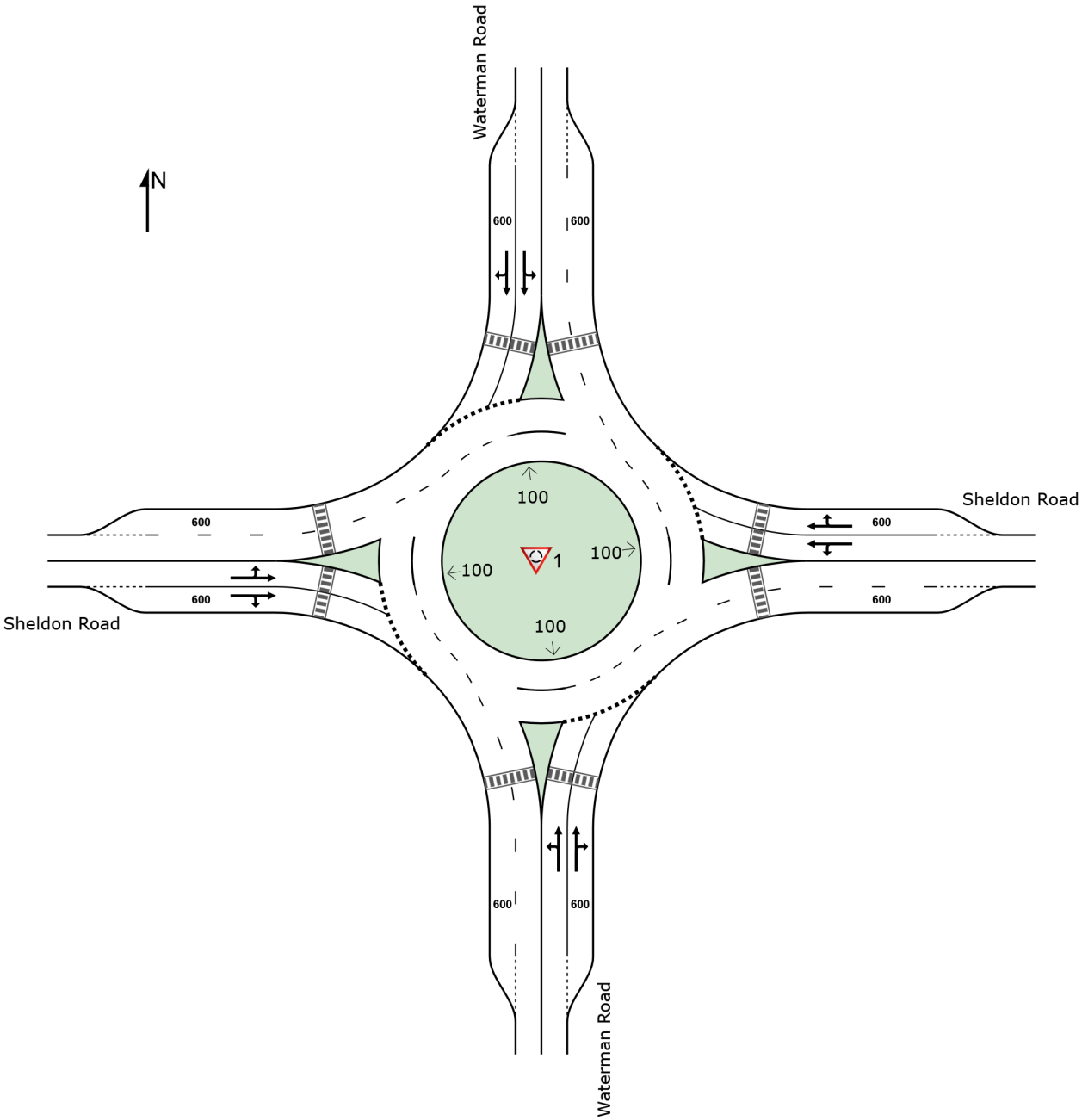
Appendix C - Delay Reports with Improvements

SITE LAYOUT

Site: Int 3 Waterman & Sheldon Improvements

New Site
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: Int 3 [Waterman & Sheldon Improvements AM Peak Hour (Site Folder: CNP)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Waterman Road															
3	L2	All MCs	215	3.0	215	3.0	0.453	8.5	LOS A	2.6	66.9	0.63	0.55	0.78	30.6
8	T1	All MCs	602	3.0	602	3.0	0.453	11.2	LOS B	2.6	66.9	0.61	0.53	0.76	31.9
18	R2	All MCs	172	3.0	172	3.0	0.453	12.1	LOS B	2.6	66.1	0.61	0.52	0.74	32.1
Approach			989	3.0	989	3.0	0.453	10.8	LOS B	2.6	66.9	0.62	0.53	0.76	31.6
East: Sheldon Road															
1	L2	All MCs	194	3.0	194	3.0	0.777	29.9	LOS D	6.1	155.4	0.87	1.16	1.87	23.8
6	T1	All MCs	613	3.0	613	3.0	0.777	33.0	LOS D	6.3	160.1	0.87	1.16	1.87	24.9
16	R2	All MCs	65	3.0	65	3.0	0.777	32.8	LOS D	6.3	160.1	0.87	1.15	1.87	25.2
Approach			871	3.0	871	3.0	0.777	32.3	LOS D	6.3	160.1	0.87	1.16	1.87	24.7
North: Waterman Road															
7	L2	All MCs	54	3.0	54	3.0	0.932	55.7	LOS F	10.3	263.8	0.96	1.52	2.90	19.0
4	T1	All MCs	624	3.0	624	3.0	0.932	56.9	LOS F	10.9	277.9	0.96	1.53	2.92	19.5
14	R2	All MCs	215	3.0	215	3.0	0.932	59.1	LOS F	10.9	277.9	0.96	1.54	2.95	19.8
Approach			892	3.0	892	3.0	0.932	57.4	LOS F	10.9	277.9	0.96	1.53	2.92	19.5
West: Sheldon Road															
5	L2	All MCs	149	3.0	149	3.0	0.522	13.8	LOS B	2.8	71.6	0.74	0.81	1.09	28.6
2	T1	All MCs	351	3.0	351	3.0	0.522	15.2	LOS C	2.8	72.4	0.74	0.80	1.08	29.7
12	R2	All MCs	223	3.0	223	3.0	0.522	19.4	LOS C	2.8	72.4	0.73	0.78	1.07	30.1
Approach			723	3.0	723	3.0	0.522	16.2	LOS C	2.8	72.4	0.73	0.80	1.08	29.6
All Vehicles			3476	3.0	3476	3.0	0.932	29.3	LOS D	10.9	277.9	0.79	1.00	1.66	25.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: Int 3 [Waterman & Sheldon Improvements PM Peak Hour (Site Folder: CNP)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Waterman Road															
3	L2	All MCs	223	2.0	223	2.0	0.542	12.3	LOS B	3.6	92.4	0.72	0.74	1.08	29.1
8	T1	All MCs	511	2.0	511	2.0	0.542	14.5	LOS B	3.7	93.2	0.71	0.73	1.07	30.3
18	R2	All MCs	170	2.0	170	2.0	0.542	16.0	LOS C	3.7	93.2	0.70	0.72	1.06	30.6
Approach			904	2.0	904	2.0	0.542	14.2	LOS B	3.7	93.2	0.71	0.73	1.07	30.0
East: Sheldon Road															
1	L2	All MCs	218	2.0	218	2.0	0.595	16.3	LOS C	3.7	93.6	0.78	0.89	1.27	27.6
6	T1	All MCs	553	2.0	553	2.0	0.595	20.2	LOS C	3.7	95.2	0.77	0.88	1.25	29.0
16	R2	All MCs	32	2.0	32	2.0	0.595	19.5	LOS C	3.7	95.2	0.77	0.87	1.25	29.3
Approach			803	2.0	803	2.0	0.595	19.1	LOS C	3.7	95.2	0.77	0.88	1.26	28.6
North: Waterman Road															
7	L2	All MCs	59	2.0	59	2.0	0.863	42.2	LOS E	8.1	204.9	0.92	1.33	2.32	21.5
4	T1	All MCs	596	2.0	596	2.0	0.863	43.4	LOS E	8.4	214.3	0.92	1.33	2.33	22.0
14	R2	All MCs	223	2.0	223	2.0	0.863	45.6	LOS E	8.4	214.3	0.91	1.33	2.33	22.3
Approach			878	2.0	878	2.0	0.863	43.9	LOS E	8.4	214.3	0.92	1.33	2.33	22.1
West: Sheldon Road															
5	L2	All MCs	144	2.0	144	2.0	0.402	8.5	LOS A	1.9	49.0	0.66	0.64	0.81	30.8
2	T1	All MCs	436	2.0	436	2.0	0.402	10.3	LOS B	1.9	49.0	0.65	0.62	0.80	31.9
12	R2	All MCs	202	2.0	202	2.0	0.402	14.0	LOS B	1.9	48.9	0.64	0.61	0.78	32.2
Approach			782	2.0	782	2.0	0.402	10.9	LOS B	1.9	49.0	0.65	0.62	0.80	31.8
All Vehicles			3367	2.0	3367	2.0	0.863	22.4	LOS C	8.4	214.3	0.77	0.90	1.38	27.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: Int 3 [Waterman & Sheldon Improvements AM Peak Hour (Site Folder: CPP)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Waterman Road															
3	L2	All MCs	216	3.0	216	3.0	0.457	8.5	LOS A	2.7	68.1	0.63	0.55	0.78	30.6
8	T1	All MCs	613	3.0	613	3.0	0.457	11.3	LOS B	2.7	68.1	0.61	0.53	0.76	31.9
18	R2	All MCs	172	3.0	172	3.0	0.457	12.1	LOS B	2.6	67.3	0.61	0.52	0.74	32.1
Approach			1001	3.0	1001	3.0	0.457	10.8	LOS B	2.7	68.1	0.62	0.53	0.76	31.6
East: Sheldon Road															
1	L2	All MCs	194	3.0	194	3.0	0.787	31.1	LOS D	6.2	159.1	0.88	1.18	1.91	23.5
6	T1	All MCs	613	3.0	613	3.0	0.787	34.2	LOS D	6.4	164.1	0.88	1.18	1.91	24.6
16	R2	All MCs	65	3.0	65	3.0	0.787	34.0	LOS D	6.4	164.1	0.88	1.17	1.92	24.9
Approach			871	3.0	871	3.0	0.787	33.5	LOS D	6.4	164.1	0.88	1.18	1.91	24.4
North: Waterman Road															
7	L2	All MCs	43	3.0	43	3.0	0.926	54.7	LOS F	10.0	255.9	0.96	1.50	2.83	19.2
4	T1	All MCs	628	3.0	628	3.0	0.926	55.9	LOS F	10.5	269.2	0.96	1.50	2.85	19.7
14	R2	All MCs	215	3.0	215	3.0	0.926	58.1	LOS F	10.5	269.2	0.95	1.52	2.88	19.9
Approach			886	3.0	886	3.0	0.926	56.3	LOS F	10.5	269.2	0.96	1.51	2.86	19.7
West: Sheldon Road															
5	L2	All MCs	151	3.0	151	3.0	0.524	13.8	LOS B	2.8	72.6	0.74	0.81	1.10	28.6
2	T1	All MCs	355	3.0	355	3.0	0.524	15.2	LOS C	2.9	73.4	0.74	0.80	1.09	29.7
12	R2	All MCs	226	3.0	226	3.0	0.524	19.4	LOS C	2.9	73.4	0.73	0.78	1.08	30.1
Approach			731	3.0	731	3.0	0.524	16.2	LOS C	2.9	73.4	0.73	0.80	1.09	29.6
All Vehicles			3489	3.0	3489	3.0	0.926	29.2	LOS D	10.5	269.2	0.79	1.00	1.65	25.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: Int 3 [Waterman & Sheldon Improvements PM Peak Hour (Site Folder: CPP)]

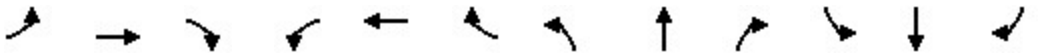
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Waterman Road															
3	L2	All MCs	209	2.0	209	2.0	0.522	11.6	LOS B	3.4	87.4	0.70	0.71	1.02	29.4
8	T1	All MCs	518	2.0	518	2.0	0.522	13.7	LOS B	3.5	87.8	0.69	0.69	1.01	30.6
18	R2	All MCs	170	2.0	170	2.0	0.522	15.3	LOS C	3.5	87.8	0.69	0.68	0.99	30.9
Approach			897	2.0	897	2.0	0.522	13.5	LOS B	3.5	87.8	0.69	0.69	1.01	30.4
East: Sheldon Road															
1	L2	All MCs	213	2.0	213	2.0	0.579	15.5	LOS C	3.6	90.2	0.77	0.87	1.23	27.9
6	T1	All MCs	553	2.0	553	2.0	0.579	19.3	LOS C	3.6	91.6	0.76	0.85	1.21	29.3
16	R2	All MCs	32	2.0	32	2.0	0.579	18.7	LOS C	3.6	91.6	0.76	0.85	1.21	29.6
Approach			798	2.0	798	2.0	0.579	18.3	LOS C	3.6	91.6	0.76	0.86	1.22	28.9
North: Waterman Road															
7	L2	All MCs	43	2.0	43	2.0	0.842	38.8	LOS E	7.6	191.9	0.91	1.28	2.18	22.2
4	T1	All MCs	607	2.0	607	2.0	0.842	40.1	LOS E	7.9	200.1	0.91	1.28	2.19	22.8
14	R2	All MCs	223	2.0	223	2.0	0.842	42.3	LOS E	7.9	200.1	0.90	1.28	2.19	23.0
Approach			873	2.0	873	2.0	0.842	40.6	LOS E	7.9	200.1	0.91	1.28	2.19	22.8
West: Sheldon Road															
5	L2	All MCs	128	2.0	128	2.0	0.391	8.3	LOS A	1.8	46.9	0.66	0.62	0.79	31.0
2	T1	All MCs	436	2.0	436	2.0	0.391	10.0	LOS B	1.8	46.9	0.65	0.61	0.78	32.0
12	R2	All MCs	203	2.0	203	2.0	0.391	13.9	LOS B	1.8	46.7	0.64	0.60	0.76	32.3
Approach			767	2.0	767	2.0	0.391	10.7	LOS B	1.8	46.9	0.65	0.61	0.77	31.9
All Vehicles			3335	2.0	3335	2.0	0.842	21.1	LOS C	7.9	200.1	0.75	0.87	1.31	27.9

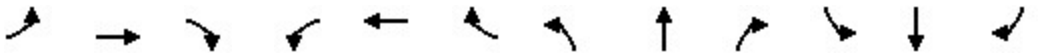
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	74	28	1	105	20	11	257	2	7	323	49
Future Volume (veh/h)	146	74	28	1	105	20	11	257	2	7	323	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	157	80	30	1	113	22	12	276	2	8	347	53
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	491	147	395	159	378	73	174	644	5	165	562	85
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	922	590	1585	5	1516	294	30	1799	13	13	1570	236
Grp Volume(v), veh/h	237	0	30	136	0	0	290	0	0	408	0	0
Grp Sat Flow(s),veh/h/ln	1512	0	1585	1815	0	0	1841	0	0	1819	0	0
Q Serve(g_s), s	1.6	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.0	0.0	0.3	1.4	0.0	0.0	2.7	0.0	0.0	4.2	0.0	0.0
Prop In Lane	0.66		1.00	0.01		0.16	0.04		0.01	0.02		0.13
Lane Grp Cap(c), veh/h	638	0	395	611	0	0	823	0	0	811	0	0
V/C Ratio(X)	0.37	0.00	0.08	0.22	0.00	0.00	0.35	0.00	0.00	0.50	0.00	0.00
Avail Cap(c_a), veh/h	1394	0	1244	1581	0	0	1592	0	0	1581	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.5	0.0	6.6	7.0	0.0	0.0	5.6	0.0	0.0	6.1	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.1	0.2	0.0	0.0	0.3	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.1	0.3	0.0	0.0	0.5	0.0	0.0	0.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	7.9	0.0	6.7	7.2	0.0	0.0	5.8	0.0	0.0	6.6	0.0	0.0
LnGrp LOS	A		A	A			A			A		
Approach Vol, veh/h		267			136			290			408	
Approach Delay, s/veh		7.7			7.2			5.8			6.6	
Approach LOS		A			A			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	12.7	10.2	12.7	10.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	4.7	5.0	6.2	3.4
Green Ext Time (p_c), s	1.4	1.2	2.0	0.5

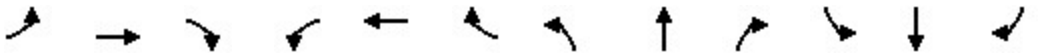
Intersection Summary	
HCM 7th Control Delay, s/veh	6.7
HCM 7th LOS	A



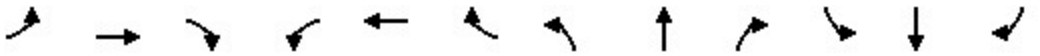
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	98	25	6	113	13	32	371	2	4	425	107
Future Volume (veh/h)	100	98	25	6	113	13	32	371	2	4	425	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	108	105	27	6	122	14	34	399	2	4	457	115
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	358	194	341	152	345	39	177	761	4	140	633	158
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.44	0.44	0.44	0.44	0.44	0.44
Sat Flow, veh/h	698	904	1585	36	1605	180	64	1730	8	3	1439	360
Grp Volume(v), veh/h	213	0	27	142	0	0	435	0	0	576	0	0
Grp Sat Flow(s),veh/h/ln	1602	0	1585	1821	0	0	1803	0	0	1803	0	0
Q Serve(g_s), s	1.2	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.9	0.0	0.4	1.7	0.0	0.0	4.4	0.0	0.0	6.8	0.0	0.0
Prop In Lane	0.51		1.00	0.04		0.10	0.08		0.00	0.01		0.20
Lane Grp Cap(c), veh/h	552	0	341	535	0	0	942	0	0	932	0	0
V/C Ratio(X)	0.39	0.00	0.08	0.27	0.00	0.00	0.46	0.00	0.00	0.62	0.00	0.00
Avail Cap(c_a), veh/h	1264	0	1094	1391	0	0	1369	0	0	1381	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.1	0.0	8.2	8.7	0.0	0.0	5.3	0.0	0.0	6.0	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.1	0.3	0.0	0.0	0.4	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.1	0.5	0.0	0.0	0.8	0.0	0.0	1.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.6	0.0	8.3	9.0	0.0	0.0	5.7	0.0	0.0	6.7	0.0	0.0
LnGrp LOS	A		A	A			A			A		
Approach Vol, veh/h		240			142			435			576	
Approach Delay, s/veh		9.4			9.0			5.7			6.7	
Approach LOS		A			A			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.0		10.1		16.0		10.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		6.4		4.9		8.8		3.7				
Green Ext Time (p_c), s		2.2		1.0		2.6		0.6				

Intersection Summary												
HCM 7th Control Delay, s/veh			7.1									
HCM 7th LOS			A									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	76	28	1	106	20	11	257	2	7	323	49
Future Volume (veh/h)	146	76	28	1	106	20	11	257	2	7	323	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	157	82	30	1	114	22	12	276	2	8	347	53
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	488	151	398	159	381	73	174	643	5	164	561	84
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	913	601	1585	5	1519	292	30	1799	13	13	1570	236
Grp Volume(v), veh/h	239	0	30	137	0	0	290	0	0	408	0	0
Grp Sat Flow(s),veh/h/ln	1514	0	1585	1816	0	0	1841	0	0	1819	0	0
Q Serve(g_s), s	1.6	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.0	0.0	0.3	1.4	0.0	0.0	2.7	0.0	0.0	4.2	0.0	0.0
Prop In Lane	0.66		1.00	0.01		0.16	0.04		0.01	0.02		0.13
Lane Grp Cap(c), veh/h	639	0	398	613	0	0	822	0	0	810	0	0
V/C Ratio(X)	0.37	0.00	0.08	0.22	0.00	0.00	0.35	0.00	0.00	0.50	0.00	0.00
Avail Cap(c_a), veh/h	1391	0	1241	1577	0	0	1588	0	0	1577	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.5	0.0	6.6	7.0	0.0	0.0	5.6	0.0	0.0	6.1	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.1	0.2	0.0	0.0	0.3	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.1	0.3	0.0	0.0	0.5	0.0	0.0	0.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	7.9	0.0	6.7	7.2	0.0	0.0	5.9	0.0	0.0	6.6	0.0	0.0
LnGrp LOS	A		A	A			A			A		
Approach Vol, veh/h		269			137			290			408	
Approach Delay, s/veh		7.7			7.2			5.9			6.6	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		12.7		10.3		12.7		10.3				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		4.7		5.0		6.2		3.4				
Green Ext Time (p_c), s		1.4		1.2		2.0		0.6				
Intersection Summary												
HCM 7th Control Delay, s/veh			6.7									
HCM 7th LOS			A									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	99	25	6	115	13	32	371	2	4	425	107
Future Volume (veh/h)	100	99	25	6	115	13	32	371	2	4	425	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	108	106	27	6	124	14	34	399	2	4	457	115
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	357	196	342	151	347	38	177	761	4	140	633	158
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.44	0.44	0.44	0.44	0.44	0.44
Sat Flow, veh/h	694	909	1585	35	1609	177	64	1730	8	3	1439	360
Grp Volume(v), veh/h	214	0	27	144	0	0	435	0	0	576	0	0
Grp Sat Flow(s),veh/h/ln	1603	0	1585	1821	0	0	1803	0	0	1803	0	0
Q Serve(g_s), s	1.2	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.9	0.0	0.4	1.7	0.0	0.0	4.4	0.0	0.0	6.9	0.0	0.0
Prop In Lane	0.50		1.00	0.04		0.10	0.08		0.00	0.01		0.20
Lane Grp Cap(c), veh/h	553	0	342	536	0	0	941	0	0	931	0	0
V/C Ratio(X)	0.39	0.00	0.08	0.27	0.00	0.00	0.46	0.00	0.00	0.62	0.00	0.00
Avail Cap(c_a), veh/h	1262	0	1092	1390	0	0	1367	0	0	1379	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.1	0.0	8.2	8.7	0.0	0.0	5.3	0.0	0.0	6.0	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.1	0.3	0.0	0.0	0.4	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.1	0.5	0.0	0.0	0.8	0.0	0.0	1.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.6	0.0	8.3	9.0	0.0	0.0	5.7	0.0	0.0	6.7	0.0	0.0
LnGrp LOS	A		A	A			A			A		
Approach Vol, veh/h		241			144			435			576	
Approach Delay, s/veh		9.4			9.0			5.7			6.7	
Approach LOS		A			A			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.0		10.1		16.0		10.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		6.4		4.9		8.9		3.7				
Green Ext Time (p_c), s		2.2		1.1		2.6		0.6				

Intersection Summary												
HCM 7th Control Delay, s/veh			7.1									
HCM 7th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	77	28	1	106	20	14	257	2	7	331	49
Future Volume (veh/h)	146	77	28	1	106	20	14	257	2	7	331	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	157	83	30	1	114	22	15	276	2	8	356	53
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	484	152	398	157	381	73	177	645	5	163	570	84
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	909	606	1585	5	1519	292	38	1783	13	13	1576	231
Grp Volume(v), veh/h	240	0	30	137	0	0	293	0	0	417	0	0
Grp Sat Flow(s),veh/h/ln	1515	0	1585	1816	0	0	1833	0	0	1820	0	0
Q Serve(g_s), s	1.6	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.1	0.0	0.3	1.4	0.0	0.0	2.8	0.0	0.0	4.4	0.0	0.0
Prop In Lane	0.65		1.00	0.01		0.16	0.05		0.01	0.02		0.13
Lane Grp Cap(c), veh/h	637	0	398	612	0	0	826	0	0	816	0	0
V/C Ratio(X)	0.38	0.00	0.08	0.22	0.00	0.00	0.35	0.00	0.00	0.51	0.00	0.00
Avail Cap(c_a), veh/h	1378	0	1228	1561	0	0	1564	0	0	1562	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.6	0.0	6.6	7.0	0.0	0.0	5.6	0.0	0.0	6.1	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.1	0.2	0.0	0.0	0.3	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.1	0.3	0.0	0.0	0.5	0.0	0.0	0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	7.9	0.0	6.7	7.2	0.0	0.0	5.9	0.0	0.0	6.6	0.0	0.0
LnGrp LOS	A		A	A			A			A		
Approach Vol, veh/h		270			137			293			417	
Approach Delay, s/veh		7.8			7.2			5.9			6.6	
Approach LOS		A			A			A			A	

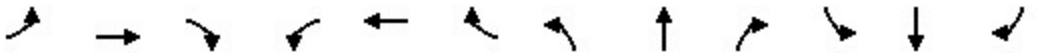
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	12.9	10.3	12.9	10.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	4.8	5.1	6.4	3.4
Green Ext Time (p_c), s	1.4	1.2	2.0	0.6

Intersection Summary	
HCM 7th Control Delay, s/veh	6.8
HCM 7th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	100	25	6	116	13	41	371	2	4	431	107
Future Volume (veh/h)	100	100	25	6	116	13	41	371	2	4	431	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	108	108	27	6	125	14	44	399	2	4	463	115
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	354	199	343	150	349	38	189	747	4	139	638	157
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.44	0.44	0.44	0.44	0.44	0.44
Sat Flow, veh/h	686	919	1585	35	1611	176	87	1691	8	3	1444	356
Grp Volume(v), veh/h	216	0	27	145	0	0	445	0	0	582	0	0
Grp Sat Flow(s),veh/h/ln	1605	0	1585	1822	0	0	1787	0	0	1803	0	0
Q Serve(g_s), s	1.2	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.0	0.0	0.4	1.8	0.0	0.0	4.6	0.0	0.0	7.0	0.0	0.0
Prop In Lane	0.50		1.00	0.04		0.10	0.10		0.00	0.01		0.20
Lane Grp Cap(c), veh/h	553	0	343	537	0	0	939	0	0	934	0	0
V/C Ratio(X)	0.39	0.00	0.08	0.27	0.00	0.00	0.47	0.00	0.00	0.62	0.00	0.00
Avail Cap(c_a), veh/h	1252	0	1083	1379	0	0	1342	0	0	1368	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.2	0.0	8.2	8.8	0.0	0.0	5.4	0.0	0.0	6.1	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.1	0.3	0.0	0.0	0.4	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.1	0.5	0.0	0.0	0.8	0.0	0.0	1.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.6	0.0	8.3	9.0	0.0	0.0	5.8	0.0	0.0	6.7	0.0	0.0
LnGrp LOS	A		A	A			A			A		
Approach Vol, veh/h		243			145			445			582	
Approach Delay, s/veh		9.5			9.0			5.8			6.7	
Approach LOS		A			A			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	16.1	10.2	16.1	10.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	6.6	5.0	9.0	3.8
Green Ext Time (p_c), s	2.3	1.1	2.6	0.6

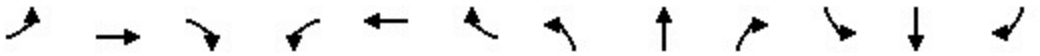
Intersection Summary	
HCM 7th Control Delay, s/veh	7.1
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	79	28	1	107	20	14	257	2	7	331	49
Future Volume (veh/h)	146	79	28	1	107	20	14	257	2	7	331	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	157	85	30	1	115	22	15	276	2	8	356	53
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	380	133	355	105	341	65	125	930	6	110	818	120
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	936	596	1585	4	1523	290	31	1797	13	9	1581	232
Grp Volume(v), veh/h	242	0	30	138	0	0	293	0	0	417	0	0
Grp Sat Flow(s),veh/h/ln	1532	0	1585	1816	0	0	1840	0	0	1822	0	0
Q Serve(g_s), s	2.6	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.8	0.0	0.5	2.2	0.0	0.0	3.1	0.0	0.0	5.0	0.0	0.0
Prop In Lane	0.65		1.00	0.01		0.16	0.05		0.01	0.02		0.13
Lane Grp Cap(c), veh/h	514	0	355	511	0	0	1061	0	0	1048	0	0
V/C Ratio(X)	0.47	0.00	0.08	0.27	0.00	0.00	0.28	0.00	0.00	0.40	0.00	0.00
Avail Cap(c_a), veh/h	929	0	820	1043	0	0	1061	0	0	1048	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.2	0.0	10.7	11.3	0.0	0.0	4.8	0.0	0.0	5.2	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.1	0.3	0.0	0.0	0.6	0.0	0.0	1.1	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.2	0.7	0.0	0.0	0.8	0.0	0.0	1.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.9	0.0	10.8	11.6	0.0	0.0	5.5	0.0	0.0	6.4	0.0	0.0
LnGrp LOS	B		B	B			A			A		
Approach Vol, veh/h		272			138			293			417	
Approach Delay, s/veh		12.6			11.6			5.5			6.4	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.5		12.3		22.5		12.3				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		5.1		6.8		7.0		4.2				
Green Ext Time (p_c), s		1.4		1.1		2.0		0.5				

Intersection Summary	
HCM 7th Control Delay, s/veh	8.3
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	101	25	6	118	13	41	371	2	4	431	107
Future Volume (veh/h)	100	101	25	6	118	13	41	371	2	4	431	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	108	109	27	6	127	14	44	399	2	4	463	115
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	353	201	345	149	351	38	189	747	4	139	637	157
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.44	0.44	0.44	0.44	0.44	0.44
Sat Flow, veh/h	682	924	1585	34	1615	174	87	1692	8	3	1444	356
Grp Volume(v), veh/h	217	0	27	147	0	0	445	0	0	582	0	0
Grp Sat Flow(s),veh/h/ln	1606	0	1585	1822	0	0	1787	0	0	1803	0	0
Q Serve(g_s), s	1.2	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.0	0.0	0.4	1.8	0.0	0.0	4.6	0.0	0.0	7.0	0.0	0.0
Prop In Lane	0.50		1.00	0.04		0.10	0.10		0.00	0.01		0.20
Lane Grp Cap(c), veh/h	554	0	345	538	0	0	939	0	0	933	0	0
V/C Ratio(X)	0.39	0.00	0.08	0.27	0.00	0.00	0.47	0.00	0.00	0.62	0.00	0.00
Avail Cap(c_a), veh/h	1250	0	1082	1377	0	0	1340	0	0	1366	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.2	0.0	8.2	8.8	0.0	0.0	5.4	0.0	0.0	6.1	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.1	0.3	0.0	0.0	0.4	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.1	0.5	0.0	0.0	0.8	0.0	0.0	1.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.6	0.0	8.3	9.0	0.0	0.0	5.8	0.0	0.0	6.8	0.0	0.0
LnGrp LOS	A		A	A			A			A		
Approach Vol, veh/h		244			147			445			582	
Approach Delay, s/veh		9.5			9.0			5.8			6.8	
Approach LOS		A			A			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		16.1		10.2		16.1		10.2				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		6.6		5.0		9.0		3.8				
Green Ext Time (p_c), s		2.2		1.1		2.6		0.6				

Intersection Summary	
HCM 7th Control Delay, s/veh	7.2
HCM 7th LOS	A

Attachment A: EGSIM20 – Model Development Report and VMT Methodology (See attached file)