Sid Commons Apartment Project

Draft Environmental Impact Report

Technical Appendix

SCH # 2007072041
Lead Agency: City of Petaluma
January, 2018

Prepared for:
City of Petaluma Planning Division
11 English Street
Petaluma, CA

LAMPHIER-GREGORY

Sid Commons Apartment Project
Draft EIR

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Appendix 1A

Notice of Preparation

City of Petaluma
Community Development Department

NOTICE OF PREPARATION
FOR AN
ENVIRONMENTAL IMPACT REPORT (EIR)

To:

From: City of Petaluma Community
Development Department
City Hall
11 English Street
Petaluma, CA 94952-6320

Subject: Notice of Preparation of an Environmental Impact Report

The City of Petaluma will be the Lead Agency and will prepare an Environmental Impact Report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project.

The project description, location, and the potential environmental effects are contained in the Initial Study (attached).

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this notice. The Draft EIR is anticipated to be available for public review in October 2007.

Please send your response to Michael Moore, Community Development Director at the address shown above.

We will need the name for a contact person in your agency.

Project Title: Oak Creek Apartments II

Project Applicant: J. Cyril Johnson Investment Corp.

Date: ____________________

Signature ____________________________
Title Community Development Director
Telephone (707) 778-4301

Environmental Checklist/Initial Study

1. Project title: Sid Commons (Oak Creek II) Apartments

2. Lead agency name and address:

City of Petaluma Community Development Department
City Hall
11 English Street
Petaluma, CA 94952-2610

3. Contact person and phone number: Betsi Lewitter, Interim Project Planner
(707) 778-4301

4. Project location: Northwest of the existing Oak Creek Apartments at the northern terminus of Graylawn Avenue, between the Petaluma River and the Northwestern Pacific Railroad tracks

5. Project sponsor's name and address:

J. Cyril Johnson Investment Corp.
125 Willow Road
Menlo Park, CA 94025
(650) 324-9021

6. General plan designation: Urban Diversified (5.1 to 10.0 units per acre), Urban Standard (2.1 to 5.0 units per acre), and Floodway (two acres, with no development potential)

7. Zoning: Planned Unit District (Oak Creek PUD, which specified that the area now APN 019-010-009 be limited to uses permitted in the Agricultural District), R-1:6,500 (Single-family residential), Floodway and Floodplain

8. Description of project:

The Project applicant has requested a General Plan Amendment and rezoning of the property to Planned Unit District (PUD) with guidelines to allow the development of a 312-unit apartment complex, consisting of 14 three-story structures and 1 one-story clubhouse on approximately 17 non-floodway acres, at an average density of approximately 18.5 units per developed acre. The application request also includes a tentative parcel map. Because the Applicant intends to use Graylawn Avenue as a second major access (contrary to the previous conditions of approval for the Oak Creek Apartments), the City will also require a PUD amendment.

Primary access to the Project site is proposed using an extension of Shasta Road, which would incorporate a new at-grade crossing of the Northwestern Pacific Railroad tracks (pending approval of the California Public Utilities Commission), with Graylawn Avenue to be used as a secondary access.

9. Surrounding land uses and setting: Briefly describe the project's surroundings:

The Project site is situated directly northwest of the existing Oak Creek Apartments at the northern terminus of Graylawn Avenue. The Petaluma River forms the eastern boundary and the Northwestern Pacific Railroad tracks form the western boundary. The Linda del Mar subdivision of the Payran neighborhood lies to the south of the site. Across the Petaluma River to the east lies a vacant remainder parcel and U.S. Highway 101. There are single-family homes located along Shasta Avenue, and a vacant hillside is beyond the Northwestern Pacific Railroad tracks on the west. Lands owned by the Petaluma Premium Outlets lie to the northwest of the Project site.

10. Other public agencies whose approval is required (e.g., permits, agreement, participation, etc.)

In order for the Project to proceed as currently proposed, the California Public Utilities Commission (PUC) will need to grant approval for an at-grade crossing of the Sonoma Marin Area Rail Transit (SMART) tracks by an extended Shasta Avenue. U.S. Army Corps of Engineers and the San Francisco Regional Water Quality Control Board review will be required. Permits from U.S. Fish and Wildlife Service and the California Department of Fish and Game may be required.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below (:) would be potentially affected by this project, involving at least one impact that is a “Potentially Significant Impact” as indicated by the Environmental Checklist on the following pages.

: 1. Aesthetics	: 7. Hazards & Hazardous Materials	9 12. Population and Housing
9 2. Agricultural Resources	: 8. Hydrology and Water Quality	9 13. Public Services
: 3. Air Quality	: 9. Land Use and Planning	: 14. Recreation
: 4. Biological Resources	9 10. Mineral Resources	: 15. Transportation, Circulation & Parking
: 5. Cultural Resources	: 11. Noise	: 16. Utilities/Service Systems
: 6. Geology and Soils		

DETERMINATION:

After due consideration, and on the basis of this Initial Study, the Planning Director of the City of Petaluma has made the following determination (marked “:”).

9 I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

9 I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

: I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

9 I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

9 I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects 1) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable legal standards, and 2) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	Date
Betsi Lewitter	Interim Project Planner
Printed Name	Title

EVALUATION OF ENVIRONMENTAL IMPACTS

1) A brief explanation is required for all answers except “No Impact” answers that are adequately supported by the information sources a lead agency cites in the discussion following each major topic heading. A “No Impact” answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A “No Impact” answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. “Potentially Significant Impact” is appropriate if there is substantial evidence that an effect may be significant. If there are one or more “Potentially Significant Impact” entries when the determination is made, an EIR is required.

4) Answers to the focused questions indicating “MAYBE: Significance to be Determined in Draft EIR” refer to specific topic areas which will be addressed completely in the EIR.

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

    a) Earlier Analysis Used. Identify and state where they are available for review.

    b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

    c) Mitigation Measures. For effects that are “Less than Significant with Mitigation Measures Incorporated,” describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

    a) the significance criteria or threshold, if any, used to evaluate each question; and

    b) the mitigation measure identified, if any, to reduce the impact to less than significance.

BACKGROUND

The Project is proposed on the 14.3-acre segment (west of the Petaluma River) of the 63.4-acre parcel created on Parcel Map 307 (known as the Johnson property) and on the 4.7-acre parcel 019-010-006 (previously owned by Gray). Two of the 14.3 acres are within the floodway, and thus undevelopable. The Project applicant has requested a General Plan Amendment and rezoning of the property to Planned Unit District (PUD) with guidelines to allow the development of a 312-unit apartment complex, consisting of 14 three-story structures and 1 one-story clubhouse on approximately 17 non-floodway acres, at an average density of approximately 18.5 units per developed acre. The application request also includes a tentative parcel map. Because the Applicant intends to use Graylawn Avenue as a second major access (contrary to the previous conditions of approval for the Oak Creek Apartments, the City will require a PUD amendment.

Access to the Project site is constrained due to its location immediately west of the Petaluma River and east of the Northwestern Pacific Railroad tracks. At-grade access over the tracks was terminated in 1963 in exchange for an at-grade crossing at Payran Street. The Oak Creek PUD conditioned that access to future developments on the remaining Johnson property shall be from the Rainier Avenue extension or other new public street rather than from streets to the south, such as Graylawn Avenue and Burlington Drive. The Project Applicant has proposed an at-grade crossing of the Northwestern Pacific Railroad tracks by an extension of Shasta Avenue as the primary means of providing public vehicular access to the Project site (pending approval of the California Public Utilities Commission), with Graylawn Avenue to be used as a secondary access.

Sonoma-Marin Area Rail Transit District (SMART) assumed title of the adjacent rail right-of-way from the Northwestern Pacific Railroad Authority in March, 2004. The Northcoast Railroad Authority holds a freight easement over the right-of-way. The Public Utilities Commission (PUC) application for the proposed at-grade crossing has not yet been formally submitted by the Project Applicant, pending obtaining entitlements from the City of Petaluma.

One alternative to providing an at-grade crossing of the existing rails at Shasta Avenue at the Project's southwestern edge that may be considered is to provide a grade-separated crossing. A below-grade crossing is apparently not feasible unless the nearby aqueduct can be relocated. If a below-grade crossing proves infeasible, an overcrossing may provide another grade-separation option. In order to estimate the length of the potential overcrossing, some initial assumptions were made. These assumptions are as follows:

- 20-foot minimum clearance for the railroad tracks
- 4-foot roadway deck thickness
- 6% maximum roadway grade
- 200-foot minimum vertical tangent at center of horizontal curve
- Flat terrain

Based on these assumptions, the required overcrossing length would be 400-500 feet on either side of the tracks. Based on the most recent Project site plan, this could not be accomplished without a substantial site redesign. Further, on the western side of the tracks, this overpass would travel in front of and over existing homes on Shasta Avenue, becoming flush with the existing roadway approximately 250' from Petaluma Boulevard (These dimensions are in no way detailed design parameters, but are reasonable assumptions used to generate an order-of-magnitude estimate of the overcrossing length.) Also, the current preferred alternative for the Rainier Avenue extension would provide a north-south roadway parallel to, and west of, the existing tracks. This roadway is intended to intersect with Shasta Boulevard. If Shasta were grade-separated, there might be a conflict.

Given the potential impacts to existing residences on the west side of the tracks, the potential conflict with the circulation system proposed as part of the Rainier Avenue extension, and the likely multi-million dollar cost, an overcrossing may not be feasible at this location.

The Project Applicant has indicated that if the PUC does not grant the requested approval of the proposed at-grade rail crossing, the Project Applicant believes that development of the Project site as currently proposed would not be possible due to an inability to provide adequate vehicular access to the site.

City staff has informed the Project Applicant that, as the existing Oak Creek Apartments development already exceeds the number of units normally allowed with only one access point, the Project Applicant will need to demonstrate that at least two public street access points can be provided to support any future development at the Project site. The Project as currently proposed provides two public street access points to the Project site, relying on an extension of Shasta Avenue to serve as the primary access to the Project site via an at-grade crossing of the Northwestern Pacific Railroad tracks (which has not been approved by the PUC), with Graylawn Avenue to be used as a secondary access..

In reviewing the application for the Project, City staff has indicated that the increased residential density requested (beyond that permitted under current General Plan land use designations) could only be allowed where it can be found that the Project provides a measurable community benefit, where infrastructure, services and facilities are available to serve the increased density, and where the effects of the increased density will be compatible with the major goals for the General Plan. The Project Applicant has responded that the proposed density will provide significant community benefit by increasing the supply of affordable housing (through the payment of in-lieu fees, rather than through construction of affordable housing units at the Project site) and by implementing provisions of the Petaluma River Access and Enhancement Plan. The Project Applicant has also indicated that the proposed residential density is compatible with the major goals of the General Plan, since it represents "infill" development within the 20-year Urban Growth Boundary, and higher density residential development at the Project site would ease future development pressure to expand the Urban Growth Boundary. The Project Applicant has indicated that existing utility capacities in the vicinity of the Project site are adequate to support residential development at the density proposed.

PROJECT OBJECTIVES

The Project Applicant has identified the following objective for developing the Project site:

- To develop a 312-unit apartment complex, consisting of 14 three-story structures and 1 one-story clubhouse at the Project site.

ENVIRONMENTAL CHECKLIST/INITIAL STUDY

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

1a. The site is not an element of any formally-identified “scenic vista”.

1b. Existing trees and other elements at the site have not been formally designated as “scenic resources”.

1c. Although a portion of the site supports the completed Oak Creek apartments, the portion of the Project site now proposed for development is currently undeveloped, and presents the visual appearance of an open meadow. Development of the this portion of the Project site as proposed would result in the placement of 14 three-story apartment structures, a clubhouse and related infrastructure on the 18.7-acre site, resulting in a major change in the visual character of the site.

1d. Development of the site as proposed would also result in the addition of new lighting within the proposed residences, at the clubhouse/pool, and in the parking areas and streets, and would also result in an increase in light/glare related to vehicles moving to and from the site.

The EIR will present visual simulations of the proposed development and evaluate the aesthetic effects associated with the Project.

Environmental Factors and Focused Questions for Determination of Environmental Impact	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
2. AGRICULTURE RESOURCES. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), Shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				Y
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				Y
c) Involve other changes in the existing environment which, due to there location or nature, could result in conversion of Farmland to non-agricultural use?				Y

2a. The Project site has not been in agricultural use form more than 30 years, and development as proposed would not result in the conversion of any Farmland, either on- or off-site, to non-agricultural use.

2b. The Project site is not zoned for agricultural use, and is not under a Williamson Act contract.

2c. No portion of the area surrounding the Project site is in active agricultural use, and development of the Project site as proposed would not be expected to jeopardize the viability of any existing agricultural operations in the vicinity, or result in the conversion of any Farmland in the Petaluma area to non-agricultural use.

Environmental Factors and Focused Questions for Determination of Environmental Impact	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
3. AIR QUALITY. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	Y			
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		Y		
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			Y	

Environmental Factors and Focused Questions for Determination of Environmental Impact	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Expose sensitive receptors to substantial pollutant concentrations?		Y		
e) Create objectionable odors affecting a substantial number of people?			Y	

3a. Development of the Project site as proposed would require a General Plan Amendment (GPA) to enable residential development at a density above that currently permitted under the General Plan. Under Bay Area Air Quality Management District CEQA Guidelines (December, 1999), where a GPA required, the cumulative impact analysis of air quality effects should consider the differences between the project and the original (pre-GPA) land use designation for the site with respect to motor vehicle use and potential land use conflicts. A project would have a significant cumulative effect if vehicle miles traveled (VMT) from the project as proposed would be greater than the VMT that would be associated with development under the original land use designations. In the case of this Project, since the number of residential units proposed is considerably greater than the number that would be permitted under the current land use designations in the General Plan, the total vehicle trips associated with the proposed development of the Project site would be expected to exceed the number of vehicle trips that would be anticipated with development under the current General Plan, and (on average) the total VMT following development of the Project site as proposed would also be expected to exceed the total VMT anticipated were the site to develop at the upper limits of the currently applicable General Plan land use designations. Since it cannot be demonstrated that the VMT value following development of the Project site as proposed would be less than or equal to the VMT anticipated with development of the site under the current General Plan land use designations, the Project would be expected to have a significant and unavoidable cumulative impact associated with a conflict with the BAAQMD's current Clean Air Plan.

3b. Demolition, grading, site preparation and construction activities associated with the development of the Project site as proposed could result in temporarily increased levels of particulate matter (PM_{10} and $PM_{2.5}$) and equipment exhaust (including, but not limited to, the particulate fraction of diesel exhaust, which has been identified as a toxic air contaminant) downwind of construction sites.

In accordance with the requirements of the BAAQMD, the Project Developer shall be responsible for the implementation of the following dust control measures during all grading, site preparation and construction activity at the Project site:

- Water all construction areas at least twice daily.
- Cover all trucks hauling soil, sand, and other loose materials *or* require all trucks to maintain at least two feet of freeboard.
- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.
- Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.

- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.

- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (i.e., previously graded areas inactive for ten days or more).

- Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.).

- Limit traffic speeds on unpaved roads to 15 miles per hour.

- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.

- Replant vegetation in disturbed areas as quickly as possible.

- Install wheel washers for all exiting trucks or wash off the tires or tracks of all trucks and equipment leaving the site.

- Install wind breaks, or plant trees/vegetative wind breaks at windward side(s) of construction areas.

- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 miles per hour.

- Limit the area subject to excavation, grading and other construction activity at any one time.

Effective implementation of the mitigation measures identified above would reduce air pollution impacts associated with construction-related fugitive dust to a level of less than significant.

The health risks associated with exposure to diesel exhaust is greatest for children, the elderly and the chronically or acutely ill. However, given the temporary nature and limited duration of heavy equipment use, the construction-related generation of toxic air contaminants at the Project site would not be expected to result in a probability of contracting cancer for the Maximally Exposed Individual exceeding 10 in 1,000,000, or the generation of ground-level non-carcinogenic toxic air contaminants that would result in a Hazard Index greater than 1 for the maximally exposed Individual. Project-related effects associated with the generation of toxic air contaminants during site preparation and construction activities would be less than significant.

3c. Development of the Project site as proposed would result in the construction of 312 apartment units and a clubhouse. Based on the BAAQMD CEQA Guidelines, page 34, Table 8 (December, 1999), the development of 312 apartment units would be expected to generate approximately 2,060 vehicle trips each day. Using the manual modeling procedures in the BAAQMD CEQA Guidelines, at Project completion this level of trip generation would be expected to generate approximately 13.80 pounds per day of reactive organic gases (ROG), approximately 32.97 pounds per day of oxides of nitrogen (NO_x), approximately 210.99 pounds of carbon monoxide (CO), and approximately 14.96 pounds of PM_{10} each day. These emission thresholds are below the thresholds of significance established in the BAAQMD CEQA Guidelines (80 pounds per day for ROG, NO_X and PM_{10}, 550 pounds per day for CO), and the traffic-related air quality effects associated with the proposed Project would be less than significant.

Although vehicular traffic associated with the Project would be expected to increase local carbon monoxide concentrations at local intersections slightly above levels that would otherwise be anticipated at Project completion, carbon monoxide levels at all local intersections would be anticipated to remain well below state and national standards for carbon monoxide concentration (national one-hour standard of 35 parts per million of CO, state one-hour standard of 20 parts per million of CO, and national and state eight-hour standard of 9 parts per million of CO). The Project's impact on long-term local air quality is considered less than significant in terms of carbon monoxide emissions.

3d. Sensitive receptors (members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly and people with illnesses) are living in the existing residential areas in the immediate vicinity of the Project site (e.g., in the Oak Creek Apartments, along Graylawn Avenue, and along Shasta Avenue). Demolition, grading, site preparation and construction activities associated with the development of the Project site as proposed could result in temporarily increased levels of particulate matter (PM_{10} and $PM_{2.5}$) and equipment exhaust (including, but not limited to, the particulate fraction of diesel exhaust, which has been identified as a toxic air contaminant) downwind of construction sites (see discussion of appropriate mitigation in 3b, above).

3e. Except during construction activity, it is unlikely that activities proposed at the Project site would generate detectable odors, and any odors associated with these activities would not be expected to adversely affect a substantial number of people, or be generally regarded as objectionable.

The EIR will evaluate air quality effects associated with development of the Project site as proposed.

Environmental Factors and Focused Questions for Determination of Environmental Impact	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

4. BIOLOGICAL RESOURCES - Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations , or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	Y			
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?			Y	
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption or other means?				Y

	Environmental Factors and Focused Questions for Determination of Environmental Impact	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			Y	
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	Y			
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	Y			

4a. The Project Applicant has presented a report on special status plant and animal species that may be present at the Project site, prepared by Wetlands Research Associates in March 2004. This report indicated that, based on existing habitat conditions, there is a moderate to high potential for four special status wildlife species to occur in the Study Area: White-Tailed Kite; Allen's Hummingbird; Loggerhead Shrike; and Saltmarsh common yellow throat. Since two other special status wildlife species (e.g., California Red-legged Frog and Western Pond Turtle) have historically occurred in the area south of Magnolia Avenue on the west side of the Petaluma River, it is possible that they may use upland areas near the river for migration and aestivation. Raptors and other special-status birds may also use larger trees on the Project site as seasonal nesting habitat. The Wetlands Research Associates report indicated that no special status plant species had a moderate to high potential for occurring in the Study Area. ***The EIR will evaluate the extent to which development of the Project site as proposed may affect special status animal and plant species.***

4b. Portions of the Project site lie within the 100-year floodplain of the Petaluma River, but no buildings would be situated within the 100-year floodplain. However, the Project Applicant has proposed the construction of a multi-use trail between the west bank of the Petaluma River and the proposed apartment buildings, and development of this trail could affect riparian habitat along the river. ***The EIR will evaluate the extent to which development of the Project site as proposed may affect riparian habitat or other sensitive natural communities.***

4c. In August, 2004, Wetlands Research Associates submitted preliminary wetlands delineation to the U.S. Army Corps of Engineers (USACE) on behalf of the Project Applicant. The USACE reviewed the preliminary wetlands delineation, and in November, 2004, defined the jurisdictional delineation consistent with the map submitted by Wetlands Research Associates. The USACE determined that that any work within the designated Study Area Boundary (as shown on the delineation map) will not involve the discharge of fill materials into regulated waters of the United States, and that the interstate commerce nexus to these particular waters (as mapped within the Project site) is insufficient to establish Clean Water Act jurisdiction. The USACE determined that these waters are, therefore, not subject to regulation by the USACE under Section 404 of the Clean Water Act. The USACE further determined that a USACE permit is not required for the proposed development activity at the Project site, and that the determination/delineation would expire in five years (November 10, 2009), or possibly with a change in the Project. Based on the jurisdictional delineation provided by the USACE in their letter of November 10, 2004 to the Project Applicant, development of the Project site as proposed would have no impact on federally protected wetlands as defined by Section 404 of the Clean Water Act.

4d. The Project site has not been formally identified as either a wildlife migration corridor or a wildlife nursery site. Development of the Project site as proposed would not be expected to interfere significantly with wildlife movement or with the use of any wildlife nursery sites.

4e. Development of the Project site as proposed would result in the removal of numerous existing trees at the Project site, including 26 oak trees (some located in the northern portion of the Project site near the Petaluma River). With regard to the Upstream Segment (which includes the Project site), the Petaluma River Access and Enhancement Plan identifies Program 20 ("Protect, restore and enhance areas of fragile habitat isolated in the RODZ (River Oriented Development Zone), such as oaks seasonal wetlands, whenever feasible.) and Program 13j ("Development shall not encroach within 50' from the drip line of existing mature oak trees.). These programs indicate the City's intention to preserve mature oak trees in areas along the Petaluma River. In addition, the previous approval of the existing Oak Creek Apartments, which comprises all of the Johnson property on the west side of the Petaluma River, included a condition of approval requiring that the existing oaks be preserved. Removal of mature oak trees at the Project site (or the encroachment of proposed development within 50 feet of mature oak trees at the Project site) would be in conflict with these Programs and the earlier condition of approval that remains in force, a potentially significant impact.

4f. The Petaluma River Access and Enhancement Plan identifies a portion of the Project site near the Petaluma River as "Oak Grove/Riparian Woodland Preservation Zone", and development as proposed would result in removal of several oak trees which may be considered part of this zone. The Project Applicant has indicated an interest in establishing a preservation zone for the remnant Oak Grove/Riparian Woodlands upstream of Lynch Creek, as applicable, and as directed by City staff and the Planning Department. ***The EIR will evaluate the extent to which development of the Project site as proposed may conflict with preservation concerns in this area.***

Environmental Factors and Focused Questions for Determination of Environmental Impact	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

5. CULTURAL RESOURCES - Would the project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?				Y
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	Y			
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	Y			
d) Disturb any human remains, including those interred outside of formal cemeteries?		Y		

5a. A Cultural Resources Evaluation of the Project site was prepared for the Project Applicant by Archaeological Resource Service in December, 2003.This report indicated that the Project site previously supported several structures associated with dairy farming, but that by 1997, all of these structures had been removed. None of the debris was observed as discrete historic deposits, and most of the building materials were consolidated into recently moved piles of debris. In the absence of any historic resources at the Project site, development as proposed would have no impact on any historical resources as defined in §15064.5. Although no surficial historic remains exist in the Project parcel, it is possible that previously unknown buried historic material or features may be present. ***Through a review of existing information on the Project site, the EIR will evaluate the likelihood of encountering significant historic resources during site preparation and construction activity associated with the proposed development of the Project site.***

5b. During the evaluation of the Project site, the Archaeological Resource Service investigators found a pestle at the southern edge of the eastern portion of the Project area, only about 45 feet west of Graylawn Avenue and about 8 feet north of the southern fence line. This pestle was found within plowed soils, and no other prehistoric cultural materials or soils were found nearby. However, one older fragment of abalone shell was found within the southwestern portion of the Project area, on top of the knoll. ***Through a review of existing information on the Project site, the EIR will evaluate the likelihood of encountering significant archaeological resources during site preparation and construction activity associated with the proposed development of the Project site.***

5c. No unique paleontological resources have been identified at the Project site, and development of the Project site as proposed would have no impact on any unique paleontological resources. However, there is an existing natural rock outcropping at the project site that may be regarded as a unique geologic feature. The approval of the existing Oak Creek Apartments, which comprises all of the Johnson property on the west side of the Petaluma River, included a condition of approval requiring that the existing natural rock outcrop be preserved. ***The EIR will evaluate the extent to which development of the Project site as proposed might jeopardize the preservation of the existing rock outcrop on the Johnson property.***

5d. No human remains are known to exist at the Project site. However, were human remains to be encountered at the Project site during site preparation or construction activity, implementation of the following mitigation measure would reduce potentially significant impacts to a level of less than significant:

> In the event that any human remains are uncovered during site preparation, excavation or other construction activity, all such activity shall cease until these remains have been evaluated by the County Coroner, and appropriate action taken in coordination with the Native American Heritage Commission.

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

6a(i). There are no known earthquake faults passing through the Project site, so fault rupture is unlikely to occur at the site.

6a(ii). The Project site is located in an area of relatively high seismicity, where structures are likely to be subjected to strong ground shaking produced by earthquakes on nearby faults which could damage structures at the site. Severe ground shaking is likely due to the proximity of active faulting in the region, and seismic waves may be amplified due to the depth of the underlying sedimentary deposits. Compliance with the seismic safety provisions of current building code requirements could be expected to reduce the risks associated with anticipated strong ground shaking to an acceptable level.

6a(iii). The Project site is located on an alluvial flood plain of the Petaluma River, with deep sedimentary deposits consisting predominantly of clay, but including areas of silt, sand and gravel. Groundwater depths are shallow. The Project Applicant has submitted two studies prepared by United Soils Engineering, Inc.: a Geotechnical Investigation and Pavement Design report (October 21, 2003) and a Soil Survey report (August 27, 2004). These reports indicate that there is a low potential for liquefaction to occur at the site.

6a(iv). The Project site is relatively flat, and not subject to landslides. However, the banks of the Petaluma River in the Project vicinity could be prone to failure during flooding, or in the event of strong seismic ground shaking. The Project Applicant intends to implement barricade fencing along the Petaluma River bank on the west side in order to protect the riverside buffer zone setback that has been established and the bike and pedestrian trail that is proposed within this buffer zone. The proposed setback is expected to reduce the potential impact of river bank failure to a level of less than significant.

6b. Site preparation necessary prior to development of the Project site as proposed (including excavation and grading) would be expected to result in increased rates of erosion and the loss of topsoil unless appropriate mitigation measures are effectively implemented. Developer compliance with the provisions of a required Stormwater Pollution Prevention Plan (SWPPP) during construction, and with the provisions a required Stormwater Management Plan (SMP) once construction has been completed would be expected to limit stormwater pollution from the site to the satisfaction of the Regional Water Quality Control Board.

6c. As indicated above, there is a low potential for liquefaction to occur at the Project site, and given the topography of the site, landslides, lateral spreading and subsidence are unlikely to occur.

6d. Soils exposed on the Project site include moderately expansive clay soils at the ground surface and subsurface, and may adversely affect structures built at the site in the absence of appropriate mitigation.

6e. The apartments proposed at the site would be connected to the City's sanitary sewer system, and would not rely on septic tanks or other alternative wastewater disposal technologies.

The EIR will evaluate the extent to which development of the Project site as proposed would expose people or structures to geologic hazards or result in substantial soil erosion.

Environmental Factors and Focused Questions for Determination of Environmental Impact	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

7. HAZARDS AND HAZARDOUS MATERIALS. Would the project:

a) Create a significant hazard to the public or the environment through the routine transportation, use, or disposal of hazardous materials?					Y

Environmental Factors and Focused Questions for Determination of Environmental Impact		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				Y
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within a quarter mile of an existing or proposed school?				Y
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (“Cortese List”, prepared by the California Integrated Waste Management Board) and, as a result, would it create a significant hazard to the public or the environment?	Y			
e)	For a project located within an airport land use plan, or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				Y
f)	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				Y
g)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	Y			
h)	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				Y

7a. The proposed development of the Project site involves the construction and occupancy of apartments. This use would not involve transport, use or disposal of any hazardous materials beyond those used by individual households for routine cleaning and maintenance, so no significant hazard to the public or the environment would be created.

7b. The proposed development of the Project site involves the construction and occupancy of apartments. This use would not involve transport, use or disposal of any hazardous materials beyond those used by individual households for routine cleaning and maintenance, so no significant hazard related to the accidental release of hazardous materials into the environment would be created.

7c. The proposed development of the Project site involves the construction and occupancy of apartments. This use would not involve transport, use or disposal of any hazardous materials beyond those used by individual households for routine cleaning and maintenance, so no hazardous emissions would be generated within a quarter mile of any existing or proposed school.

7d. The Project Applicant has submitted a Phase I Environmental Site Assessment prepared by United Soil Engineering, Inc. (January, 2004). This report indicates that the Project site has not been listed pursuant to Government Code Section 65962.5 as a hazardous materials site, and that the site has not been adversely impacted by the earlier releases of hazardous materials from off-site locations. However, the report recommends that surface soils at the Project site be tested for pesticides prior to development because of the former agricultural activities at the site. ***The EIR will evaluate the extent to which the possible residual presence of agricultural chemicals may affect those working or residing at the Project site.***

7e. The Project site is outside the airport land use area for the Petaluma Municipal Airport, including the "conical zone" approach area, and would, therefore, not result in a safety hazard for people working or residing in the Project area.

7f. The Project site is not located in the vicinity of any private airstrip.

7g. ***Given the unresolved issues related to site access, the EIR will evaluate the extent to which development of the Project site may interfere with or impair implementation of the City's emergency plans.***

7h. There are no wildland areas in the Project site vicinity, and the Project would, therefore, not result in any exposure of people or structures to risk of loss, injury or death involving wildland fires.

Environmental Factors and Focused Questions for Determination of Environmental Impact	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
8. HYDROLOGY AND WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements?		Y		
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a bet deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			Y	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?			Y	

	Environmental Factors and Focused Questions for Determination of Environmental Impact	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	Y			
e)	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?		Y		
f)	Otherwise substantially degrade water quality?		Y		
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				Y
h)	Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				Y
i)	Expose people or structures to significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	Y			
j)	Inundation by seiche, tsunami, or mudflow?				Y

8a. As a result of the Project, the site would be converted from an essentially unused meadow to high-density residential and supporting uses. This conversion would lead to a decrease in stormwater-conveyed sediment flowing to the Petaluma River, but could also lead to an increase in urban stormwater constituents flowing to the river (e.g., heavy metals and hydrocarbons). Also, during site preparation and construction at the Project site, stormwater flowing to the Petaluma River could have elevated concentrations of sediment and hydrocarbons. ***The EIR will evaluate the extent to which development of the Project site as proposed could violate water quality standards, and will identify appropriate mitigation measures that can be implemented to reduce potential water quality impacts to a level of less than significant.***

8b. Although proposed development at the Project site would not rely on groundwater at the site for domestic water supply or irrigation demand, the new development would result in an increase in the amount of imperious surface (e.g., roadways, parking areas, sidewalks, rooftops, etc.) that would reduce the potential for groundwater recharge at the site. However, given the large extent of the local groundwater basin and the relatively small size of the Project site in relation to the size of the groundwater basin, this reduction in groundwater recharge resulting from the proposed development would be considered less than significant.

8c. Development of the Project site as proposed would result in changes to the existing drainage patterns at the site, but would not be expected to result in substantial erosion or siltation due to the need to meet water quality control requirements established by the Regional Water Quality Control Board. ***The EIR will evaluate the extent to which development of the Project site as proposed could result in substantial erosion or siltation, and will identify appropriate mitigation measures that can be implemented to reduce potential erosion/siltation impacts to a level of less than significant.***

8d. Although no habitable structures are proposed within the 100-year floodplain of the Petaluma River, development of the Project site as proposed would include installation of a multi-use trail along the river within the 100-year floodplain. Development of the Project site as proposed would increase surface runoff relative to existing conditions, and in the absence of appropriate mitigation, this could contribute to existing flooding problems in the area. The City of Petaluma is currently evaluating Petaluma River flooding and the extent of the floodplain in conjunction with the General Plan update and in response to significant flooding upstream of the Petaluma River weir on December 31, 2005. When completed, these studies may result in an expansion of the floodplain beyond what is currently mapped. In addition, the City of Petaluma currently has a moratorium on all development that could negatively affect the floodplain upstream of the Petaluma River weir, and this could preclude development at the Project site until the moratorium is lifted or expires. ***The EIR will evaluate the extent to which development of the Project site as proposed could contribute to flooding on- or off-site, and will identify appropriate mitigation measures that can be implemented to reduce potential flooding impacts to a level of less than significant.***

8e. Storm drainage infrastructure proposed at the Project site is intended to accommodate stormwater runoff generated at the Project site on-site without linking to the City's stormwater collection system, so would not affect the existing capacity of the City's system. Developer compliance with the provisions of a required Stormwater Pollution Prevention Plan (SWPPP) during construction, and with the provisions a required Stormwater Management Plan (SMP) once construction has been completed would be expected to limit stormwater pollution from the site to the satisfaction of the Regional Water Quality Control Board. ***The EIR will evaluate the extent to which the proposed storm drainage infrastructure at the Project site would accommodate anticipated stormwater flows.***

8f. As indicated above, development of the Project site as proposed has the potential to adversely affect water quality unless appropriate mitigation measures are effectively implemented. ***The EIR will evaluate the extent to which development of the Project site as proposed could violate water quality standards, and will identify appropriate mitigation measures that can be implemented to reduce potential water quality impacts to a level of less than significant.***

8g. No housing units are proposed within the 100-year floodplain of the Petaluma River.

8h. The only structure proposed within the 100-year floodplain at the Project site is a multi-use trail along the Petaluma River. Installation of this trail would not be expected to impede or redirect flood flows.

8i. Although no habitable structures would be built within the 100-year floodplain of the Petaluma River, development of the Project site as proposed might expose future residents and/or their property to flood hazards. ***The EIR will evaluate the extent to which development of the Project site as proposed could increase exposure to flooding hazards, and will identify appropriate mitigation measures that can be implemented to reduce potential flooding impacts to a level of less than significant.***

8j. The Project site is located inland, away from any large body of water or steep hillsides, and, therefore, would not be subject to hazards associated with seiche, tsunami, or mudslides.

Environmental Factors and Focused Questions for Determination of Environmental Impact	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

9. LAND USE AND PLANNING. Would the project:

a)	Physically divide an established community?				Y
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating environmental impacts?	Y			
c)	Conflict with any applicable habitat conservation plan or natural community conservation plan?	Y			

9a. The Project site is located on the periphery of an area that has previously been developed in residential uses. Development of the Project site as proposed would not divide an established community.

9b. Development of the Project site as proposed would result in a residential density in excess of that currently anticipated by the City based on the existing General Plan land use designations for the property, and this could entail adverse environmental effects greater than those anticipated with development under the current General Plan. The Project Applicant has requested a General Plan Amendment (GPA) to allow the development of the Project site as proposed, and City approval of the requested GPA would be one way to resolve this potential conflict. In addition, the Draft General Plan currently identifies a portion of the 63.4-acre Johnson property across the Petaluma River from the project site (and not currently proposed for development as part of this Project) as the site for a future 7-acre community park. Given the number of residents that might ultimately be expected to live at the Project site following development as currently proposed, the Project Applicant will be expected to dedicate approximately 4.15 acres of this portion of the Johnson property to the City for development as a community park (based on the Draft General Plan's policy to provide 5 acres of parkland for each 1,000 Petaluma residents). This dedication of parkland has not been identified by the Project Applicant as part of the description of the Project. ***The EIR will provide an evaluation of potential land use and planning impacts of the Project, within the context of the Petaluma General Plan, the Zoning Ordinance, and the Petaluma River Access and Enhancement Plan.***

9c. The Petaluma River Access and Enhancement Plan identifies a portion of the Project site near the Petaluma River as "Oak Grove/Riparian Woodland Preservation Zone", and removal of mature oak trees at the Project site (or the encroachment of proposed development within 50 feet of mature oak trees at the Project site) would be in conflict with Programs identified in that Plan. ***The EIR will evaluate the extent to which development of the Project site as proposed may conflict with preservation concerns in this area.***

Environmental Factors and Focused Questions for Determination of Environmental Impact	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

10. MINERAL RESOURCES. Would the project:

a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				Y
b)	Result in the loss of availability of a locally-important mineral resource recovery site delineated on the local general plan, specific plan, or other land use plan?				Y

10a. There are no known mineral resources on the Project site that would be of major value to the region or the residents of the state.

10b. The Project site is not included on any County or City map of mineral resource recovery sites.

Environmental Factors and Focused Questions for Determination of Environmental Impact	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

11. NOISE. Would the project result in:

a)	Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	Y			
b)	Exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels?			Y	
c)	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	Y			
d)	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	Y			
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				Y
f)	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				Y

11a. Although those living in apartments at the Project site would not generally be expected to generate noise at levels in excess of established standards, those residents could be exposed to excessive noise levels in the event the adjacent SMART track eventually supports commuter train or other rail traffic, since those trains would be required to sound warnings when approaching the at-grade rail crossing that the Project Applicant has identified as the primary access point to the Project site. (It should be noted that, given recent voter decisions related to funding for SMART, it is also possible that active rail traffic might not resume along the SMART tracks in the foreseeable future, but in terms of the potential for noise exposure, the "worst case" assumption for the environmental review is that rail traffic will ultimately move along those tracks at some point during the economic life of the Project.) Provision of this new at-grade rail crossing would also expose existing nearby residential receptors to train horns, where they would otherwise not be subject to this type of noise. In addition, noise associated with site preparation and construction activity at the Project site could temporarily exceed established standards unless appropriate noise mitigation measures are effectively implemented.

11b. Although site preparation and construction activity at the Project site could be expected to generate some detectable groundborne vibration and groundborne noise, these effects would be temporary. In the absence of any pile-driving or similar unusually noisy activities, this would be considered to be less than significant.

11c. Development of the Project site as proposed would be expected to generate additional vehicle traffic that could result in an increase in ambient noise levels above existing levels. Since the Project would require an extension of Shasta Avenue to cross the existing Northwestern Pacific Railroad tracks in order to provide the primary access to the site, additional vehicles moving along what is currently a dead-end street (Shasta Avenue) could result in a significant increase in existing ambient noise levels in that area.

11d. The Project site is located adjacent to several developed residential areas. During site preparation and construction activity at the Project site, noise levels could temporarily exceed existing ambient levels, resulting in a significant impact unless effectively mitigated.

11e. The Project site is outside the airport land use area for the Petaluma Municipal Airport, including the "conical zone" approach area, and would, therefore, not result in any exposure of future workers or residents living at the Project site to excessive airport-related noise.

11f. The Project site is not located in the vicinity of any private airstrip.

The Project Applicant has submitted a Noise Assessment for the Project, prepared by Illingworth & Rodkin, Inc. (January 7, 2004). ***The EIR will evaluate the noise effects associated with the development of the Project site as proposed, and identify appropriate mitigation measures.***

Environmental Factors and Focused Questions for Determination of Environmental Impact	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

12. POPULATION AND HOUSING. Would the project:

a)	Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure?			Y	
b)	Displace substantial numbers of existing housing, units, necessitating the construction of replacement housing elsewhere?				Y
c)	Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				Y

12a. Development of the Project site as proposed would result in 312 new apartments, and the residents would directly add to the population of Petaluma. The population of Petaluma was estimated at 56,727 on January 1, 2006 by the California Department of Finance (State of California Department of Finance, E-5 Population and Housing Estimates for Cities, Counties and the State 2001 – 2006, with 2000 Benchmarks [Sacramento, Californian, May 2006]). At the City's average 2006 population density of 2.66 persons per household, the development of 312 new apartment units could be expected to add approximately 830 new residents to Petaluma's population, an increase of approximately 1.5 percent. As the Project is expected to be completed in phases over a number of years, this level of population growth attributable directly to the Project would not be regarded as substantial. The only infrastructure improvement proposed by the project Applicant are those necessary to enable development of the Project site alone, and would not be available to support additional development in the surrounding area. The growth-inducing effects of the project as proposed would be less than significant.

12b. There are no existing housing units or residences on the Project site, and development of the Project site as proposed would not displace any existing housing units.

12c. No people currently live at the Project site, and development of the Project site as proposed would not displace any people.

Environmental Factors and Focused Questions for Determination of Environmental Impact	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

13. PUBLIC SERVICES. Would the Project:

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:				
i) Fire protection?			Y	
ii) Police protection?			Y	
iii) Schools?			Y	
iv) Parks?			Y	
v) Other public facilities?			Y	

13a(i). Development of the Project site as proposed would result in 312 new apartment units where future residents would place an additional demand on existing fire protection and emergency medical response units. However, the development of 312 apartments would not require the Petaluma Fire Department to construct additional fire stations or expand any existing facilities in order to effectively serve the Project site following development. In the absence of any Project-related need for new construction related to fire protection, this impact would be considered less than significant. Prior to development of the Project site, the Project Developer would be required to pay all applicable impact fees related to fire protection to enable the City to continue to meet established service objectives.

13a(ii). Development of the Project site as proposed would result in 312 new apartment units where future residents would place an additional demand on the Petaluma Police Department. However, the development of 312 apartments would not require the Petaluma Police Department to construct additional police stations or expand any existing facilities in order to effectively serve the Project site following development. In the absence of any Project-related need for new construction related to police protection, this impact would be considered less than significant. Prior to development of the Project site, the Project Developer would be required to pay all applicable impact fees related to police protection to enable the City to continue to meet established service objectives.

13a(iii). Development of the Project site as proposed could be expected to increase the local population by approximately 830 people. Using a multiplier of 0.42 for multifamily development (which assumes that each of the apartments will generate an average of 0.42 new public school students), the development of the 312 apartments at the Project site would be expected to generate approximately 132 new students who would need to be accommodated in the public schools (distributed within grades K through 12). This level of development would not be expected to require the development of new public schools beyond that already anticipated. In the absence of any Project-related need for new construction related to public schools, this impact would be considered less than significant. The Project Developer would be required to pay all applicable school impact mitigation fees established by the affected school districts prior to the issuance of any building permits. Under Government Code Section 65995, the payment of these fees is deemed to be full and complete mitigation for Project-related impacts on public school facilities.

13a(iv). Development of the Project site as proposed could be expected to increase demand for existing parks and recreational facilities within Petaluma and the region. However, the addition of approximately 830 new residents in the 312 proposed apartments at the Project site would not be expected to require the development of new parks or recreational facilities beyond those already anticipated. In the absence of any Project-related need for new construction related to parks and recreational facilities, this impact would be considered less than significant. Prior to development, the Project Developer would be required to pay all appropriate City park/recreation fees to enable the City to continue to meet established service objectives.

13a(v). Development of the Project site as proposed would be expected to place additional demands on other public facilities (e.g., area libraries, City Hall, etc.), as it would add new residents to the local population. However, the development of 312 apartments would not require the City of Petaluma to construct additional public facilities or expand any existing public facilities in order to effectively serve those living at the Project site following development. In the absence of any Project-related need for new construction related to other public facilities, this impact would be considered less than significant.

Environmental Factors and Focused Questions for Determination of Environmental Impact	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
14. RECREATION. Would the project:				
a) Increase the use of existing neighborhood and and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?			Y	
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	Y			

13a. Development of the Project site as proposed would increase the local population by approximately 830 people (or a total of approximately 1.5 percent over a number of years). The potential increase in demand for local and regional parks and recreational facilities from this development source would be regarded as less than significant within the context of the demand already placed upon such facilities by current local residents, and future residents at the Project site would not be expected to contribute to any substantial deterioration of existing parks or recreational facilities. The Project as proposed would incorporate a clubhouse and a swimming pool for the use of residents, which could result in some reduction in their use of public parks and recreational facilities.

13b. The Project would result in the construction of a riverside multi-use trail at the site that would provide the public with access to the Petaluma River consistent with the adopted Petaluma River Access and Enhancement Plan. The Project as proposed would also incorporate a clubhouse and a swimming pool. In addition, the Draft General Plan currently identifies a portion of the 63.4-acre Johnson property across the Petaluma River from the project site (and not currently proposed for development as part of this Project) as the site for a future 7-acre community park. Given the number of residents that might ultimately be expected to live at the Project site following development as currently proposed, the Project Applicant will be expected to dedicate approximately 4.15 acres of this portion of the Johnson property to the City for development as a community park (based on the Draft General Plan's policy to provide 5 acres of parkland for each 1,000 Petaluma residents). This dedication of parkland has not been identified by the Project Applicant as part of the description of the Project. ***The EIR will evaluate the potential of the proposed riverside trail, clubhouse and swimming pool to have adverse physical effects on the environment, and the potential land use and planning impacts of the Project, within the context of the Petaluma General Plan .***

Environmental Factors and Focused Questions for Determination of Environmental Impact	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

15. TRANSPORTATION/TRAFFIC. Would the project:

a)	Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections?	Y			
b)	Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency (CMA) for designated roads or highways?	Y			
c)	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				Y
d)	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or Incompatible uses (e.g., farm equipment)?	Y			
e)	Result in inadequate emergency access?	Y			
f)	Result in inadequate parking capacity?				Y
g)	Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?				Y

15a. Development of the Project site as proposed would result in an increase in vehicle trips on local roadways, and could result in significant adverse impacts at some intersections or along some roadway segments (NOTE: The traffic study prepared on behalf of the Project applicant [W-Trans, January 21, 2004] has indicated that since current General Plan level of service goals cannot be maintained at the intersection of Petaluma Boulevard North and Washington Street with development of the Project site as proposed, the impact would be considered significant and unavoidable). ***The EIR will evaluate Project-related traffic and circulation impacts on the local street system, and identify appropriate mitigation measures.***

15b. With development of the Project site as proposed, it is possible that level of service standards on some roadway segments in the CMA network may be exceeded (NOTE: The traffic study prepared on behalf of the Project applicant [W-Trans, January 21, 2004] has indicated that since current General Plan level of service goals cannot be maintained at the intersection of Petaluma Boulevard North and Washington Street with development of the Project site as proposed, the impact would be considered significant and unavoidable). ***The EIR will evaluate Project-related traffic and circulation impacts on the CMA network, and identify appropriate mitigation measures.***

15c. Development of the Project site as proposed would have no impact on existing air traffic patterns or result in any substantial aviation safety-related risks.

15d. Development of the Project site as proposed would require an at-grade crossing of the Northwestern Pacific Railroad tracks by an extension of Shasta Avenue. Such an at-grade rail crossing could increase risks associated with possible train/vehicle collisions relative to current risk levels in the absence of a new at-grade rail crossing. (It should be noted that, given recent voter decisions related to funding for SMART, it is also possible that active rail traffic might not resume along the SMART tracks in the foreseeable future, but in terms of the potential for safety hazards, the "worst case" assumption for the environmental review is that rail traffic will ultimately move along those tracks at some point during the economic life of the Project.) ***The EIR will evaluate the extent to which the proposed at-grade rail crossing may substantially increase hazards related to train/vehicle collisions, and will identify mitigation measures to reduce these impacts (if determined to be significant) to a level of less than significant.***

15e. The City of Petaluma has indicated that at least two public street accesses must be provided to the Project site, based on the number of units served. As proposed, the Project would provide primary public street access via the proposed extension of Shasta Avenue (which is possible only if the PUC allows a new at-grade crossing of the Northwestern Pacific Railroad tracks, as requested by the Project Applicant), with Graylawn Avenue to be used as a secondary access. The fact that a new at-grade crossing of the Northwestern Pacific Railroad tracks has not been approved by the PUC raises issues related to the adequacy of vehicle access (including emergency vehicle access) to the Project site, and if it cannot be demonstrated by the Project Applicant that adequate vehicle access can be provided at the site, this would represent a significant environmental impact associated with the proposed development. ***The EIR will evaluate vehicle access issues, and if potentially significant vehicle access impacts are identified, will identify appropriate mitigation measures.***

15f. Development of the Project site as proposed would result in the provision of 480 parking spaces distributed throughout the site. The Use and Development Standards set the parking requirement at 1.5 spaces per unit, for a total requirement of 468 parking spaces, and 6 additional parking spaces to support the proposed clubhouse. Since the 480 parking spaces to be provided at the Project site exceeds the 474 parking spaces that the City would require for the level of development proposed, adequate parking space would be provided with development of the Project site as proposed.

15g. Development of the Project site as proposed would incorporate a multi-use trail along the Petaluma River, which would enhance pedestrian and bicycle access where none currently exists in support of the policies and programs of the Petaluma River Access and Enhancement Plan. No elements of the Project as proposed are in conflict with existing City of Petaluma polices, plans or programs to support alternative transportation.

Environmental Factors and Focused Questions for Determination of Environmental Impact	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

16. UTILITIES AND SERVICE SYSTEMS. Would the project:

a)	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?			Y	
b)	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				Y
c)	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	Y			
d)	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	Y			
e)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			Y	
f)	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			Y	
g)	Comply with federal, state, and local statutes and regulations related to solid waste?			Y	

16a. Development of the Project site could result in an increase in urban stormwater constituents flowing to the Petaluma River (e.g., heavy metals and hydrocarbons), and stormwater flowing to the Petaluma River could have elevated concentrations of sediment and hydrocarbons during site preparation and construction at the Project site. Project Developer compliance with the provisions of a required Stormwater Pollution Prevention Plan (SWPPP) during construction, and with the provisions a required Stormwater Management Plan (SMP) once construction has been completed would be expected to limit stormwater pollution from the site to the satisfaction of the Regional Water Quality Control Board. ***The EIR will evaluate the extent to which development of the Project site as proposed could violate water quality standards, and will identify appropriate mitigation measures that can be implemented to reduce potential water quality impacts to a level of less than significant.***

16b. Existing water and wastewater treatment facilities have adequate capacity to serve the Project site. No new water treatment or wastewater treatment facilities would need to be built to accommodate the proposed Project, and no expansion of existing facilities would be necessary.

16c. Storm drainage infrastructure would be built at the Project site as part of the development as proposed. ***The EIR will evaluate the environmental effects associated with the installation of the***

proposed storm drainage infrastructure, and will identify mitigation measures to reduce any potentially significant impacts identified to a level of less than significant.

16d. There are currently no formal constraints on development in Petaluma related to the availability of water. The Sonoma County Water Agency (SCWA) has established maximum delivery allocations to the City of Petaluma and other agencies based on the assumption that certain additional facilities will be constructed as planned. However, existing water transmission system constraints have necessitated the development of an additional agreement to govern maximum water allocations during the summer months. The memorandum of *Understanding Regarding Water Transmission System Capacity Allocation during Temporary Impairment* (Temporary Impairment MOU) is in effect between the SCWA and its primary customers until September 30, 2008. Continued delays in the SCWA's project to expand its water transmission system have reached the point where it can be seen that water supply from SCWA alone is not sufficient to meet water demands anticipated through build-out of the Draft General Plan 2025. In evaluating City-wide water demand as part of the General Plan update, the City has found that Petaluma's anticipated water demands through build-out of the General Plan 2025 can be met by supplementing SCWA water supplies with expansion of the recycled water program, enhanced water conservation and limited use of groundwater (if necessary). The Council's expressed intention is to collect new revenues from capacity charges (one-time fees levied on new customers that increase their demand on the water supply, as they connect to municipal water system facilities) to defray the capital costs of facilities needed to serve growth, and the Project Applicant would be required to pay all capacity charges in effect when building permits are issued. ***The EIR will evaluate Project-related water demand and, in consultation with SCWA, clarify whether or not adequate water supply can be provided to support the proposed development.***

16e. Although development of the Project site as proposed would place an increased demand on the City's wastewater treatment infrastructure, the City's wastewater treatment plant has sufficient capacity to support the level of development proposed at the Project site.

16f. Future residents at the Project site would generate solid waste that would require disposal. Green Waste Recovery, Inc., which provides solid waste collection and disposal services in Petaluma, has indicated that it has access to sufficient landfill capacity to provide service to the 312 units proposed at the Project site (Telephone conversation with Kathleen Garber, Green Waste Recovery, Inc. on January 9, 2007).

16g. All activities at the Project site shall be required to comply with all current regulations regarding the collection and disposal of solid waste.

Environmental Factors and Focused Questions for Determination of Environmental Impact	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

17. MANDATORY FINDINGS OF SIGNIFICANCE

a)	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	Y			
b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects).	Y			
c)	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	Y			

17a. As indicated above, development of the Project site as proposed could have significant adverse effects on special-status wildlife species unless appropriate mitigation measures can be effectively implemented. ***The EIR will evaluate the extent to which development of the Project site as proposed may affect special status animal and plant species.*** Development of the Project site as proposed would not eliminate any example of the major periods of California history/prehistory.

17b. Development of the Project site as proposed may have cumulative impacts related to air quality (inconsistency with the BAAQMD Clean Air Plan), hydrology (possible contribution to existing flooding problems in the vicinity), traffic (possible contribution to congestion on local roadways/intersections), and water supply (possible contribution to local water demand that may temporarily exceed the capacity of the water transmission infrastructure until planned improvements can be completed). ***The EIR will evaluate the cumulative environmental impacts associated with development of the Project site as proposed.***

17c. As indicated above, there are several potentially significant environmental effects associated with project development that could affect the health and safety of human beings, unless effectively mitigated:

- Demolition, grading, site preparation and construction activities associated with the development of the Project site as proposed could result in temporarily increased levels of particulate matter (PM_{10} and $PM_{2.5}$) and equipment exhaust (including, but not limited to, the particulate fraction of diesel exhaust, which has been identified as a toxic air contaminant) downwind of construction sites.

Appendix 1B

Responses to Notice of Preparation

CITY OF PETALUMA

POST OFFICE BOX 61
PETALUMA, CA 94953-0061

August 22, 2007

John Courtney
Lamphier-Gregory
1944 Embarcadero
Oakland, CA 94606

Re: Sid Commons Comments in Response to NOP

Dear John:

Enclosed please find the following comments received in response to the NOP for the Sid Commons project.

Date Received	From
7/13/07	State Clearinghouse
7/18/07	Native American Heritage Commission
7/21/07	Stephanie Sanchez
7/24/07	PUC
7/30/07	Sonoma County Waste Management
8/6/07	CA Department of Forestry
8/9/07	PUC
8/9/07	Caltrans
8/15/07	Imad Baiyasi, Petaluma WRC
8/17/07	Transportation Solutions Defense & Education Fund
8/17/07	RWQCB
8/20/07	Sonoma County Water Agency

Mike Moore is on vacation until August 27. I will try to arrange a meeting to discuss the points in your email shortly thereafter.

Sincerely,

Betsi Lewitter
Interim Project Planner

Community Development Department
11 English Street
Petaluma, CA 94952
E-Mail
cdd@ci.petaluma.ca.us

Building
Phone (707) 778-4301
Fax (707) 778-4498
To Schedule Inspections:
Phone (707) 778-4479

G.I.S.
Phone (707) 778-4301
Fax (707) 778-4498

Housing Division
Phone (707) 778-4555
Fax (707) 778-4586
E-Mail
hgaebler@ci.petaluma.ca.us

Neighborhood Preservation / Code Enforcement
Phone (707) 778-4469
Fax (707) 778-4498
E-Mail
codeenforcement@ci.petaluma.ca.us

Planning
Phone (707) 778-4301
Fax (707) 778-4498

EQUAL HOUSING OPPORTUNITY

ARNOLD SCHWARZENEGGER
GOVERNOR

CYNTHIA BRYANT
DIRECTOR

Notice of Preparation

July 11, 2007

To: Reviewing Agencies

Re: Sid Commons (Oak Creek II) Apartments
SCH# 2007072041

Attached for your review and comment is the Notice of Preparation (NOP) for the Sid Commons (Oak Creek II) Apartments draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Betsi Lewitter
City of Petaluma
Community Development Department
11 English Street
Petaluma, CA 94952-2610

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Project Analyst, State Clearinghouse

Attachments
cc: Lead Agency

RECEIVED
JUL 1 9 2007
COMMUNITY DEVELOPMENT DEPARTMENT

Document Details Report
State Clearinghouse Data Base

SCH#	2007072041
Project Title	Sid Commons (Oak Creek II) Apartments
Lead Agency	Petaluma, City of

Type **NOP** Notice of Preparation

Description The project applicant has requested a General Plan Amendment and rezoning of the property to Planned Unit District (PUD) with guidelines to allow the development of a 312-unit apartment complex, consisting of 14 three-story structures and 1 one-story clubhouse on approximately 17 non-floodway acres, at an average density of approximately 18.5 units per developed acre. The application request also includes a tentative parcel map. Because the applicant intends to use Graylawn Avenue as a second major access (contrary to the previous conditions of approval for the Oak Creek Apartments), the City will also require a PUD amendment.

Lead Agency Contact

Name Betsi Lewitter
Agency City of Petaluma
Phone (707) 778-4301 *Fax*
email
Address Community Development Department
11 English Street
City Petaluma *State* CA *Zip* 94952-2610

Project Location

County Sonoma
City Petaluma
Region
Cross Streets Shasta Avenue / Graylawn Avenue
Parcel No. 019-010-006
Township *Range* *Section* *Base*

Proximity to:

Highways
Airports
Railways Northwestern Pacific RR
Waterways Petaluma River
Schools
Land Use GP: Urban Diversified (5.1 to 10.0 units/acre), Urban Standard (2.1 to 5.0 units/acre), and Floodway (two acres, with no development potential).
Z: Planned Unit District (Oak Creek PUD, which specified that the area now APN 019-010-009 be limited to uses permitted in the Agricultural District), R-1:6,500 (Single-family residential), Floodway and Floodplain.

Project Issues Aesthetic/Visual; Air Quality; Biological Resources; Archaeologic-Historic; Geologic/Seismic; Soil Erosion/Compaction/Grading; Toxic/Hazardous; Water Quality; Drainage/Absorption; Flood Plain/Flooding; Landuse; Noise; Recreation/Parks; Traffic/Circulation; Public Services; Water Supply; Wildlife; Cumulative Effects

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Reviewing Agencies Resources Agency; Regional Water Quality Control Board, Region 2; Department of Parks and Recreation; Native American Heritage Commission; Public Utilities Commission; Department of Forestry and Fire Protection; Department of Fish and Game, Region 3; Department of Water Resources; California Highway Patrol; Caltrans, District 4

Date Received 07/11/2007 *Start of Review* 07/11/2007 *End of Review* 08/09/2007

Note: Blanks in data fields result from insufficient information provided by lead agency.

NOP Distribution List

SL County: SONOMA SCH# 2007072041

Resources Agency

- [x] **Resources Agency**
  Nadell Gayou
- [ ] **Dept. of Boating & Waterways**
  David Johnson
- [ ] **California Coastal Commission**
  Elizabeth A. Fuchs
- [ ] **Colorado River Board**
  Gerald R. Zimmerman
- [ ] **Dept. of Conservation**
  Sharon Howell
- [ ] **California Energy Commission**
  Paul Richins
- [x] **Dept. of Forestry & Fire Protection**
  Allen Robertson
- [ ] **Office of Historic Preservation**
  Wayne Donaldson
- [x] **Dept of Parks & Recreation**
  Environmental Stewardship Section
- [ ] **Reclamation Board**
  DeeDee Jones
- [ ] **S.F. Bay Conservation & Dev't. Comm.**
  Steve McAdam
- [x] **Dept. of Water Resources**
  Resources Agency
  Nadell Gayou
- [ ] ____________
  Conservancy

Fish and Game

- [ ] **Depart. of Fish & Game**
  Scott Flint
  Environmental Services Division
- [ ] **Fish & Game Region 1**
  Donald Koch
- [ ] **Fish & Game Region 1E**
  Laurie Harnsberger
- [ ] **Fish & Game Region 2**
  Banky Curtis
- [x] **Fish & Game Region 3**
  Robert Floerke
- [ ] **Fish & Game Region 4**
  Julie Vance
- [ ] **Fish & Game Region 5**
  Don Chadwick
  Habitat Conservation Program
- [ ] **Fish & Game Region 6**
  Gabrina Gatchel
  Habitat Conservation Program
- [ ] **Fish & Game Region 6 I/M**
  Gabrina Getchel
  Inyo/Mono, Habitat Conservation Program
- [ ] **Dept. of Fish & Game M**
  George Isaac
  Marine Region

Other Departments

- [ ] **Food & Agriculture**
  Steve Shaffer
  Dept. of Food and Agriculture
- [ ] **Depart. of General Services**
  Public School Construction
- [ ] **Dept. of General Services**
  Robert Sleppy
  Environmental Services Section
- [ ] **Dept. of Health Services**
  Veronica Malloy
  Dept. of Health/Drinking Water

Independent Commissions,Boards

- [ ] **Delta Protection Commission**
  Debby Eddy
- [ ] **Office of Emergency Services**
  Dennis Castrillo
- [ ] **Governor's Office of Planning & Research**
  State Clearinghouse
- [x] **Native American Heritage Comm.**
  Debbie Treadway
- [x] **Public Utilities Commission**
  Ken Lewis
- [ ] **Santa Monica Bay Restoration**
  Guangyu Wang
- [ ] **State Lands Commission**
  Jean Sarino
- [ ] **Tahoe Regional Planning Agency (TRPA)**
  Cherry Jacques

Business, Trans & Housing

- [ ] **Caltrans - Division of Aeronautics**
  Sandy Hesnard
- [ ] **Caltrans - Planning**
  Terri Pencovic
- [x] **California Highway Patrol**
  Shirley Kelly
  Office of Special Projects
- [ ] **Housing & Community Development**
  Lisa Nichols
  Housing Policy Division

Dept. of Transportation

- [ ] **Caltrans, District 1**
  Rex Jackman
- [ ] **Caltrans, District 2**
  Marcelino Gonzalez
- [ ] **Caltrans, District 3**
  Jeff Pulverman
- [x] **Caltrans, District 4**
  Tim Sable
- [ ] **Caltrans, District 5**
  David Murray
- [ ] **Caltrans, District 6**
  Marc Birnbaum
- [ ] **Caltrans, District 7**
  Cheryl J. Powell
- [ ] **Caltrans, District 8**
  Dan Kopulsky
- [ ] **Caltrans, District 9**
  Gayle Rosander
- [ ] **Caltrans, District 10**
  Tom Dumas
- [ ] **Caltrans, District 11**
  Mario Orso
- [ ] **Caltrans, District 12**
  Bob Joseph

Cal EPA

Air Resources Board

- [ ] Airport Projects
  Jim Lerner
  - [ ] Transportation Projects
    Ravi Ramalingam
  - [ ] Industrial Projects
    Mike Tollstrup
- [ ] **California Integrated Waste Management Board**
  Sue O'Leary
- [ ] **State Water Resources Control Board**
  Regional Programs Unit
  Division of Financial Assistance
- [ ] **State Water Resources Control Board**
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- [ ] **State Water Resouces Control Board**
  Steven Herrera
  Division of Water Rights
- [ ] **Dept. of Toxic Substances Control**
  CEQA Tracking Center
- [ ] **Department of Pesticide Regulation**

Regional Water Quality Control Board (RWQCB)

- [ ] **RWQCB 1**
  Cathleen Hudson
  North Coast Region (1)
- [x] **RWQCB 2**
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- [ ] **RWQCB 3**
  Central Coast Region (3)
- [ ] **RWQCB 4**
  Teresa Rodgers
  Los Angeles Region (4)
- [ ] **RWQCB 5S**
  Central Valley Region (5)
  - [ ] **RWQCB 5F**
    Central Valley Region (5)
    Fresno Branch Office
  - [ ] **RWQCB 5R**
    Central Valley Region (5)
    Redding Branch Office
- [ ] **RWQCB 6**
  Lahontan Region (6)
  - [ ] **RWQCB 6V**
    Lahontan Region (6)
    Victorville Branch Office
- [ ] **RWQCB 7**
  Colorado River Basin Region (7)
- [ ] **RWQCB 8**
  Santa Ana Region (8)
- [ ] **RWQCB 9**
  San Diego Region (9)
- [ ] Other ____________

Last Updated on 05/16/07

STATE OF CALIFORNIA Arnold Schwarzenegger, *Governor*

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax

July 16, 2007

Betsi Lewitter
City pf Petaluma
Community Development Department
11 English Street
Petaluma, CA 94952-2610

RE: SCH# 2007072041, Sid Commons (Oak Creek II) Apartments; Sonoma County.

Dear Ms. Lewitter:

The Native American Heritage Commission (NAHC) has reviewed the Notice of Preparation (NOP) referenced above. The California Environmental Quality Act (CEQA) states that any project that causes a substantial adverse change in the significance of an historical resource, which includes archeological resources, is a significant effect requiring the preparation of an EIR (CEQA Guidelines 15064(b)). To comply with this provision the lead agency is required to assess whether the project will have an adverse impact on historical resources within the area of project effect (APE), and if so to mitigate that effect. To adequately assess and mitigate project-related impacts to archaeological resources, the NAHC recommends the following actions:

✓ Contact the appropriate regional archaeological Information Center for a record search. The record search will determine:
- If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
- If any known cultural resources have already been recorded on or adjacent to the APE.
- If the probability is low, moderate, or high that cultural resources are located in the APE.
- If a survey is required to determine whether previously unrecorded cultural resources are present.

✓ 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.
- The final report containing site forms, site significance, and mitigation measurers 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 pubic disclosure.
- The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.

✓ Contact the Native American Heritage Commission for:
- A Sacred Lands File Check. **USGS 7.5-minute quadrangle name, township, range, and section required.**
- A list of appropriate Native American contacts for consultation concerning the project site and to assist in the mitigation measures. **Native American Contacts List attached.**

✓ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
- Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5(f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
- Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.
- Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, CEQA §15064.5(e), and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

Sincerely,

Katy Sanchez

Katy Sanchez
Program Analyst

RECEIVED
JUL 2 8 2007
COMMUNITY DEVELOPMENT DEPARTMENT

CC: State Clearinghouse

Native American Contacts
Sonoma County
July 16, 2007

The Federated Indians of Graton Rancheria
Gene Buvelot
PO Box 14428 — Coast Miwok
Santa Rosa , CA 95402 — Southern Pomo
coastmiwok@aol.com
(415) 883-9215 Home

Kathleen Smith
1778 Sunnyvale Avenue — Pomo
Walnut Creek , CA 94596 — Coast Miwok
(925) 938-6323

Ya-Ka-Ama
6215 Eastside Road — Pomo
Forestville , CA 95436 — Coast Miwok
yakaama.indian.ed@att.net — Wappo
(707) 887-1541

Dawn S. Getchell
P.O. Box 53 — Coast Miwok
Jenner , CA 95450 — Pomo
(707) 865-2248

The Federated Indians of Graton Rancheria
Greg Sarris, Chairperson
PO Box 14428 — Coast Miwok
Santa Rosa , CA 95402 — Southern Pomo
coastmiwok@aol.com
707-578-2233
707-578-2299 - fax

The Federated Indians of Graton Rancheria
Frank Ross
813 Lamont Ave — Coast Miwok
Novato , CA 94945 — Southern Pomo
miwokone@yahoo.com
(415) 269-6075

The Federated Indians of Graton Rancheria
Tim Campbell, Cultural Resources Officer
PO Box 14428 — Coast Miwok
Santa Rosa , CA 95402 — Southern Pomo
coastmiwok@aol.com
707-578-2233
707-578-2299 - fax

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

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH# 2007072041, Sid Commons (Oak Creek II) Apartments; Sonoma County.

Stephanie Sanchez
709 Madison St
Petaluma, CA 94952
766 6051

July 21, 2007

Petaluma Planning Commission:

I am astonished and aghast that a proposal to further develop flood plain in Petaluma, called the SID Commons project (Oak Creek 11) could be entertained by anyone with awareness of WATER issues. Citizens have been invited to make comments about this matter on July 25, in a meeting conducted by the Planning Division. Here is my vote: absolutely no development at that location. EVER.

I have lived and worked in Petaluma for four years, own a home here, voted in every election, tried to stay abreast of local issues, and still… I utterly fail to understand the logic of being asked to consider a plan to place a vast additional strain on our water supply, to say nothing of the strain on the water quality itself, which is greatly impaired by the lack of drainage which areas such as the one in question provides.

While we are told we haven't met the current water conservation goals set for this summer by the city, we are asked at the same time to entertain a proposal to add 321 new housing units to our system. Why, but why is more development, let alone in sensitive areas, at all debatable, particularly at this point in time?

The disconnect between what we are told to do, namely conserve water, of which there is not enough to go around already, and at the same time attend a meeting presided over by city officials to entertain a huge new development, challenges ones sanity.

Sincerely

Stephanie Sanchez

Stephanie Sanchez

Lewitter, Betsi

From: Stewart, David R. [ATM@cpuc.ca.gov]

Sent: Tuesday, July 24, 2007 10:04 AM

To: Lewitter, Betsi

Cc: Boles, Kevin

Subject: Sid Commons Scoping Meeting

Hi Betsi,

As per my letter dated August 20, 2003, CPUC staff cannot support a new at-grade crossing at Shasta Avenue. The Shasta Avenue crossing was abolished as part of the agreement to open the Payran Street crossing, Decision 61939, dated May 1, 1961.
The City may still file an application for the crossing, but it is more than likely that CPUC staff will protest it.

Thank you,

David Stewart
Gate, Eliminate, or Separate

July 26, 2007

SONOMA COUNTY
Waste
Management
Agency

Betsi Lewitter
Interim Project Planner
Community Development Department, City of Petaluma
11 English Street
Petaluma, CA 94952-2610

Re: Comments on the Initial Study for the Sid Commons (Oak Creek II) Apartments Project

Dear Ms. Lewitter,

As the agency responsible for implementing many of the waste diversion programs in Sonoma County required by the *California Integrated Waste Management Act of 1989* (AB939), the Sonoma County Waste Management Agency (SCWMA) is commenting on the Initial Study for the Sid Commons (Oak Creek II) Apartments Project (Project). Our comments are limited to the solid waste that could be generated by the construction and operation of the project proposed to be developed in the City of Petaluma. To help mitigate the potential impacts of the proposed project on our compliance with AB939, two recommendations are offered:

First, it is suggested that the Project applicant be required to prepare and implement a recycling plan for the construction phase of the Project. The recycling plan will address the major materials generated by a construction project and will identify the means to divert these materials away from landfill disposal. Materials to be included in such a plan are soil, brush and other vegetative growth, dimensional lumber, metal scraps, cardboard packaging, plastic wrap, and other building materials generated as a result of the project. As an aside, implementation of this recommendation can lower the cost of construction of a project by reducing waste disposal fees.

Second, to support the recycling of materials generated during operation of a project, your attention is directed towards the *California Solid Waste Reuse and Recycling Access Act of 1991* requiring areas to be set aside for collecting and loading recyclable materials in development projects. If the City of Petaluma has not developed its own Ordinance in response to this act, the State's Model Ordinance is the governing standard for this component of the Project. In addition, legislation signed into law on September 29, 2004 (AB 2176), prohibits local agencies from issuing building permits to any development project unless the development project provides adequate areas for collecting and loading recyclable materials.

Thank you for the opportunity to comment on the Initial Study for Sid Commons (Oak Creek II) Apartments Project, and if any further assistance is desired on these or other solid waste management issues, please do not hesitate to contact us.

Sincerely,
KEN WELLS, DIRECTOR
SONOMA COUNTY WASTE MANAGEMENT AGENCY

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JUL 30 2007
COMMUNITY DEVELOPMENT DEPARTMENT

Patrick Carter

Patrick Carter, Waste Management Specialist

2300 County Center Drive, Suite 100 B, Santa Rosa, California 95403 Phone: 707.565.3579 Fax: 707.565.3701

STATE OF CALIFORNIA—THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, *Governor*

DEPARTMENT OF FORESTRY AND FIRE PROTECTION

Sonoma-Lake-Napa Unit
1199 Big Tree Road
St. Helena, CA 94574-9711
Email: frank.kemper@fire.ca.gov
(707) 967-1408

August 2, 2007

City of Petaluma
Attn: Betsi Lewitter
Community Development Department
11 English Street
Petaluma, CA 94952-2610

RE: Sid Commons Apartments - Petaluma
SCH# 2007072041

Thank you for the opportunity to comment on the Sid Commons (Oak Creek II) project.

- Under 7e Biological Resources, Loss of 26 oak trees. Public Resources Code (PRC) §750, et seq. states that only a Registered Professional Forester (RPF) may practice forestry on non-federal, forested landscapes (See attached letter from the Board of Forestry).
- Sonoma County has been declared Sudden Oak Death (SOD) infested county. Quarantine regulations are in place for the infested counties, and before moving susceptible plant material out of the regulated area, you must contact your Agricultural Commissioner for a permit.

Sincerely,

Ernie Loveless
Unit Chief

By: Frank Kemper
Assistant Chief
Pre-Fire Division

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AUG 06 2007

COMMUNITY DEVELOPMENT DEPARTMENT

Encl.

CONSERVATION IS WISE-KEEP CALIFORNIA GREEN AND GOLDEN

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BOARD OF FORESTRY AND FIRE PROTECTION
PROFESSIONAL FORESTERS REGISTRATION
P.O. Box 944246
SACRAMENTO, CA 94244-2460
Website: www.bof.fire.ca.gov/licensing/licensing_main.html
(916) 653-8031

January 9, 2006

Mr. Anthony Farrington, Chair
County of Lake Board of Supervisors
255 North Forbes Street
Lakeport, California 95453

Dear Mr. Farrington,

This letter is in response to the growing misconception regarding the application of the Professional Foresters Law (PFL), within the context of the California Environmental Quality Act (CEQA). As you may be aware, the PFL became effective on January 1, 1973, one year prior to the effective date of the Z'berg-Nejedly Forest Practice Act. With the passage of the PFL, the Legislature declared the existence of a public interest in the management and treatment of California's forest resources, and regulates all persons who practice the profession of forestry. The intent of the Law is to provide the consuming public with a source of forest management experts--knowledgeable, trained, experienced and skilled in the scientific fields relating to forestry.

Though the PFL is often characterized as applicable only to activities related to the Forest Practice Act, i.e. preparation of Timber Harvest Plans (THP's, NTMP's, etc.) the PFL is in fact far broader in scope and no less applicable to oak woodlands or any other forest type. Public Resources Code (PRC) §750, *et seq.* states that only a Registered Professional Forester (RPF) may practice forestry on non-federal, forested landscapes.

Forestry is defined as,

> ...the science and practice of managing forested landscapes and the treatment of the forest cover in general, and includes, among other things, the application of scientific knowledge and forestry principles in the fields of fuels management and forest protection, timber growing and utilization, forest inventories, forest economics, forest valuation and finance, and the evaluation and mitigation of impacts from forestry activities on watershed and scenic values... (PRC §753)

Forested Landscapes are defined as,

> ...those tree dominated landscapes and their associated vegetation types on which there is growing a significant stand of tree species, or which are naturally capable of growing a significant stand of native trees in perpetuity, and is not otherwise devoted to non-forestry commercial, urban, or farming uses. (PRC §754)

The Board of Forestry and Fire Protection has generally interpreted the term *significant stand of tree species* to mean those stands with a canopy cover of 10% or greater.

While it has been argued that the preparation of tree inventories and forest cover characterizations in support of CEQA compliant documents does not constitute the practice of forestry, this perspective does not satisfy the Law. Regardless of context, be it a Timber Harvest Plan for a stand of ponderosa pine or an Environmental Impact Report (EIR) for development conversion of blue oak woodland, if the project occurs on a *forested landscape* an RPF must be involved. Certified arborists, vegetation ecologists, botanists, biologists or individuals from any other discipline may not serve as surrogates for a Registered Professional Forester.

The Board of Forestry and Fire Protection respectfully requests the assistance of your Board to ensure that CEQA projects under county control comply with the Professional Foresters Law. To that end, this office will provide whatever assistance it may to your Board and county departments. Further information on the Registration of Professional Foresters may be found at www.bof.fire.ca.gov/licensing/licensing_main.asp.

Thank you for your time and consideration in the review of this correspondence. Questions or concerns may be directed to me at (916) 653-8031.

Sincerely,

Eric K. Huff, RPF No. 2544
Executive Officer, Foresters Licensing

STATE OF CALIFORNIA

Arnold Schwarzenegger, *Governor*

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

August 8, 2007

Betsi Lewitter
City of Petaluma
11 English Street
Petaluma, CA 94952-2610

RE: Sid Commons (Oak Creek II) Apartments, SCH# 2007072041

Dear Ms. Lewitter:

As the state agency responsible for rail safety within California, we recommend that any development projects planned adjacent to or near the rail corridor in the City be planned with the safety of the rail corridor in mind. New developments may increase traffic volumes not only on streets and at intersections, but also at at-grade highway-rail crossings. This includes considering pedestrian circulation patterns/destinations with respect to railroad right-of-way (ROW).

Safety factors to consider include, but are not limited to, the planning for grade separations for major thoroughfares, and appropriate fencing to limit the access of trespassers onto the railroad right-of-way. Any project that includes a modification to an exiting crossing or proposes a new crossing is legally required to obtain authority to construct from the Commission. Since the project includes a proposed new crossing, the Commission will be a responsible party under CEQA and the impacts of the crossing must be discussed within the environmental documents.

Please be advised that as part of its mission to reduce the hazards associated with at-grade crossings, and in support of the national goal of the Federal Railroad Administration, the Commission's policy is to reduce the number of at-grade crossings on freight and passenger mainlines in California.

The above-mentioned safety improvements should be considered when approval is sought for the new development.

If you have any questions in this matter, please call me at (415) 703-2795.

Very truly yours,

Kevin Boles
Environmental Specialist
Rail Crossings Engineering Section
Consumer Protection and Safety Division

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AUG 09 2007
COMMUNITY DEVELOPMENT DEPARTMENT

cc: Mitch Stogner, North Coast Railroad Authority
Lillian Hames, SMART

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
P. O. BOX 23660
OAKLAND, CA 94623-0660
(510) 286-4444
(510) 286-4454 TDD

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SON101876
SON101873
SCH # 2007072041
COMMUNITY DEVELOPMENT DEPARTMENT

August 9, 2007

Betsi Lewitter
City of Petaluma
Community Development Department
11 English Street
Petaluma, CA 94952-2610

Dear Ms. Lewitter:

Sid Commons (Oak Creek II) Apartments – Notice of Preparation (NOP)

Thank you for including the California Department of Transportation (Department) in the early stages of the environmental review process for the Sid Commons Apartments project. We reviewed the NOP and have the following comments:

Traffic Analysis

Please ensure that the Environmental Impact Report (EIR) evaluates the proposed project's impacts on State transportation facilities, in particular on US 101 and its on- and off-ramps at East Washington Street and Old Redwood Highway/Petaluma Blvd North. The following criteria should be used in determining if a traffic analysis for these facilities is warranted:

1. The project would generate over 100 peak hour trips assigned to a State highway facility.

2. The project would generate 50 to 100 peak hour trips assigned to a State highway facility, and the affected highway facilities are experiencing noticeable delay; approaching unstable traffic flow (level of service (LOS) "C" or "D") conditions.

3. The project would generate 1 to 49 peak hour trips assigned to a State highway facility, and the affected highway facilities are experiencing significant delay; unstable or forced traffic flow (LOS "E" or "F") conditions.

We recommend using the Department's *"Guide for the Preparation of Traffic Impact Studies"* for determining which scenarios and methodologies to use in the analysis. It is available on the following website:

http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf

If the proposed project will not generate the amount of trips needed to meet the Department's trip generation thresholds, an explanation of how this conclusion was reached should be provided.

Mitigation measures should be identified where the project would have a significant impact. All mitigation measures proposed should be fully discussed, including financing, scheduling, implementation responsibilities, and lead agency monitoring. The Department considers the following to be significant impacts:

- Off-ramps with vehicle queues that extend into the ramp's deceleration area or onto the freeway;
- Vehicle queues at intersections that exceed existing storage length;
- Impacts that cause any ramp's merge/diverge Level of Service (LOS) to be worse than the freeway's LOS; and
- Impacts that cause the LOS to deteriorate below "E" for freeways and "D" for highways and intersections. If the existing LOS is already "E" or "D", a quantitative measure of increased queue length and delay should be used to determine appropriate mitigation measures.

The traffic analysis should also address impacts of the project on the proposed crosstown connector at Rainier Avenue and US 101. A Project Study Report is currently being prepared for this proposal.

Hydrology

Due to the sensitive location of the project site, the close proximity to US 101 and the potential for increased surface runoff, as outlined in the Hydrology and Water Quality section of the Initial Study, the EIR should evaluate impacts of the proposed development on State storm drainage facilities.

Should you require further information or have any questions regarding this letter, please call or email Ina Gerhard of my staff at (510) 286-5737 or ina_gerhard@dot.ca.gov .

Sincerely,

Timothy C. Sable

TIMOTHY C. SABLE
District Branch Chief
IGR/CEQA

c: State Clearinghouse

CITY OF PETALUMA, CALIFORNIA
MEMORANDUM

Water Resources and Conservation Department, 202 N. McDowell Boulevard, Petaluma, CA 94954
(707) 778-4546 Fax (707) 778-4508 E-mail: dwrc@ci.petaluma.ca.us

DATE: August 15, 2007

TO: Betsi Lewitter

FROM: Imad Baiyasi

SUBJECT: NOP for an EIR, Sid Commons Apartments

CC: Dean Eckerson, Gary Blackledge

Based on our review of the project, we have the following comments on the Initial Study:

1. Item 16.a references wastewater treatment requirements of the RWQCB; however, the explanation on the same page discusses storm water and urban run off. Please verify.

2. Item 16.c, this project will fall under the City' storm water permit, specifically Attachment 4 Design criteria. The EIR shall include evaluation of the site to accommodate the City's Storm Water permit design requirements.

3. Item 16.d water study shall be provided in the EIR, including an assessment of projected water demand, and existing water consumption for the current zoning. In addition, the applicant shall evaluate appropriate water conservation resources and identify alternates to decrease projected water consumption.

4. Item 16.e sewer capacity study shall be required and off-site improvements identified, if any.

Transportation Solutions Defense and Education Fund

P.O. Box 151439 San Rafael, CA 94915 415-460-5260

August 17, 2007
By Fax (707)778-4498
& E-mail to BLewitter@
avispmail.com

Betsi Lewitter
Petaluma Community Development Department
11 English Street
Petaluma, CA 94952

Re: Sid Commons Apartments NOP

Dear Ms. Lewitter:

The following scoping comments are intended to augment the oral comments I made at the meeting on July 25.

1. Evaluate the cumulative Impacts of development in the adjacent area by assuming the maximum buildout of the Ranier floodplain.
2. What would be the maximum Average Daily Traffic passing over the proposed at-grade crossing over the NWP tracks under those circumstances?
3. What would be the implications of sea level rise due to global warming under those circumstances?
4. Why is yet another crossing of the NWP tracks needed? Why isn't the Payran crossing sufficient? Why should the public be exposed to more opportunities to collide with trains?
5. What are the growth-inducing impacts of such a crossing providing improved access to the entire Ranier floodplain area?

Sincerely,

/s/ David Schonbrunn

David Schonbrunn,
President

California Regional Water Quality Control Board
San Francisco Bay Region

Linda S. Adams
Secretary for Environmental Protection

1515 Clay Street, Suite 1400, Oakland, California 94612
(510) 622-2300 • Fax (510) 622-2460
http://www.waterboards.ca.gov/sanfranciscobay

Arnold Schwarzenegger
Governor

Date: AUG 15 2007
File No. 2148.02 (AHS/MB)

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AUG 17 2007
COMMUNITY DEVELOPMENT DEPARTMENT

Community Development Department
City of Petaluma
11 English Street
Petaluma, CA 94952-2610
Attn: Betsi Lewitter

Re: **Initial Study/Environmental Checklist for the Sid Commons (Oak Creek II) Apartments Project, Petaluma, Sonoma County, California SCH #2007072041**

Dear Ms. Lewitter:

We have reviewed the Initial Study (IS)/Environmental Checklist for the Sid Commons (Oak Creek II) Apartments Project (Project). The IS evaluates the potential environmental impacts from the construction of a subdivision (312 apartments) on an 18.93-acre site. The subdivision would be located at the terminus of Graylawn Avenue, between the railroad tracks that form the western boundary of the site and the Petaluma River that defines the eastern boundary. We appreciate the opportunity to provide our comments and convey how our Board's policies may relate to the Project. We offer the following comments.

The IS does not consider the impacts to the seasonal wetlands that are located on the project site. The development of the parcel as proposed could violate State policy and the Board's Basin Plan and be in conflict with the objectives and policies of the Petaluma River Enhancement Plan (River Plan).

The IS does not address impacts to the on-site wetlands even though they were identified by the U.S. Army Corps of Engineers (USACE) (11/20/2004 letter) and in the River Plan. Section 4 of the IS states "the USACE determined that any work within the designated Study Area Boundary (as shown on the delineation map) will not involve the discharge of fill materials into regulated waters of the United States, and that the interstate commerce nexus to these particular waters (as mapped within the Project site) is insufficient to establish Clean Water Act Jurisdiction. The USACE determined that these waters are, therefore, not subject to regulation by the USACE under Section 404 of the Clean Water Act." So as stated above, the USACE identified the on-site wetlands and the River Plan also identifies two wetland features on page 63.

And while the on-site wetlands were not determined to be Corps jurisdictional, the State has jurisdiction over wetlands that are deemed non-jurisdictional and the development of the site as proposed could violate State Policy. Activities in areas that are outside of the jurisdiction of the Corps (e.g., isolated wetlands, vernal pools, or stream banks above the ordinary high water mark) are regulated by the Water Board, under the authority of the Porter-Cologne Water Quality Control Act and may require the issuance of either individual or general waste discharge requirements (WDRs) from the Water Board. The project would also have to comply with the State's Wetland Conservation Policy and the Water Board's Basin Plan.

The State's Wetland Conservation Policy (Policy) requires that there is no net loss of wetlands and the Water Board's Basin Plan implements this policy requiring that development avoid existing wetlands to the maximum extent feasible. The Policy not only requires that there is no net loss of wetlands but also requires an overall net gain in the quantity and quality of wetlands. In addition, the Water Board's policy as stated in the Basin Plan and the California Water Code Section 13142.5 states that the "Highest priority shall be given to improving or eliminating discharges that adversely affect…wetlands, estuaries, and other biologically sensitive sites." Therefore, the Water Board would not be able to permit the project unless the project proponent had adequately demonstrated that they had avoided the wetlands to the maximum extent possible.

The fill of the wetlands is also inconsistent with the policies that apply to the River Oriented Development Zone (ROZD) that is mapped in the River Plan. The two major wetland features identified on the project site are within the boundaries of the RODZ and therefore subject to ROZD policies such as Policy #20. The purpose of Policy #20 (Page 80) is to "Protect, restore and enhance areas of fragile habitat isolated in the RODZ, such as oaks and seasonal wetlands, whenever feasible." The fill of the wetlands would be in conflict with this policy.

The removal of the mature oaks in both the upland and riparian areas is inconsistent with an objective of the River Plan and mitigation requirements for the Oak Creek I development. The River Plan includes Objective #3 (Page 67 - Section 3.3.3 Access and Enhancement Objectives) that has the stated purpose to "Protect and preserve the existing communities of mature riparian vegetation and restore and enhance native riparian and upland habitats." The mature oaks would qualify as mature riparian vegetation and the upland oaks provide important upland habitat. According to the IS, the removal of the mature oaks on the project site is also prohibited as a condition of approval of the existing Oak Creek I residential development. While the IS identifies this as a significant impact and offers to mitigate for the loss of the oaks by establishing a remnant oak preserve upstream of Lynch Creek, the project proponent should consider complying with the previous mitigation requirements. The project proponent should verify and comply with applicable Oak Creek I permit requirements including any conditions that would have required that these specific oaks be protected into perpetuity. In addition, the removal of any trees that were identified as mitigation for Oak Creek I should be replaced at a ratio that would create an overall net increase in mature oaks and mitigate for the temporal loss of habitat at the Oak Creek I project.

Overall, the project proponent should comply with State Policy and existing regulatory requirements, and the City of Petaluma should not grant exceptions to the established River Plan. The project proponent should avoid the on-site wetlands to the maximum extent feasible and comply with all previous mitigation requirements. The City of Petaluma should implement the objectives and policies of the River Plan especially since the River Plan was developed through a coordinated planning effort that included the input from numerous groups including representatives from Federal, State, and local governments. Staff strongly encourages the project proponent to protect the existing wetlands and encourages the City of Petaluma to follow its own local plans and enforce existing regulatory requirements that call for the protection of existing wetlands, riparian habitat, and mature oaks on the project site.

If you have any questions please contact Abigail Smith at (510) 622-2413, or email her at asmith@waterboards.ca.gov.

Sincerely,

Abigail Smith
Sonoma County Watershed Coordinator

cc: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044

Bill Cox, CDFG Yountville
Bryan Matsumoto, USACE

J. Cyril Johnson Investment Corporation
125 Willow Road
Menlo Park, CA 94025

SONOMA COUNTY WATER AGENCY

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COMMUNITY DEVELOPMENT DEPARTMENT

August 17, 2007

Ms. Betsi Lewitter
City of Petaluma
Community Development Department
11 English Street
Petaluma, CA 94952

RE: Sid Commons (Oak Creek II) Apartments Notice of Preparation

Dear Ms. Lewitter:

Sonoma County Water Agency (Agency) staff has reviewed the Notice of Preparation (NOP) for the subject project. In response, the Agency submits the following comments.

1. For site-specific improvements, Agency staff recommends that the drainage design for the project be in compliance with the Agency's *Flood Control Design Criteria.* However, compliance with the *Design Criteria* does not provide assurance that flooding will not occur and will not, by itself, mitigate all flooding risks. Additionally, Agency staff recommends that downstream storm drain systems be analyzed to determine the potential effects of increases to runoff due to this development.
2. Incremental increases in fill material within the 100-year floodplain may reduce the flood capacity and/or obstruct the flow of floodwaters of the creeks within the project area watershed, and may cause a significant cumulative increase in flood risk. Incremental increases in runoff due to paving or surfacing from new development may similarly cause a significant cumulative increase in flood risk within the project area and in areas upstream and downstream from the project area. The subject application should specifically identify: waterways affecting, or affected by, the above-mentioned project, runoff expected to be generated by development in the area; capacity of waterways affecting, or affected by, development in the project area (taking into account increased flows and diminished waterway capacity); the 100-year floodplain and any anticipated development or fill to be located in the floodplain; and cumulative impacts on flooding and exposure to flood hazards due to the project and other reasonably foreseeable projects.
3. The Agency adopted its 2005 Urban Water Management Plan (UWMP) on December 12, 2006. The UWMP contains information about the amount of water expected to be available to the City of Petaluma (City) from the Agency through 2030. The Draft Environmental Impact Report (DEIR) for the above mentioned project should reflect the UWMP analysis, as discussed in more detail below. The DEIR should also reflect the analysis contained in the City's Urban Water Management Plan adopted in 2007.

P.O. Box 11628 - Santa Rosa, CA 95406 - 404 Aviation Boulevard - Santa Rosa, CA 95403 - (707) 526-5370 - Fax (707) 544-6123

a. The DEIR should state that there is some uncertainty about the Agency's ability to provide a water supply to its water contractors, including the City, for the reasons described in the Agency's UWMP. The Agency's UMWP analysis was premised on certain reasonable assumptions, including: (1) that the listing of three salmonid species as threatened or endangered under the federal Endangered Species Act (ESA) will not reduce the amount of water the Agency can supply; (2) that PG&E's existing Federal Energy Regulatory Commission (FERC) license for the Potter Valley Project (PVP) will not be modified, or that any license modifications (and the terms of any new license) will not reduce the amount of water available for diversion by the Agency; (3) that the Agency will construct and operate the facilities described in its Notice of Preparation of the environmental impact report (EIR) for the Water Supply, Transmission, and Reliability Project (Water Project), and will obtain the approval of the State Water Resources Control Board to increase the amount of water the Agency can divert from the Russian River beyond the current limit of 75,000 acre-feet per year. Changes in these assumptions could affect the ability of the Agency to divert water from the Russian River or to construct and operate the Water Project. If construction and operation of the Water Project or an alternative project to meet the demands of water contractors is delayed, or if there is a delay in the expected date by which the Agency obtains water rights allowing the Agency to divert additional water from the Russian River, then deliveries by the Agency to its water contractors will be limited by any then-existing constraints on the capacity of the transmission system and by the Agency's current Russian River diversion limit of 75,000 acre-feet per year.

b. The DEIR should not assume that the Agency will be able to deliver to City the current allocation of 13,400 acre-feet per year as set forth in the Restructured Agreement for Water Supply, for two reasons. First, that allocation was premised upon the assumption that the Agency would construct the Water Supply and Transmission System Project (WSTSP). As noted in the Agency's UWMP, the Agency no longer intends to construct the WSTSP. Second, that allocation was premised on an outdated analysis of the amount of water reasonably needed by City from the Agency to meet the City's future demands. The analysis by the Agency and City of the reasonable future demands of the City and the maximum amounts of water the City can expect to receive from the Agency over time are set forth in the Agency's UWMP [and the City's UWMP]. The DEIR should use the UWMP allocation rather than the allocation set forth in the Restructured Agreement for Water Supply.

c. As reflected in the Agency's UWMP [and the City's UWMP], a portion of the City's future water demands is expected to be met by local supply and recycled water projects developed and implemented by the City. To the extent that such local supply and recycled water projects will be necessitated in part by increases in future demands caused by the Oak Creek II Project, the local supply and recycled water projects should be identified and any environmental impacts of developing and implementing those projects should be analyzed. If any local supply project relies on groundwater, the analysis should include an evaluation of the project's impacts on the long-term sustainability of any affected groundwater basin.

d. The Agency's UWMP [and the City's UWMP] assume that the City will continue to implement existing water conservation programs and institute aggressive new water conservation programs in the future. These programs include: (1) continued implementation of the California Urban Water Conservation Council Best Management Practices; (2) implementation of additional "Tier 2" Best Management Practices (listed as Table 6-2 in the Agency's UWMP); (3) implementation of future plumbing retrofits as required by the plumbing code; and (4) implementation of water-efficient design standards for future developments. The DEIR should evaluate the status of the City's implementation of these programs and standards, and should ensure that all elements of these conservation programs are incorporated into the project either as project components or as mitigation measures to reduce the project's impact.

e. The reliable capacity of the Agency's transmission system is currently limited to 92 million gallons per day. Summertime demands on the Agency's transmission system may exceed this capacity. To the extent that the project could increase peak summertime demands, the DEIR should discuss ways in which peak summertime demands both of the project specifically and in the City's service area can be reduced.

4. The Agency is concerned with any activity that may affect the operation and maintenance of Petaluma River property. A Revocable License will be required for access or construction work within the Agency's Petaluma property.

5. The Agency requests the opportunity to review environmental documents and civil design plans for the above-mentioned project when they become available.

Thank you for the opportunity to comment. For questions regarding flooding and drainage issues, please contact Rem Scherzinger at 547-1978. For other questions please contact me at 547-1998 or bautista@scwa.ca.gov.

Sincerely,

Marc Bautista
Environmental Specialist

c Ken Goddard

EP:\\fileserver\data\CL\PINKS\week081307\OakCreekIIApts.doc

PETALUMA 1858

Community Development Department

11 English Street
Petaluma, CA 94952
Email: cdd@ci.petaluma.ca.us

Code Enforcement
Phone: (707) 778-4469
Fax: (707) 778-4498

Planning
Phone: (707) 778-4301
Fax: (707) 778-4498

Engineering
Phone: (707) 778-4301
Fax: (707) 778-4498

Inspection Services
Phone: (707) 778-4301
Fax: (707) 778-4498
To schedule inspections: (707) 778-4479

Permits
Phone: (707) 778-4301
Fax: (707) 778-4498

To: JOHN COURTNEY

From: BETSI LEWITTER

Fax: 670 535 6699

Pages: (including cover page) 2

Phone:

Date: 8/28/07

Re: SID COMMONS

CC:

JOHN – WE ACTUALLY RECEIVED THIS AFTER THE COMMENT PERIOD ENDED, BUT IT'S DATED AUG 17.

BETSI

4040 Civic Center Drive
Suite 200
San Rafael, CA 94903
415-492-2857
Fax-492-2654
Email:www.sonomamarintrain.org

August 17, 2007

Betsi Lewitter
Petaluma Community Development Department
11 English Street
Petaluma, CA 94952

Re: Sid Commons Apartments Notice of Preparation (NOP)
SMART/NWP Mile Post 5-39.40

Dear Ms Lewitter:

SMART staff has reviewed the NOP for an environmental impact report for the Sid Commons (Oak Creek II) Apartments located between the SMART/NWP railroad tracks and the Petaluma River at Shasta Road.

SMART has some concerns with the project and they are summarized below:

- The proposed at-grade rail/roadway crossing of the extension of Shasta Road would jeopardize safe of the operation of the railroad for both passenger service and freight. SMART has adopted a policy to not add any NEW at-grade crossings without the elimination of another comparable crossing. There are no plans to close any adjacent crossings.
- The existing rail siding near Shasta Road was recently extended northward, near the Petaluma River Bridge, for rail operations and to accommodate the storage of freight cars. A new crossing across the siding would disrupt the operations and storage capacity of this siding.
- The original private at-grade crossing at Shasta was abandoned by order of the California Public Utilities Commission in favor of opening the existing at-grade crossing at Payran Street just to the south.
- The site location of the new development may result in trespassing across the railroad to gain direct access, creating safety and liability issues.

Please contact either myself or SMART's rail engineer, Mike Strider at (707) 573-1728, if you have any questions regarding this letter.

RECEIVED
AUG 27 07
COMMUNITY DEVELOPMENT DEPARTMENT

Sincerely,

Lillian Hames

Lillian Hames, General Manager

cc: L.Mills, SMART; M.Strider, SMART, D.Stewart, CPUC, M.Stogner, NCRA

Appendix A-4

Summary of Public Comments at EIR Scoping Meeting

SUMMARY OF COMMENTS – SID COMMONS EIR SCOPING SESSION, July 25, 2007

Preliminary Comments from Various People in the Audience: Can we get some clarification? Doesn't the City have a letter from the PUC indicating that it will never approve any rail crossing at Shasta Road? If so, why is this Project being evaluated at all? If there is no rail crossing, wouldn't traffic from the site only be able to use Graylawn Avenue? Wouldn't a new traffic signal be necessary? Isn't it the PUC's policy to not to approve any new rail crossings unless an existing crossing is closed? There is going to be increased freight activity along this rail line, and an at-grade crossing would have adverse effects. Would the freight operator be more concerned about this than SMART? There might be effects on other cities beyond Petaluma were a new rail crossing to be established here. The geometry of the proposed rail crossing looks suspect. This would be a difficult alignment, since the sight lines are poor. Since two points of access are going to be required by the City, isn't this Project basically dead on arrival?

Janice Cader Thompson: I know this Project very well. The earlier comment on sight line problems is correct. This is a big issue. We don't have enough water available to serve the proposed development. Water is being rationed now, and there is no additional water available. This Project would inundate Graylawn Avenue with traffic. The flood control project did not protect upstream areas, and the 2005 flood video shows this area underwater. It was also underwater during the floods of February 1998 and in 1989. You can get this information from Pamela Tuft. The Anderson Brothers had photos of this site underwater from 25 years ago. There is lots of bird habitat specific to this site. Flood mapping has not yet been completed. Why spend money on an EIR at this point? Deer Creek goes into the Petaluma River, and more impervious surfaces on the east side brings more water into the basin. Transportation issues will probably kill this Project. There is no way to prove that there is an existing at-grade crossing in this location. Going through this process at this point is useless.

David Keller: Can the Initial Study be put on-line? Put up story poles early and often. The site plan does not show an alignment for the Rainier cross-town connector. This needs to be considered if any of the plan lines for the Rainier project go through this parcel. There needs to be safe ways provided for walkers to get from the Project site to transit, shopping, schools and play areas. Bicycle and pedestrian safety needs to be considered. This is especially true along Petaluma Boulevard North, and this Project will have cumulative effects on pedestrian and bicycle safety there. How will this Project improve bicycle and pedestrian safety along Petaluma Boulevard North? Cumulative impacts on terrestrial and aquatic habitat need to be reviewed. This area represents the most valuable riparian habitat on the river. Past habitat losses should be looked at in combination, up to Willow Brook. On flood plain impacts, for the Outlet Mall hydrology analysis, PWA showed elevations of two to four feet above what had been calculated earlier for the Mall when it was originally built. Has any of that been recognized by the General Plan? This parcel and others on the 1987/1988 flood maps are shown as too low for current flooding conditions. There is going to be additional construction upstream. The Corps of

Engineers says that the flood control project will work if no development beyond that anticipated in the 1987 General Plan takes place. What about the channelization of Willow Brook? What about other construction that has taken place upstream? This needs to be modeled. The Project needs to show zero net increment in stormwater runoff. Flows from the site need to be modeled to show quantity, timing, and water quality. The landscaping plan needs to show how runoff of herbicides and pesticides will be prevented from going into the river, since the river has been identified as impaired now. Alternatives should include limited development or a central park that would be accessible to non-driving residents, with a link to the Chelsea unbuilt sites. There is money for park acquisition and development available from voter-approved funds for this reach of the Petaluma River, from OSD, from OES, and from flood hazard prevention money.

Geoff Cartwright: In the 1982 flood, this area was under six feet of water. From beyond Payran, to Lakeville and Washington, it was all flooded. The Golden Eagle was an island in 1982. In 1986 and 1998, water came into this area, and in 2005 water also came into the area shown for development. There is the issue of dirt fill – will you be using it? If so, you're going to be altering the flood area, since fill will displace areas where floodwaters otherwise could go. On groundwater, Petaluma doesn't use it full-time now, but other communities do, and with future development, Petaluma will be using groundwater on a regular basis. This may cause problems with salt-water intrusion, which is already a problem in Sonoma. What are the cumulative impacts associated with putting a bridge over the river in this location? What about an extension of Rainier, or an extension of Industrial? All of these are cumulative impacts that should be considered. What about endangered species and wetlands. You need to look at the plants, since they could indicate that the area is wetlands. Look for endangered species. If there is no rail crossing at Shasta, you'll need a traffic signal at Graylawn.

Lee Olaeta: I'm concerned about flooding and traffic along other roads besides Graylawn. There will be 624 cars from the Project site going south to Payran, then to 101, so traffic signals will be needed at intersections in between. The owners of the property don't live in Petaluma, and are only interested in generating income. There are too many cars now, and many are speeding, some going 60 miles per hour. The City puts up the speed monitors, but they don't slow traffic down for long after they are gone. What if the number of cars from the Project were cut in half? You'd still have the access problem with the rail crossing, if you can acquire it. Can you get access through Cinnabar? Through the Outlet Mall? Anywhere you go, you'll have to cross the rails.

Pat McShane: I live in one of the last of the houses flooded in 1982. You need to consider the cultural and emotional effect of waiting for the flood call. This goes on year after year. I've lived in Petaluma for 34 years. The Outlet Mall did flood, and this is another piece of this. When completed, the flood control project would take us out of the floodplain, but if this goes forward, we'll be back in the floodplain, and that means about a thousand dollars a year in insurance premiums for us. This will affect the lifestyle of thousands of people. The floods will come when you're home alone. Last time, the water came close to going over the wall.

Richard Thompson: At the proposed Shasta rail crossing, what are the assumptions for noise? Will you use the STC 50 standard indoors for residential development? Noise profiles need to be developed.

Kirk Androtti: I'm flabbergasted! This is ridiculous! Everyone is very polite at these sessions, but we may "polite" ourselves to such an extent that we get raped and pillaged! I don't mind making money, but not on the backs of people living in the flood zone. In 1982 you saw Cotati, to Novato, and up to Penngrove – all connected with water. I was working at Marin Surplus at that time, and all floatation equipment was gone by 9:00. Remember that not a drop of water from here doesn't go into the river. When the river fills up, it goes through here. This bothers me. Is it not true that we have on-going problems with water supply, sewers overflows, traffic and flooding?

Linda Scott: I have pictures of the February 1998 flood. There is now a wall before Lynch Creek and a wall at Washington Creek, which are high right now. The river couldn't escape at Washington because the wall was too high, so it went to Penney's and K Mart. The flood walls helped Payran, but backed everything up, and held back Lynch Creek. There was an old plan to bring access through another property on the other side of the river. On MapQuest, Cinnabar shows up with a rail crossing. Is this crossing already approved by the PUC? It used to be a road, but can the tracks be crossed there now? Could you build an overpass at the hill? Traffic is already a mess. It takes me longer to cross town than to get on the freeway. The City has a no fill policy as far up as the Auto Center, Can you put parking below the proposed apartment units? The flood maps are changing. Would doing this project encourage building on other parcels nearby, by enhancing access via an extension of Shasta? In a previous flood, boat propellers were going above the roofs of cars. As you go block by block from the river toward the freeway, each block is about a foot higher.

David Glass: I have digital files available from the December 2005 flood that you should get from me via e-mail. Using the 1989 flood map is trying to sneak in under the radar. We should have a new flood map, which will probably show that the area subject to flooding has expanded. Flooding has been devastating. You need to analyze it fully using a new flood plain map. There is no need to rush this Project. Where will the water supply come from? Petaluma might not have an adequate wastewater treatment/sewer facility to serve this Project, depending on what the voters decide in 2008. I'm concerned about water runoff. I'm concerned about traffic circulation. Crossing the railroad tracks is necessary, but might not be achievable. The traffic plan must make mitigation achievable. You can't rely on the Rainier connector. On recreation, where will children play? More ballfields are needed. There will be a loss of scenic character. The treatment of precious trees is also a concern. Time is not of the essence until the water issues are resolved.

Joan Bennett: I'm concerned about traffic and water. In the 1982 flood, I was in the house for five days. I agree with everything that's been said already.

David Schonbrun (TRANSDEF): We're concerned about protecting SMART, and litigated the Caulfield Lane rail crossing victory. That crossing will be terminated once SMART starts passenger service. This might need a grade separation. The PUC discourages new at-grade crossings as policy. Would putting in an at-grade crossing here be serving public safety? Is it a necessity? Why would access via Shasta be better than access via Graylawn? If there is no difference, why add a new crossing? You need to look at the growth-inducing aspects of a new crossing, which could open up other areas for development. What would be the maximum daily traffic at the crossing? You need to consider global warming and sea level rising. Wouldn't that affect the size of the flood plain? Why would this place multi-family housing so far from everything, making it auto-dependent? This is the opposite of a transit-oriented development, and represents a step backward. It would increase greenhouse gas emissions. You need to look at greenhouse gas emissions and Petaluma's carbon footprint. I believe that any new auto trips would equal a significant impact in terms of global warming and the generation of criteria pollutants, and this needs mitigation, such as separation of parking costs from the cost of the units. Look at the MTC's "smart growth" parking guide for other mitigations. I have nothing good to say about this Project. Mitigation fees should be collected to fund alternative transportation projects and transit.

Stephanie Sanchez: I'm astonished! I couldn't believe it! Wayne Leach must lack a conscience, since he is working for the developer on this, and he should be embarrassed! In 2005, water was at the top of the flood wall. I saw that, and now I'm really scared! I walk the fields in this area and see beautiful oaks and a riparian environment. It is so obvious that the flood plain definition is political! We know it is a floodplain!

Linda Scott: In 1956 when 101 opened, noise was a factor, and noise should be looked at here. At that time I had a friend on Betty Court, and clearly remember hearing train noise. The City should require a sound wall along the track, so the City will not have to pay for one later.

Becky Winslow: An EIR just appeases the City Council. On Magnolia, the EIR said there would be no runoff! No cars? No children? Big houses with no water use? No environmental impact? The only impacts are to the people that live here! We should impeach the Council that votes for developers!

Geoff Cartwright: Has a requirement for an Economic Impact Report been approved by the City yet? You need to look at the costs associated with flooding. In the 1980s and 1990s, it was about $40,000,000 in damage per flood, and in 2005, it was about $50,000,000 in flood damage. These costs need to be looked at in the EIR. You need to look at the fines or fees that have been or would be paid by the City in a cumulative context. More development will equal more flood costs.

David Schonbrun (TRANSDEF): You need to look at the impacts of the Project on passenger rail service. The safety of rail passengers needs to be evaluated, since the rail line will not just be carrying freight.

Rich Squagali: I'm concerned about traffic issues. This will bring heavier traffic, and there is always talk of mitigation, but nothing ever happens to improve things. We're paving over our floodplain, and the water is pushed elsewhere, so more people experience flooding. In the General Plan, the City Council said that it will allow people to build in the floodplain, and developers are the only ones who will benefit. Flooding events are more and more costly, and you can't recover those costs through taxes. The residents bring their horror stories about flooding, but are ignored! The EIRs all say that traffic will be bad, but this doesn't faze the City Council one bit! People are fed up, and flooding makes it personal. It may be other people's problem up to now, but then they'll get flooded, and it will be their problem too.

David Schonbrun (TRANSDEF): I saw the discussion on an overcrossing on page 4 of the Initial Study, and was wondering if the report was available for review. (Upon hearing that there was no report, but that this represented a "back-of-the-envelope" summary of issues that would need to be considered in determining the feasibility of an overcrossing of the rails at Shasta): There needs to be more analysis of an overcrossing. Is it feasible? After studying this, the Applicant will probably argue that it is not feasible, but you should look at this very skeptically. Why would an overcrossing not be feasible? What would make an overcrossing feasible?

Appendix 5A

CalEEMod Air Quality and GHG Emissions Model Results

Sid Commons Apartments

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	445.00	Space	6.00	178,000.00	0
City Park	3.00	Acre	3.00	130,680.00	0
Health Club	3.21	1000sqft	0.07	3,210.00	0
Recreational Swimming Pool	0.40	1000sqft	0.01	400.00	0
Apartments Mid Rise	278.00	Dwelling Unit	10.37	278,000.00	795

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	4			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Sid Commons Apartments - Bay Area AQMD Air District, Annual

Project Characteristics -

Land Use - Total Project Site area is 19.45

Construction Phase -

Off-road Equipment -

Off-road Equipment - Includes internal driveways, paths and offsite roadway imrpovements

Grading - Site preparation material exported

Architectural Coating - Max limit allowed is 150 g/L post 1.1.2011

Vehicle Trips - Trips generated by new residents captured

Land Use Change -

Construction Off-road Equipment Mitigation - Tier 1 engine

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	250.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	250.00
tblArchitecturalCoating	EF_Parking	150.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	150.00
tblAreaCoating	Area_EF_Parking	150	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstructionPhase	PhaseEndDate	3/14/2019	7/12/2019
tblConstructionPhase	PhaseEndDate	1/17/2019	5/17/2019
tblConstructionPhase	PhaseEndDate	11/23/2017	3/23/2018
tblConstructionPhase	PhaseEndDate	2/14/2019	6/14/2019
tblConstructionPhase	PhaseEndDate	10/12/2017	2/9/2018
tblConstructionPhase	PhaseStartDate	2/15/2019	6/15/2019
tblConstructionPhase	PhaseStartDate	11/24/2017	3/24/2018
tblConstructionPhase	PhaseStartDate	10/13/2017	2/10/2018
tblConstructionPhase	PhaseStartDate	1/18/2019	5/18/2019

tblConstructionPhase	PhaseStartDate	9/29/2017	1/27/2018
tblGrading	MaterialExported	0.00	14,470.00
tblLandUse	BuildingSpaceSquareFeet	0.00	130,680.00
tblLandUse	BuildingSpaceSquareFeet	0.00	400.00
tblLandUse	GreenSpaceAllowEdit	1.00	0.00
tblLandUse	GreenSpaceSquareFeet	130,680.00	0.00
tblLandUse	LotAcreage	4.00	6.00
tblLandUse	LotAcreage	7.32	10.37
tblLandUse	RecSwimmingAreaAllowEdit	1.00	0.00
tblLandUse	RecSwimmingAreaSquareFeet	400.00	0.00
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblProjectCharacteristics	OperationalYear	2018	2020
tblTripsAndVMT	WorkerTripLength	10.80	12.40
tblTripsAndVMT	WorkerTripLength	10.80	12.40
tblTripsAndVMT	WorkerTripLength	10.80	12.40
tblTripsAndVMT	WorkerTripLength	10.80	12.40
tblTripsAndVMT	WorkerTripLength	10.80	12.40

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.5696	4.9900	3.9148	9.9500e-003	0.5952	0.2148	0.8100	0.2046	0.2010	0.4056	0.0000	911.7308	911.7308	0.1149	0.0000	914.6020
2019	4.4070	1.9002	1.7369	4.4200e-003	0.1834	0.0830	0.2664	0.0494	0.0779	0.1273	0.0000	401.4540	401.4540	0.0492	0.0000	402.6830
Maximum	**4.4070**	**4.9900**	**3.9148**	**9.9500e-003**	**0.5952**	**0.2148**	**0.8100**	**0.2046**	**0.2010**	**0.4056**	**0.0000**	**911.7308**	**911.7308**	**0.1149**	**0.0000**	**914.6020**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.5696	4.9900	3.9148	9.9500e-003	0.4602	0.2148	0.6750	0.1413	0.2010	0.3423	0.0000	911.7303	911.7303	0.1149	0.0000	914.6016
2019	4.4070	1.9002	1.7369	4.4200e-003	0.1834	0.0830	0.2664	0.0494	0.0779	0.1273	0.0000	401.4538	401.4538	0.0492	0.0000	402.6828
Maximum	**4.4070**	**4.9900**	**3.9148**	**9.9500e-003**	**0.4602**	**0.2148**	**0.6750**	**0.1413**	**0.2010**	**0.3423**	**0.0000**	**911.7303**	**911.7303**	**0.1149**	**0.0000**	**914.6016**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**17.33**	**0.00**	**12.54**	**24.91**	**0.00**	**11.87**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Sid Commons Apartments - Bay Area AQMD Air District, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
2	12-29-2017	3-28-2018	1.6166	1.6166
3	3-29-2018	6-28-2018	1.3059	1.3059
4	6-29-2018	9-28-2018	1.3054	1.3054
5	9-29-2018	12-28-2018	1.3080	1.3080
6	12-29-2018	3-28-2019	1.1824	1.1824
7	3-29-2019	6-28-2019	3.0562	3.0562
8	6-29-2019	9-28-2019	2.0955	2.0955
		Highest	3.0562	3.0562

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.5923	0.0388	2.9585	1.8700e-003		0.1377	0.1377		0.1377	0.1377	12.6739	8.5857	21.2596	0.0237	8.3000e-004	22.0993
Energy	0.0171	0.1460	0.0638	9.3000e-004		0.0118	0.0118		0.0118	0.0118	0.0000	578.9084	578.9084	0.0218	6.9300e-003	581.5183
Mobile	0.5603	2.6761	6.2869	0.0201	1.6401	0.0225	1.6626	0.4403	0.0211	0.4614	0.0000	1,840.7987	1,840.7987	0.0729	0.0000	1,842.6220
Waste						0.0000	0.0000		0.0000	0.0000	30.1888	0.0000	30.1888	1.7841	0.0000	74.7915
Water						0.0000	0.0000		0.0000	0.0000	5.8141	44.2472	50.0613	0.5992	0.0145	69.3657
Total	**3.1697**	**2.8608**	**9.3092**	**0.0229**	**1.6401**	**0.1719**	**1.8120**	**0.4403**	**0.1706**	**0.6109**	**48.6769**	**2,472.5401**	**2,521.2169**	**2.5017**	**0.0223**	**2,590.3968**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.5923	0.0388	2.9585	1.8700e-003		0.1377	0.1377		0.1377	0.1377	12.6739	8.5857	21.2596	0.0237	8.3000e-004	22.0993
Energy	0.0171	0.1460	0.0638	9.3000e-004		0.0118	0.0118		0.0118	0.0118	0.0000	578.9084	578.9084	0.0218	6.9300e-003	581.5183
Mobile	0.5603	2.6761	6.2869	0.0201	1.6401	0.0225	1.6626	0.4403	0.0211	0.4614	0.0000	1,840.798 7	1,840.798 7	0.0729	0.0000	1,842.622 0
Waste						0.0000	0.0000		0.0000	0.0000	30.1888	0.0000	30.1888	1.7841	0.0000	74.7915
Water						0.0000	0.0000		0.0000	0.0000	5.8141	44.2472	50.0613	0.5992	0.0145	69.3657
Total	**3.1697**	**2.8608**	**9.3092**	**0.0229**	**1.6401**	**0.1719**	**1.8120**	**0.4403**	**0.1706**	**0.6109**	**48.6769**	**2,472.540 1**	**2,521.216 9**	**2.5017**	**0.0223**	**2,590.396 8**

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

2.3 Vegetation

Vegetation

	CO2e
Category	MT
Vegetation Land Change	0.0000
Total	**0.0000**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/27/2018	2/9/2018	5	10	
2	Grading	Grading	2/10/2018	3/23/2018	5	30	
3	Building Construction	Building Construction	3/24/2018	5/17/2019	5	300	
4	Paving	Paving	5/18/2019	6/14/2019	5	20	
5	Architectural Coating	Architectural Coating	6/15/2019	7/12/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 6

Sid Commons Apartments - Bay Area AQMD Air District, Annual

Residential Indoor: 562,950; Residential Outdoor: 187,650; Non-Residential Indoor: 201,435; Non-Residential Outdoor: 67,145; Striped Parking Area: 10,680 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving	Rubber Tired Loaders	2	8.00	203	0.36
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	1,809.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	331.00	81.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	11	28.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	66.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0912	0.0000	0.0912	0.0498	0.0000	0.0498	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3800	17.3800	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0912**	**0.0129**	**0.1040**	**0.0498**	**0.0119**	**0.0616**	**0.0000**	**17.3800**	**17.3800**	**5.4100e-003**	**0.0000**	**17.5152**

3.2 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.6700e-003	0.2983	0.0569	7.3000e-004	0.0153	1.1800e-003	0.0165	4.2000e-003	1.1300e-003	5.3300e-003	0.0000	70.7806	70.7806	3.7500e-003	0.0000	70.8743
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-004	3.1000e-004	3.1100e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.2000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7586	0.7586	2.0000e-005	0.0000	0.7591
Total	**9.0700e-003**	**0.2986**	**0.0600**	**7.4000e-004**	**0.0161**	**1.1900e-003**	**0.0173**	**4.4200e-003**	**1.1400e-003**	**5.5500e-003**	**0.0000**	**71.5391**	**71.5391**	**3.7700e-003**	**0.0000**	**71.6334**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0356	0.0000	0.0356	0.0194	0.0000	0.0194	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2410	0.1124	1.9000e-004		0.0129	0.0129		0.0119	0.0119	0.0000	17.3799	17.3799	5.4100e-003	0.0000	17.5152
Total	**0.0228**	**0.2410**	**0.1124**	**1.9000e-004**	**0.0356**	**0.0129**	**0.0484**	**0.0194**	**0.0119**	**0.0313**	**0.0000**	**17.3799**	**17.3799**	**5.4100e-003**	**0.0000**	**17.5152**

3.2 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.6700e-003	0.2983	0.0569	7.3000e-004	0.0153	1.1800e-003	0.0165	4.2000e-003	1.1300e-003	5.3300e-003	0.0000	70.7806	70.7806	3.7500e-003	0.0000	70.8743
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-004	3.1000e-004	3.1100e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.2000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7586	0.7586	2.0000e-005	0.0000	0.7591
Total	**9.0700e-003**	**0.2986**	**0.0600**	**7.4000e-004**	**0.0161**	**1.1900e-003**	**0.0173**	**4.4200e-003**	**1.1400e-003**	**5.5500e-003**	**0.0000**	**71.5391**	**71.5391**	**3.7700e-003**	**0.0000**	**71.6334**

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9728	84.9728	0.0265	0.0000	85.6341
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.1301**	**0.0395**	**0.1696**	**0.0540**	**0.0364**	**0.0903**	**0.0000**	**84.9728**	**84.9728**	**0.0265**	**0.0000**	**85.6341**

3.3 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3300e-003	1.0400e-003	0.0104	3.0000e-005	2.7200e-003	2.0000e-005	2.7400e-003	7.2000e-004	2.0000e-005	7.4000e-004	0.0000	2.5286	2.5286	7.0000e-005	0.0000	2.5304
Total	**1.3300e-003**	**1.0400e-003**	**0.0104**	**3.0000e-005**	**2.7200e-003**	**2.0000e-005**	**2.7400e-003**	**7.2000e-004**	**2.0000e-005**	**7.4000e-004**	**0.0000**	**2.5286**	**2.5286**	**7.0000e-005**	**0.0000**	**2.5304**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0507	0.0000	0.0507	0.0210	0.0000	0.0210	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0764	0.8928	0.5263	9.3000e-004		0.0395	0.0395		0.0364	0.0364	0.0000	84.9727	84.9727	0.0265	0.0000	85.6340
Total	**0.0764**	**0.8928**	**0.5263**	**9.3000e-004**	**0.0507**	**0.0395**	**0.0903**	**0.0210**	**0.0364**	**0.0574**	**0.0000**	**84.9727**	**84.9727**	**0.0265**	**0.0000**	**85.6340**

3.3 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3300e-003	1.0400e-003	0.0104	3.0000e-005	2.7200e-003	2.0000e-005	2.7400e-003	7.2000e-004	2.0000e-005	7.4000e-004	0.0000	2.5286	2.5286	7.0000e-005	0.0000	2.5304
Total	**1.3300e-003**	**1.0400e-003**	**0.0104**	**3.0000e-005**	**2.7200e-003**	**2.0000e-005**	**2.7400e-003**	**7.2000e-004**	**2.0000e-005**	**7.4000e-004**	**0.0000**	**2.5286**	**2.5286**	**7.0000e-005**	**0.0000**	**2.5304**

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2693	2.3507	1.7668	2.7000e-003		0.1507	0.1507		0.1417	0.1417	0.0000	238.9561	238.9561	0.0585	0.0000	240.4197
Total	**0.2693**	**2.3507**	**1.7668**	**2.7000e-003**		**0.1507**	**0.1507**		**0.1417**	**0.1417**	**0.0000**	**238.9561**	**238.9561**	**0.0585**	**0.0000**	**240.4197**

3.4 Building Construction - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0428	1.0908	0.2896	2.2500e-003	0.0534	8.3700e-003	0.0618	0.0154	8.0100e-003	0.0235	0.0000	215.9715	215.9715	0.0124	0.0000	216.2824
Worker	0.1480	0.1150	1.1493	3.1000e-003	0.3018	2.0900e-003	0.3038	0.0803	1.9200e-003	0.0822	0.0000	280.3828	280.3828	8.1600e-003	0.0000	280.5868
Total	**0.1908**	**1.2058**	**1.4389**	**5.3500e-003**	**0.3551**	**0.0105**	**0.3656**	**0.0957**	**9.9300e-003**	**0.1056**	**0.0000**	**496.3543**	**496.3543**	**0.0206**	**0.0000**	**496.8692**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2693	2.3507	1.7668	2.7000e-003		0.1507	0.1507		0.1417	0.1417	0.0000	238.9558	238.9558	0.0585	0.0000	240.4194
Total	**0.2693**	**2.3507**	**1.7668**	**2.7000e-003**		**0.1507**	**0.1507**		**0.1417**	**0.1417**	**0.0000**	**238.9558**	**238.9558**	**0.0585**	**0.0000**	**240.4194**

3.4 Building Construction - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0428	1.0908	0.2896	2.2500e-003	0.0534	8.3700e-003	0.0618	0.0154	8.0100e-003	0.0235	0.0000	215.9715	215.9715	0.0124	0.0000	216.2824
Worker	0.1480	0.1150	1.1493	3.1000e-003	0.3018	2.0900e-003	0.3038	0.0803	1.9200e-003	0.0822	0.0000	280.3828	280.3828	8.1600e-003	0.0000	280.5868
Total	**0.1908**	**1.2058**	**1.4389**	**5.3500e-003**	**0.3551**	**0.0105**	**0.3656**	**0.0957**	**9.9300e-003**	**0.1056**	**0.0000**	**496.3543**	**496.3543**	**0.0206**	**0.0000**	**496.8692**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1169	1.0434	0.8496	1.3300e-003		0.0639	0.0639		0.0600	0.0600	0.0000	116.3766	116.3766	0.0284	0.0000	117.0853
Total	**0.1169**	**1.0434**	**0.8496**	**1.3300e-003**		**0.0639**	**0.0639**		**0.0600**	**0.0600**	**0.0000**	**116.3766**	**116.3766**	**0.0284**	**0.0000**	**117.0853**

3.4 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0190	0.5077	0.1303	1.1000e-003	0.0263	3.4900e-003	0.0298	7.6000e-003	3.3400e-003	0.0109	0.0000	105.6602	105.6602	5.8500e-003	0.0000	105.8066
Worker	0.0658	0.0496	0.5019	1.4800e-003	0.1486	1.0100e-003	0.1496	0.0395	9.3000e-004	0.0405	0.0000	133.9540	133.9540	3.5400e-003	0.0000	134.0425
Total	**0.0847**	**0.5574**	**0.6321**	**2.5800e-003**	**0.1749**	**4.5000e-003**	**0.1794**	**0.0471**	**4.2700e-003**	**0.0514**	**0.0000**	**239.6142**	**239.6142**	**9.3900e-003**	**0.0000**	**239.8490**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1169	1.0434	0.8496	1.3300e-003		0.0639	0.0639		0.0600	0.0600	0.0000	116.3764	116.3764	0.0284	0.0000	117.0852
Total	**0.1169**	**1.0434**	**0.8496**	**1.3300e-003**		**0.0639**	**0.0639**		**0.0600**	**0.0600**	**0.0000**	**116.3764**	**116.3764**	**0.0284**	**0.0000**	**117.0852**

3.4 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0190	0.5077	0.1303	1.1000e-003	0.0263	3.4900e-003	0.0298	7.6000e-003	3.3400e-003	0.0109	0.0000	105.6602	105.6602	5.8500e-003	0.0000	105.8066
Worker	0.0658	0.0496	0.5019	1.4800e-003	0.1486	1.0100e-003	0.1496	0.0395	9.3000e-004	0.0405	0.0000	133.9540	133.9540	3.5400e-003	0.0000	134.0425
Total	**0.0847**	**0.5574**	**0.6321**	**2.5800e-003**	**0.1749**	**4.5000e-003**	**0.1794**	**0.0471**	**4.2700e-003**	**0.0514**	**0.0000**	**239.6142**	**239.6142**	**9.3900e-003**	**0.0000**	**239.8490**

3.5 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0258	0.2783	0.2080	4.0000e-004		0.0133	0.0133		0.0122	0.0122	0.0000	35.2248	35.2248	0.0110	0.0000	35.4998
Paving	7.8600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0336**	**0.2783**	**0.2080**	**4.0000e-004**		**0.0133**	**0.0133**		**0.0122**	**0.0122**	**0.0000**	**35.2248**	**35.2248**	**0.0110**	**0.0000**	**35.4998**

3.5 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1200e-003	8.5000e-004	8.5800e-003	3.0000e-005	2.5400e-003	2.0000e-005	2.5600e-003	6.8000e-004	2.0000e-005	6.9000e-004	0.0000	2.2892	2.2892	6.0000e-005	0.0000	2.2907
Total	**1.1200e-003**	**8.5000e-004**	**8.5800e-003**	**3.0000e-005**	**2.5400e-003**	**2.0000e-005**	**2.5600e-003**	**6.8000e-004**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**2.2892**	**2.2892**	**6.0000e-005**	**0.0000**	**2.2907**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0258	0.2783	0.2080	4.0000e-004		0.0133	0.0133		0.0122	0.0122	0.0000	35.2248	35.2248	0.0110	0.0000	35.4997
Paving	7.8600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0336**	**0.2783**	**0.2080**	**4.0000e-004**		**0.0133**	**0.0133**		**0.0122**	**0.0122**	**0.0000**	**35.2248**	**35.2248**	**0.0110**	**0.0000**	**35.4997**

3.5 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1200e-003	8.5000e-004	8.5800e-003	3.0000e-005	2.5400e-003	2.0000e-005	2.5600e-003	6.8000e-004	2.0000e-005	6.9000e-004	0.0000	2.2892	2.2892	6.0000e-005	0.0000	2.2907
Total	**1.1200e-003**	**8.5000e-004**	**8.5800e-003**	**3.0000e-005**	**2.5400e-003**	**2.0000e-005**	**2.5600e-003**	**6.8000e-004**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**2.2892**	**2.2892**	**6.0000e-005**	**0.0000**	**2.2907**

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.1654					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.6600e-003	0.0184	0.0184	3.0000e-005		1.2900e-003	1.2900e-003		1.2900e-003	1.2900e-003	0.0000	2.5533	2.5533	2.2000e-004	0.0000	2.5587
Total	**4.1680**	**0.0184**	**0.0184**	**3.0000e-005**		**1.2900e-003**	**1.2900e-003**		**1.2900e-003**	**1.2900e-003**	**0.0000**	**2.5533**	**2.5533**	**2.2000e-004**	**0.0000**	**2.5587**

3.6 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6500e-003	2.0000e-003	0.0202	6.0000e-005	5.9900e-003	4.0000e-005	6.0300e-003	1.5900e-003	4.0000e-005	1.6300e-003	0.0000	5.3959	5.3959	1.4000e-004	0.0000	5.3995
Total	**2.6500e-003**	**2.0000e-003**	**0.0202**	**6.0000e-005**	**5.9900e-003**	**4.0000e-005**	**6.0300e-003**	**1.5900e-003**	**4.0000e-005**	**1.6300e-003**	**0.0000**	**5.3959**	**5.3959**	**1.4000e-004**	**0.0000**	**5.3995**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.1654					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.6600e-003	0.0184	0.0184	3.0000e-005		1.2900e-003	1.2900e-003		1.2900e-003	1.2900e-003	0.0000	2.5533	2.5533	2.2000e-004	0.0000	2.5586
Total	**4.1680**	**0.0184**	**0.0184**	**3.0000e-005**		**1.2900e-003**	**1.2900e-003**		**1.2900e-003**	**1.2900e-003**	**0.0000**	**2.5533**	**2.5533**	**2.2000e-004**	**0.0000**	**2.5586**

3.6 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6500e-003	2.0000e-003	0.0202	6.0000e-005	5.9900e-003	4.0000e-005	6.0300e-003	1.5900e-003	4.0000e-005	1.6300e-003	0.0000	5.3959	5.3959	1.4000e-004	0.0000	5.3995
Total	**2.6500e-003**	**2.0000e-003**	**0.0202**	**6.0000e-005**	**5.9900e-003**	**4.0000e-005**	**6.0300e-003**	**1.5900e-003**	**4.0000e-005**	**1.6300e-003**	**0.0000**	**5.3959**	**5.3959**	**1.4000e-004**	**0.0000**	**5.3995**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Sid Commons Apartments - Bay Area AQMD Air District, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5603	2.6761	6.2869	0.0201	1.6401	0.0225	1.6626	0.4403	0.0211	0.4614	0.0000	1,840.7987	1,840.7987	0.0729	0.0000	1,842.6220
Unmitigated	0.5603	2.6761	6.2869	0.0201	1.6401	0.0225	1.6626	0.4403	0.0211	0.4614	0.0000	1,840.7987	1,840.7987	0.0729	0.0000	1,842.6220

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,848.70	1,776.42	1629.08	4,173,460	4,173,460
City Park	5.67	68.25	50.22	44,777	44,777
Health Club	105.71	66.99	85.80	168,157	168,157
Parking Lot	0.00	0.00	0.00		
Recreational Swimming Pool	13.53	3.64	5.44	19,808	19,808
Total	1,973.60	1,915.30	1,770.54	4,406,202	4,406,202

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Health Club	9.50	7.30	7.30	16.90	64.10	19.00	52	39	9
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Recreational Swimming Pool	9.50	7.30	7.30	33.00	48.00	19.00	52	39	9

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.573139	0.040894	0.193976	0.114604	0.017740	0.005371	0.017133	0.024527	0.002545	0.002442	0.005942	0.000877	0.000812
City Park	0.573139	0.040894	0.193976	0.114604	0.017740	0.005371	0.017133	0.024527	0.002545	0.002442	0.005942	0.000877	0.000812
Health Club	0.573139	0.040894	0.193976	0.114604	0.017740	0.005371	0.017133	0.024527	0.002545	0.002442	0.005942	0.000877	0.000812
Recreational Swimming Pool	0.573139	0.040894	0.193976	0.114604	0.017740	0.005371	0.017133	0.024527	0.002545	0.002442	0.005942	0.000877	0.000812
Apartments Mid Rise	0.573139	0.040894	0.193976	0.114604	0.017740	0.005371	0.017133	0.024527	0.002545	0.002442	0.005942	0.000877	0.000812

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	410.1613	410.1613	0.0186	3.8400e-003	411.7684
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	410.1613	410.1613	0.0186	3.8400e-003	411.7684
NaturalGas Mitigated	0.0171	0.1460	0.0638	9.3000e-004		0.0118	0.0118		0.0118	0.0118	0.0000	168.7472	168.7472	3.2300e-003	3.0900e-003	169.7499
NaturalGas Unmitigated	0.0171	0.1460	0.0638	9.3000e-004		0.0118	0.0118		0.0118	0.0118	0.0000	168.7472	168.7472	3.2300e-003	3.0900e-003	169.7499

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	3.0772e+006	0.0166	0.1418	0.0603	9.1000e-004		0.0115	0.0115		0.0115	0.0115	0.0000	164.2112	164.2112	3.1500e-003	3.0100e-003	165.1870
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	85000.8	4.6000e-004	4.1700e-003	3.5000e-003	3.0000e-005		3.2000e-004	3.2000e-004		3.2000e-004	3.2000e-004	0.0000	4.5360	4.5360	9.0000e-005	8.0000e-005	4.5629
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0171**	**0.1460**	**0.0638**	**9.4000e-004**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**168.7472**	**168.7472**	**3.2400e-003**	**3.0900e-003**	**169.7499**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	3.0772e+006	0.0166	0.1418	0.0603	9.1000e-004		0.0115	0.0115		0.0115	0.0115	0.0000	164.2112	164.2112	3.1500e-003	3.0100e-003	165.1870
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	85000.8	4.6000e-004	4.1700e-003	3.5000e-003	3.0000e-005		3.2000e-004	3.2000e-004		3.2000e-004	3.2000e-004	0.0000	4.5360	4.5360	9.0000e-005	8.0000e-005	4.5629
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0171**	**0.1460**	**0.0638**	**9.4000e-004**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**168.7472**	**168.7472**	**3.2400e-003**	**3.0900e-003**	**169.7499**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.22625e +006	356.7301	0.0161	3.3400e-003	358.1279
City Park	0	0.0000	0.0000	0.0000	0.0000
Health Club	27028.2	7.8628	3.6000e-004	7.0000e-005	7.8936
Parking Lot	156640	45.5684	2.0600e-003	4.3000e-004	45.7469
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000
Total		**410.1613**	**0.0186**	**3.8400e-003**	**411.7684**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.22625e+006	356.7301	0.0161	3.3400e-003	358.1279
City Park	0	0.0000	0.0000	0.0000	0.0000
Health Club	27028.2	7.8628	3.6000e-004	7.0000e-005	7.8936
Parking Lot	156640	45.5684	2.0600e-003	4.3000e-004	45.7469
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000
Total		**410.1613**	**0.0186**	**3.8400e-003**	**411.7684**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.5923	0.0388	2.9585	1.8700e-003		0.1377	0.1377		0.1377	0.1377	12.6739	8.5857	21.2596	0.0237	8.3000e-004	22.0993
Unmitigated	2.5923	0.0388	2.9585	1.8700e-003		0.1377	0.1377		0.1377	0.1377	12.6739	8.5857	21.2596	0.0237	8.3000e-004	22.0993

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2657					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.6217					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.6414	0.0148	0.8833	1.7600e-003		0.1263	0.1263		0.1263	0.1263	12.6739	5.2058	17.8797	0.0204	8.3000e-004	18.6367
Landscaping	0.0635	0.0240	2.0752	1.1000e-004		0.0114	0.0114		0.0114	0.0114	0.0000	3.3799	3.3799	3.3100e-003	0.0000	3.4626
Total	**2.5923**	**0.0388**	**2.9585**	**1.8700e-003**		**0.1377**	**0.1377**		**0.1377**	**0.1377**	**12.6739**	**8.5857**	**21.2596**	**0.0237**	**8.3000e-004**	**22.0993**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2657					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.6217					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.6414	0.0148	0.8833	1.7600e-003		0.1263	0.1263		0.1263	0.1263	12.6739	5.2058	17.8797	0.0204	8.3000e-004	18.6367
Landscaping	0.0635	0.0240	2.0752	1.1000e-004		0.0114	0.0114		0.0114	0.0114	0.0000	3.3799	3.3799	3.3100e-003	0.0000	3.4626
Total	**2.5923**	**0.0388**	**2.9585**	**1.8700e-003**		**0.1377**	**0.1377**		**0.1377**	**0.1377**	**12.6739**	**8.5857**	**21.2596**	**0.0237**	**8.3000e-004**	**22.0993**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	50.0613	0.5992	0.0145	69.3657
Unmitigated	50.0613	0.5992	0.0145	69.3657

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	18.1128 / 11.419	45.8848	0.5920	0.0143	64.9502
City Park	0 / 3.57444	3.6395	1.6000e-004	3.0000e-005	3.6537
Health Club	0.189849 / 0.116359	0.4776	6.2100e-003	1.5000e-004	0.6774
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0.0236573 / 0.0144996	0.0595	7.7000e-004	2.0000e-005	0.0844
Total		**50.0613**	**0.5992**	**0.0145**	**69.3657**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	18.1128 / 11.419	45.8848	0.5920	0.0143	64.9502
City Park	0 / 3.57444	3.6395	1.6000e-004	3.0000e-005	3.6537
Health Club	0.189849 / 0.116359	0.4776	6.2100e-003	1.5000e-004	0.6774
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0.0236573 / 0.0144996	0.0595	7.7000e-004	2.0000e-005	0.0844
Total		**50.0613**	**0.5992**	**0.0145**	**69.3657**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	30.1888	1.7841	0.0000	74.7915
Unmitigated	30.1888	1.7841	0.0000	74.7915

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	127.88	25.9585	1.5341	0.0000	64.3111
City Park	0.26	0.0528	3.1200e-003	0.0000	0.1308
Health Club	18.3	3.7147	0.2195	0.0000	9.2031
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	2.28	0.4628	0.0274	0.0000	1.1466
Total		**30.1888**	**1.7841**	**0.0000**	**74.7915**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	127.88	25.9585	1.5341	0.0000	64.3111
City Park	0.26	0.0528	3.1200e-003	0.0000	0.1308
Health Club	18.3	3.7147	0.2195	0.0000	9.2031
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	2.28	0.4628	0.0274	0.0000	1.1466
Total		**30.1888**	**1.7841**	**0.0000**	**74.7915**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	0.0000	0.0000	0.0000	0.0000

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Grassland	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

1.1 Land Use		
Population- Land Use 1	723	
Population- Land Use 2	0	
Population- Land Use 3	0	
Population- Land Use 4	0	
Population- Land Use 5	0	
Population- Land Use 6		
Total Population		723

3.0 Construction Detail- Number
Demolition
Site Preparation
Grading
Building Construction
Paving
Architectural Coating
Total Construction Days

2.1 Overall Construction Unmitigated		*tons to lbs*
ROG	4.98	9953.2
NOx	6.89	13780.4
CO	5.65	11303.4
SO2	0.01	28.74
PM10 (Exhaust)	0.30	595.6
PM2.5 (Exhaust)	0.28	557.8
CO2e	1317.29	**NA**

BAAQMD Thresholds- Constructi
ROG
NOx
CO
SO2
PM10 Exhaust
PM2.5 Exhaust
CO2e

2.1 Overall Construction Mitigated		*tons to lbs*
ROG		0
NOx		0
CO		0
SO2		0
PM10 (Exhaust)		0
PM2.5 (Exhaust)		0
CO2e		**NA**
Total Population		

BAAQMD Thresholds- Operation
ROG
NOx
CO
SO2
PM10
PM2.5
CO2e (in Metric Tons)
CO2e/SP

2.2 Overall Operational- Unmitigated		*tons to lbs*
ROG	3.17	6339.4
NOx	2.86	5721.6
CO	9.31	18618.4
SO2	0.02	45.8
PM10 (Total)	1.81	3624
PM2.5 (Total)	0.61	1221.8
CO2e	2590.40	**NA**

2.2 Overall Operational- Mitigated		*tons to lbs*
ROG		0
NOx		0
CO		0
SO2		0
PM10 (Total)		0
PM2.5 (Total)		0
CO2e		**NA**

of Days
10
30
300
20
20
380

on: Average Daily Emissions(lbs/day)
54
54
82
54
1,100

al Average Daily Emissions (lbs/day)
54
54
9.0 ppm (8hr avg.) 20.0 ppm (1hr avg)
NA
82
54
1,100
4.6

Construction Emissions

Scenario	ROG	NOx	*CO*	*SO2*	PM10 Exhaust	PM 2.5 Exhaust
Construction Emissions/*tons per year*	4.98	6.89	*5.65*	*0.01*	0.30	0.28
Construction Emissions/*lbs per year*	9,953.20	13,780.40	*11,303.40*	*28.74*	595.60	557.80
Average Daily Emissions/*lbs per day*	26.19	36.26	*29.75*	*0.08*	1.57	1.47
Exceeds Threshold	NO	NO			NO	NO

Source: CalEEMod Version 2016.3.1, run date: 9/29/2017

Operational Emissions

Scenario	ROG	NOx	*CO*	*SO2*	PM10 Total	PM 2.5 Total
Operational Emissions/*tons per year*	3.17	2.86	*9.31*	*0.02*	1.81	0.61
Operational Emissions/*lbs per year*	6,339.40	5,721.60	*18,618.40*	*45.80*	3,624.00	1,221.80
Average Daily Emissions/*lbs per day*	17.37	15.68	*51.01*	*0.13*	9.93	3.35
Exceeds Threshold	NO	NO			NO	NO

Source: CalEEMod Version 2016.3.1, run date: 9/29/2017

Annual GHG Emissions/*metric tons per year*	Project Emissions/MT
Construction Emissions- Unmitigated	1,317.29
Operational Emissions- Unmitigated	2,590.40
Construction Emissions- Mitigated	0.00
Operational Emissions- Mitigated	0.00
UNMITIGATED	
Population	723
Operational Emissions/Population	3.58
MITIGATED	
Population	723.00
Operational Emissions/Population	0.00

Appendix 5B

Health Risk Assessment

Environ International, March 2014

Table1
Construction Equipment List
Sid Commons
Petaluma, California

Equipment List[1]					
Phase	**Equipment**	**Quantity**	**Usage Hours per Day**	**Horsepower**	**Load Factor**
Demolition[2]	--	--	--	--	--
Site Preparation	Rubber Tired Dozers	2	8	255	0.40
	Tractors/Loaders/Backhoes	2	8	97	0.37
Grading	Excavators	1	8	162	0.38
	Graders	1	8	174	0.41
	Rubber Tired Dozers	1	8	255	0.40
	Tractors/Loaders/Backhoes	3	8	97	0.37
Building Construction	Forklifts	1	8	89	0.20
	Generator Sets	1	8	84	0.74
	Rubber Tired Loaders	1	8	199	0.36
Paving	Cement and Mortar Mixers	2	6	9	0.56
	Pavers	1	8	125	0.42
	Paving Equipment	2	6	130	0.36
	Rollers	2	6	80	0.38
	Rubber Tired Loaders	2	8	199	0.36
	Tractors/Loaders/Backhoes	1	8	97	0.37
Architectural Coating	Air Compressors	1	6	78	0.48

Notes:
1. The equipment was provided by the Project Sponsor. The horsepower and load factor values are CalEEMod default.The equipment list from CalEEMod is the same for each phase.
2. As the area is currently an undeveloped parcel, no demolition will be required.

Abbreviations:
ARB: California Air Resources Board
CalEEMod: CALifornia Emissions Estimator MODel

Table 2
Construction Phases
Sid Commons
Petaluma, California

Phase[1]	Construction State Date	Construction End Date	Total Construction Duration (years)
1	8/1/2014	12/1/2015	1.3
2	10/31/2016	3/3/2018	1.3
3	10/31/2016	3/3/2018	1.3

Notes:
1. The equipment was provided by the Project Sponsor.

Table 3
Modeling Parameters
Sid Commons
Petaluma, California

Description	Construction Phase[1]	Source Type[2]	Source Dimension[3]	Number of Sources[4]	Release Height[5]	Initial Vertical Dimension[6]	Initial Lateral Dimension[7]
			(m)		(m)	(m)	(m)
Construction Equipment Emissions	Phase 1	Volume	20 x 20	54	5.0	1.4	4.7
	Phase 2			39			
	Phase 3			94			

Notes:
1. The model was set up based on the phased construction schedule provided by the Project Sponsor, with108 apartment units being constructed in Phase 1, 72 units being constructed in Phase 2, and 102 units being constructed in Phase 3.
2. ENVIRON used SCAQMD LST methodology when setting up the model. According to the LST methodology, construction sources were modeled as adjacent volume sources.
3. The sources were modeled as adjacent volume sources. According to LST methodology for sites larger than 5 acres, the dimensions of the modeled volume sources were set to 20 x 20m.
4. The number of sources was determined by physical geometry of the source under construction and source dimensions used.
5. According to the LST methodology, release height of the modeled volume sources representing construction equipment was set to 5 meters.
6. According to the LST methodology, initial vertical dimension of the modeled volume sources was set to 1.4 meters.
7. According to USEPA ISC3 User's Guide Volume II, initial lateral dimension of single volume sources is length of side divided by 4.3.

Abbreviations:
BAAQMD: Bay Area Air Quality Management District
ISC: Industrial Source Complex Model
LST: Local Significance Threshold
m: meter
SCAQMD: South Coast Air Quality Management District
USEPA: United States Environmental Protection Agency

Sources:
South Coast Air Quality Management District (SCAQMD). *2008. Final Localized Significance Threshold (LST) Methodology*. July. Available at http://www.aqmd.gov/ceqa/handbook/lst/Method_final.pdf
United Sates Environmental Protection Agency (USEPA). 1995. User's Guide for the Industrial Source Complex (ISC3) Dispersion Models. Volume II - Description of Model Algorithms. September. Available at http://www.epa.gov/scram001/userg/regmod/isc3v2.pdf

Table 4
Exposure Parameters for Construction Scenario
Sid Commons
Petaluma, California

Exposure Parameter	Units	Resident Adult	Resident Child
Daily Breathing Rate (DBR) [1]	[L/kg-day]	302	581
Exposure Time (ET) [2]	[hours/24 hours]	24	24
Exposure Frequency (EF) [3]	[days/year]	350	350
Exposure Duration (ED) [4]	[years]	1.3	1.3
Averaging Time (AT)	[days]	25550	25550
Intake Factor, Inhalation (IF_{inh})	[m^3/kg-day]	0.0055	0.0106

Notes:
1. Daily breathing rates for residents reflect default breathing rates from BAAQMD 2010.
2. Exposure time for residents reflect default exposure time from BAAQMD 2010.
3. Exposure frequency for residents reflect default exposure time from BAAQMD 2010.
4. Construction will occur in three phases, as specified by the Project Sponsor. Phase 1 will take 487 days to complete. Phases 2 and 3 will take 488 days to complete. In the worst case scenario assumed here, Phase 1 occurs separately, while Phases 2 and 3 are completed simultaneously.

Calculation:
IF_{inh} = DBR * ET * EF * ED * CF / AT

Where: CF = 0.001 (m^3/L)

Abbreviations:
BAAQMD: Bay Area Air Quality Management District
L: liter
kg: kilogram
m^3: cubic meter

Reference:
Bay Area Air Quality Management District (BAAQMD). 2010. Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines. January.

Table 5

Carcinogenic and Noncarcinogenic Toxicity Values[1]

Sid Commons

Petaluma, California

Analysis	Chemical	Cancer Potency Factor	Chronic Reference Exposure Level
		($[mg/kg\text{-}day]^{-1}$)	($\mu g/m^3$)
Cancer Risk and Chronic HQ	Diesel PM	1.1	5.0

Abbreviations:
ARB: California Air Resources Board
HQ: Hazard Quotient
$\mu g/m^3$: micrograms per cubic meter
$[mg/kg\text{-}day]^{-1}$: per milligram per kilogram-day
OEHHA: Office of Environmental Health Hazard Assessment
PM: Particulate Matter

Reference:
California Environmental Protection Agency (Cal/EPA). 2012. OEHHA/ARB Consolidated Table of Approved Risk Assessment Health Values. May 3.
http://www.arb.ca.gov/toxics/healthval/contable.pdf

Table 6
Age Sensitivity Factors for Project[1]
Sid Commons
Petaluma, California

Receptor	Age Sensitivity Factor (ASF)
Resident - Adult[2]	1
Resident - Child[3]	10 for third trimester to age 2 years 3 for age 2 to age 16 years

Notes:
1. ASFs based on recommendations by OEHHA 2009 and BAAQMD 2010.
2. Adult characterized as 16 years and older.
3. Resident child is assumed to be exposed at some point from the third trimester of pregnancy to two years of age.

Abbreviations:
ASF: Age Sensitivity Factor
BAAQMD: Bay Area Air Quality Management District
OEHHA: Office of Environmental Health Hazard Assessment

References:
Bay Area Air Quality Management District (BAAQMD). 2010. Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines. January.

Office of Environmental Health Hazard Assessment (OEHHA). 2009. Technical Support Document for Cancer Potency Factors: Methodologies for derivation, listing of available values, and adjustments to allow for early life stage exposures. May.

Table 7
Summary of Health Risk Assessment Results (Unmitigated)
Sid Commons
Petaluma, California

Scenario	UTMx	UTMy	Estimated Annual Average DPM Concentration	Lifetime Excess Cancer Risk[1]	Chronic HQ[2]	Estimated Annual Average $PM_{2.5}$ Concentration
	(m)		(µg/m³)	(in a million)		(µg/m³)
Offsite Child Receptor exposed to emissions from Phase 1 only	531,428	4,233,429	0.53	60.7	0.107	0.51
Offsite Child Receptor exposed to emissions from Phases 2 and 3 only	531,428	4,233,539	0.82	93.7	0.165	0.78
Offsite Child Receptor exposed to emissions from Phase 1 followed by Phases 2 and 3	531,428	4,233,539	0.67	65.3	0.134	0.63
May 2011 BAAQMD Threshold				**10**	**1.0**	**0.3**

Notes:
1. The excess lifetime cancer risk assumes an individual living adjacent to the construction zone who is exposed to all construction emissions. Cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer over a lifetime as a direct result of exposure to potential carcinogens. The estimated risk is expressed as a unitless probability. The cancer risk attributed to a chemical is calculated by multiplying the chemical intake or dose at the human exchange boundaries (e.g., lungs) by the chemical-specific cancer potency factor (CPF). The cancer risks attribute to the DPM emissions associated with the Project were calculated based on the DPM exposure point concentration (C), the intake factor, the CPF, and the ASF.

Calculation:
$Risk_{inh}$ =C x CF x IF_{inh} x CPF x ASF
Where:
$Risk_{inh}$ = Cancer Risk; the incremental probability of an individual developing cancer as a result of inhalation exposure to a particular potential carcinogen (unitless)
C = Exposure point concentration in air for DPM (µg/m³)
CF = Conversion Factor (mg/µg)
IF_{inh} = Intake Factor for Inhalation (m³/kg-day)
CPF = Cancer Potency Factor (mg chemical/kg body weight-day)$^{-1}$
ASF = Age Sensitivity Factor (unitless)

2. The potential for exposure to result in chronic noncancer effects is evaluated by comparing the estimated annual average air concentration (which is equivalent to the average daily air concentration) to the chemical-specific noncancer chronic RELs. When calculated for a single chemical, the comparison yields a ratio termed a hazard quotient. The hazard quotient was calculated based on the modeled annual average DPM concentrations and the chronic REL.

Calculation:
HQ = C / cREL
Where:
HQ = Hazard Quotient for DPM
C = Average Daily Air Concentration for DPM (µg/m³)
cREL = Chronic Noncancer Reference Exposure Level for DPM (µg/m³)

Abbreviations:
µg: microgram
ASF: Age Sensitivity Factor
CPF = Cancer Potency Factor (mg chemical/kg body weight-day)$^{-1}$
DPM: Diesel Particulate Matter
HQ: Health Quotient
kg: kilogram
m: meter
PM: Particulate matter
REL: Reference Exposure Level
UTM: Universal Transverse Mercator

Table 8
Summary of Health Risk Assessment Results (Mitigated)
Sid Commons
Petaluma, California

Scenario	UTMx	UTMy	Estimated Annual Average DPM Concentration	Lifetime Excess Cancer Risk[1]	Chronic HQ[2]	Estimated Annual Average $PM_{2.5}$ Concentration
	(m)		($\mu g/m^3$)	(in a million)		($\mu g/m^3$)
Offsite Child Receptor exposed to emissions from Phase 1 only	531,428	4,233,429	0.03	3.7	0.007	0.03
Offsite Child Receptor exposed to emissions from Phases 2 and 3 only	531,428	4,233,539	0.04	5.1	0.009	0.04
Offsite Child Receptor exposed to emissions from Phase 1 followed by Phases 2 and 3	531,428	4,233,429	0.04	4.0	0.008	0.04
			May 2011 BAAQMD Threshold	**10**	**1.0**	**0.3**

Notes:
1. The excess lifetime cancer risk assumes an individual living adjacent to the construction zone who is exposed to all construction emissions. Cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer over a lifetime as a direct result of exposure to potential carcinogens. The estimated risk is expressed as a unitless probability.
The cancer risk attributed to a chemical is calculated by multiplying the chemical intake or dose at the human exchange boundaries (e.g., lungs) by the chemical-specific cancer potency factor (CPF).
The cancer risks attribute to the DPM emissions associated with the Project were calculated based on the DPM exposure point concentration (C), the intake factor, the CPF, and the ASF.

Calculation:
$Risk_{inh}$ =C x CF x IF_{inh} x CPF x ASF
Where:
$Risk_{inh}$ = Cancer Risk; the incremental probability of an individual developing cancer as a result of inhalation exposure to a particular potential carcinogen (unitless)
C = Exposure point concentration in air for DPM ($\mu g/m^3$)
CF = Conversion Factor (mg/µg)
IF_{inh} = Intake Factor for Inhalation (m^3/kg-day)
CPF = Cancer Potency Factor (mg chemical/kg body weight-day)$^{-1}$
ASF = Age Sensitivity Factor (unitless)

2. The potential for exposure to result in chronic noncancer effects is evaluated by comparing the estimated annual average air concentration (which is equivalent to the average daily air concentration) to the chemical-specific noncancer chronic RELs. When calculated for a single chemical, the comparison yields a ratio termed a hazard quotient. The hazard quotient was calculated based on the modeled annual average DPM concentrations and the chronic REL.

Calculation:
HQ = C / cREL
Where:
HQ = Hazard Quotient for DPM
C = Average Daily Air Concentration for DPM ($\mu g/m^3$)
cREL = Chronic Noncancer Reference Exposure Level for DPM ($\mu g/m^3$)

Abbreviations:
µg: microgram
ASF: Age Sensitivity Factor
CPF = Cancer Potency Factor (mg chemical/kg body weight-day)$^{-1}$
DPM: Diesel Particulate Matter
HQ: Health Quotient
kg: kilogram
m: meter
PM: Particulate matter
REL: Reference Exposure Level
UTM: Universal Transverse Mercator

Appendix 6A

Special Status Species Report of the Johnson Property

Wetlands Research Associates, Inc. (WRA), March 2004

SPECIAL STATUS SPECIES REPORT OF THE JOHNSON PROPERTY, PETALUMA, CALIFORNIA

Prepared for:

J. Cyril Johnson Investment Corporation
125 Willow Road
Menlo Park, California 94025

Prepared by:

Wetlands Research Associates, Inc.
2169 East Francisco Blvd., Suite G
San Rafael, California 94901
Contact: Doug Spicher
(415) 454-8868

March 2004

SPECIAL STATUS SPECIES REPORT FOR THE JOHNSON PROPERTY, PETALUMA, CALIFORNIA

INTRODUCTION

In February of 2004, Wetlands Research Associates completed a special status species assessment within a proposed development site on the Johnson Property in Petaluma, California. The site is located east of Interstate 101 and southwest of the Petaluma River in Petaluma, California. The purpose of the assessment was to determine:

1) habitat suitability and subsequent likelihood of occurrence of special status wildlife and plant species potentially occurring at the site.

"Special status species" include those plants and animals that have been formally listed or proposed as endangered or threatened, or are candidates for such listing under the Federal Endangered Species Act (FESA) or California Endangered Species Act (CESA). Listed and proposed species are afforded protection under these Acts. Any impacts to these species must be reviewed by the U.S. Fish and Wildlife Service (USFWS) and/or the California Department of Fish and Game (CDFG), and if unavoidable impacts occur, an Incidental Take Statement must be prepared. Fully protected species under CESA cannot be harmed or killed, even with an Incidental Take Statement.

CDFG Species of Special Concern and USFWS Species of Concern are also treated as "special status species". Species of Special Concern are those that face extirpation in California if current population and habitat trends continue. Although they generally have no special legal status, these species (and USFWS species of concern) are given special consideration under the California Environmental Quality Act (CEQA). Plant species on the California Native Plant Society (CNPS) Lists 1 and 2 are considered special status plant species. Impacts to these species are considered significant under CEQA..

PROJECT SITE

The Johnson Property covers approximately 13 acres and lies at the end of Graylawn Avenue in Petaluma, California (Figure 1). It is bounded on the west by railroad tracks and on the east by lands adjacent to the Petaluma River and the Oakcreek Apartment complex. The site is on a terrace above the river's flood plain where elevations range from approximately 15 to 25 feet NGVD. The site is undeveloped, however, portions were excavated approximately 15 years ago to remove soil for construction purposes and for subsequent development of settling basins. Some of these depressions have developed significant wetland vegetation over time. These basins were the focus of this California red-legged frog site assessment.

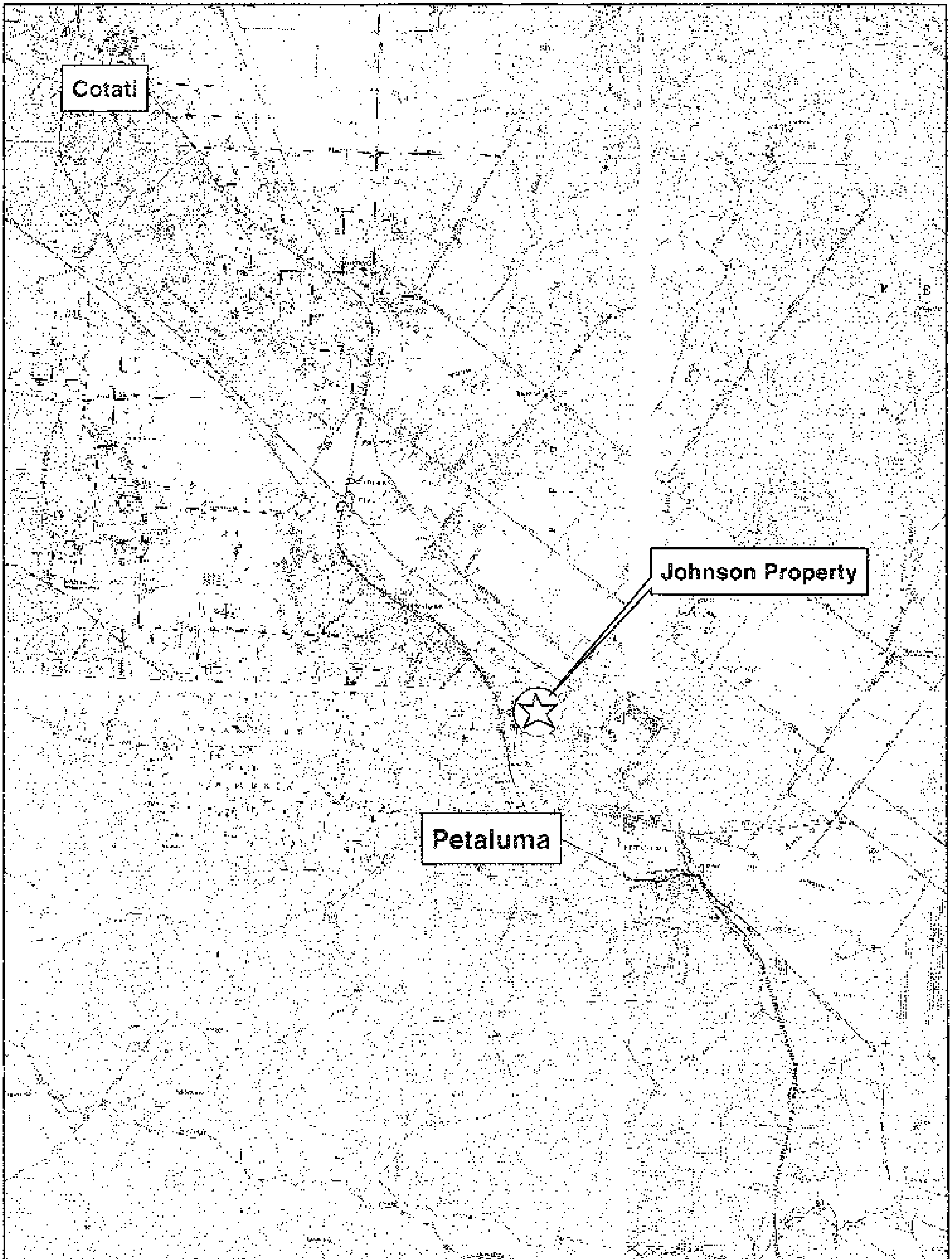

Figure 1: Location Map for Johnson Property, Petaluma, California.

Wetlands Research Associates, Inc.

Vegetation on the Johnson Property consists primarily of ruderal, non-native grass and herbaceous species. Areas determined to be uplands were dominated by wild oat (*Avena barbata*), Italian ryegrass (*Lolium multiflorum*), brome grasses (*Bromus diandrus*, *B. hordaceous*), wild radish (*Raphanus sativa*), and black mustard (*Brassica nigra*). Areas that had wetland indicators including wetland hydrology were dominated by Italian ryegrass, Mediterranean barley (*Hordeum marinum*), rabbit-foot grass (*Polypogon monspeliensis*), and pepperweed (*Lepidium latifolium*) (WRA 2000).

The Petaluma River is located approximately 200 feet from the northeast boundary of the study area. This portion of the river is tidal, but salinity levels are unknown. The riverbanks are steep, and dominated by blackberry (*Rubus* sp.), willow (*Salix* sp.), oak (*Quercus* sp.), and tules (*Scirpus* sp.). Bare soil exists where the bank face has sloughed.

METHODS

As well as site assessment, a search was made of the CDFG (2003) Natural Diversity Data Base for Sonoma County to identify any occurrences of special status species within and surrounding the Study Area. Additional searches were conducted using U.S. Fish and Wildlife Service Official Species Lists for Cotati USGS Quad (2004), and the California Native Plant Society (CNPS) electronic inventory (2004).

The special status species assessment was conducted on May 22, 2001. Although conclusions are limited, habitat suitability for special status wildlife and plant species was evaluated by classifying the potential for occurrence for each species according to the following criteria:

(1) Not Present. Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, nesting, cover, area, substrate). The species has an extremely low probability of being found on the site.

(2) Low Potential. Some habitat components meeting the species requirements are present, however, the majority of habitat on and adjacent to the site is unsuitable. The species has a low probability of being found on the site.

(3) Moderate Potential. Habitat components meeting the species requirements are present, however, some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.

(4) High Potential. Habitat components meeting the species requirements are present and most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.

RESULTS

Special Status Species

Several special status plant and animal species have been documented to occur, or potentially occur, in Sonoma County. Appendix A summarizes the potential of occurrence of these species in the Study Area. A search of the CDFG Natural Diversity Data Base found no documented occurrences of special status species on or adjacent to the Study Area.

Timing of this assessment prevented the identification of special status plant species, however, no special status plant species were identified in the area by previous studies prepared by others and the highly disturbed land on the property would indicate that none are likely to be present.

Based on existing habitat conditions, there is a moderate to high potential of occurrence for four special status wildlife species to occur in the Study Area. These species are discussed in more detail below.

White-Tailed Kite (*Elanus leucurus*), CDFG Fully Protected Species. White-tailed kites are associated with annual grasslands, scrub habitats, wet meadows, and emergent wetlands throughout the lower elevations of California. Nesting generally occurs in shrubs or small trees. Potential nesting habitat is present in the trees on the property, and kites likely forage over the grassy areas of the site. Significant impacts to this species would include nest and/or young abandonment resulting from grading or construction disturbance.

Allen's Hummingbird (*Selasphorus sasin*), USFWS Species of Concern. This hummingbird is primarily a summer resident in the San Francisco Bay region. Breeding occurs in a variety of habitat types, but especially in riparian, oak woodland, and coastal scrub communities. Allen's hummingbirds feed on nectar from a variety of herbaceous and woody flowering plants, and they also eat small insects and spiders.

Loggerhead Shrike (*Lanius ludovicianus*), CDFG Species of Special Concern, Federal Species of Concern. Loggerhead shrike is a common resident and winter visitor in lowlands and foothills throughout California. It prefers open habitats with scattered trees, shrubs, posts, fences, utility lines or other perches. Nests are usually built on a stable branch in a densely-foliaged shrub or small tree and are usually well-concealed. Suitable foraging and breeding habitat is present in the Study Area.

Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*), Federal Species of Special Concern, CDFG Species of Concern. This subspecies of the common yellowthroat is found in freshwater marshes, coastal swales, riparian thickets, brackish marshes, and saltwater marshes. Their breeding range extends from Tomales Bay in the north, Carquinez Strait to the east, and

Santa Cruz County to the south. This species requires thick, continuous cover such as tall grasses, tule patches, or riparian vegetation down to the water surface for foraging and prefers willows for nesting.

CONCLUSION

Special Status Species

Based on the results of this assessment, the majority of special status wildlife and plant species are not likely to occur in the Study Area; however, suitable habitat conditions appear to be present for four special status wildlife species.

Although this assessment determined that most special status species are unlikely to occur on the site, it is not unusual for governmental agencies to require pre-construction surveys or other mitigation measures to reduce potential project-related impacts to a less-than-significant level, even when available habitat is generally unsuitable for these species.

The oak and riparian woodlands that exist on three sides of the site provide suitable nesting habitat for several raptor species. It is likely that pre-construction surveys (30 days prior to grading) will be required to determine if raptors are nesting in the area and whether a buffer distance from the nest should be identified. Depending on the species, buffers can range from 250 to 500 feet from the active nest. The buffer area would be avoided until young have fledged (usually by late June).

REFERENCES

California Department of Fish and Game. 2003. Natural Diversity Data Base, Wildlife Habitat Data Analysis Branch. Sacramento.

California Native Plant Society Online Inventory, February 2004. Version 6.3 Updated 1/16/04 http://www.northcoast.com/~cnps/cgi-bin/cnps/sensinv.cgi

US Fish and Wildlife Service Official Species Lists. February 2004. Sacramento Fish and Wildlife Office, 2800 Cottage Way, Room W-2605, Sacramento, California 95825 http://sacramento.fws.gov/es/spp_lists/QuadName_Detail.cfm?ID=501C

Wetlands Research Associates. July 2000. Delineation of Potential Jurisdictional Wetlands Section 404 of the Clean Water Act, Johnson Property, Petaluma, California. Prepared for J. Cyril Johnson Investment Corporation.

Appendix A: Special status plant species that may occur, or are known to occur, in the vicinity of the Project Site. List compiled from USFWS Official Species Lists for Cotati USGS Quad (2004), California Department of Fish and Game (CDFG) Natural Diversity Data Base (2003) searches of the Cotati USGS Quad and surrounding 9 Quads, and the California Native Plant Society (CNPS) electronic inventory (2004).

SPECIES	STATUS*	HABITAT *Blooming Period for Plants*	POTENTIAL FOR OCCURRENCE
Mammals			
Townsend's western big-eared bat *Corynorhinus townsendii townsendii*	FSC, CSC	Primarily found in rural settings in a wide variety of habitats including oak woodlands and mixed coniferous-deciduous forest. Day roosts highly associated with caves and mines. Very sensitive to human disturbance.	**Low Potential.** Suitable roost habitat is not present.
long-eared myotis *Myotis evotis*	FSC	Primarily a forest associated species. Day roosts in hollow trees, under exfoliating bark, rock outcrop crevices and buildings. Other roosts include caves, mines and under bridges.	**Low Potential.** Typical wooded habitat is not present. Suitable roost habitat is not present.
fringed myotis *Myotis thysanodes*	FSC	Associated with a wide variety of habitats including mixed coniferous-deciduous forest and redwood/sequoia groves. Buildings, mines and large snags are important day and night roosts.	**Low Potential.** Roost habitat, such as snags, caverns, and buildings, are not present.
long-legged myotis *Myotis volans*	FSC	Generally associated with woodlands and forested habitats. Large hollow trees, rock crevices and buildings are important day roosts. Other roosts include caves, mines and buildings.	**Low Potential.** Roost habitat, such as snags, caverns, and buildings, are not present.
Yuma myotis *Myotis yumanensis*	FSC, CSC	Known for its ability to survive in urbanized environments. Also found in heavily forested settings. Day roosts in buildings, trees, mines, caves, bridges and rock crevices. Night roosts associated with man-made structures.	**Low Potential.** This species likely forages over the site; however, suitable roost habitat is not present.

SPECIES	STATUS*	HABITAT *Blooming Period for Plants*	POTENTIAL FOR OCCURRENCE
greater western mastiff bat *Eumops perotis californicus*	FSC, CSC	Found in a wide variety of habitat. Distribution appears to be tied to large rock structures which provide suitable roosting sites, including cliff crevices and cracks in boulders.	**Low Potential.** Typical roost habitat is not present.
pallid bat *Antrozous pallidus*	CSC	Occupies a variety of habitats at low elevation including grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting.	**Low Potential.** This species likely forages over the site; however, suitable roost habitat is not present.
Birds			
white-tailed kite *Elanus leucurus*	FSC, CFP	Year-long resident of coastal and valley lowlands; rarely found away from agricultural areas. Preys on small diurnal mammals and occasional birds, insects, reptiles, and amphibians.	**High Potential.** Trees along the Petaluma River could provide suitable nesting habitat; grasslands on the site provide suitable foraging habitat.
bald eagle *Haliaeetus leucocephalus*	FPD, FT, SE, CFP	Requires large bodies of water, or free-flowing rivers with abundant fish adjacent snags or other perches. Nests in large, old-growth, or dominant live tree with open branchwork.	**Low Potential.** Poor wintering and foraging habitat exists on the site.
ferruginous hawk *Buteo regalis*	FSC, CSC	Frequents open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys and fringes of pinyon-juniper habitats.	**Low Potential.** Rare winter visitor; more common in Central Valley and adjacent foothill region.
American peregrine falcon *Falco peregrinus anatum*	FD, SE, CFP	Winters throughout Central Valley. Requires protected cliffs and ledges for cover. Feeds on a variety of birds, and some mammals, insects, and fish.	**Low Potential.** May occasionally forage on the site in winter and migration; no suitable nesting habitat.
black rail *Laterallus jamaicensis coturniculus*	FSC, ST, CFP	Rarely seen resident of saline, brackish, and fresh emergent wetlands in the San Francisco Bay area. Nest in dense stands of pickleweed	**Not Present.** Tidal wetlands with emergent vegetation are not present in the Study Area.

SPECIES	STATUS*	HABITAT *Blooming Period for Plants*	POTENTIAL FOR OCCURRENCE
long-billed curlew *Numenius americanus*	FSC, CSC	Winters in large coastal estuaries, upland herbaceous areas, and croplands. Breeds in northeastern California in wet meadow habitat.	**Low Potential.** May rarely forage in the grassland areas in winter; no breeding habitat.
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FC, SE	Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	**Not Present.** Probably extirpated in Sonoma County; dense riparian habitat typical of this species is not present.
western burrowing owl *Athene cunicularia hypugea*	FSC, CSC	Frequents open grasslands and shrublands with perches and burrows. Preys upon insects, small mammals, reptiles, birds, and carrion. Nests and roosts in old burrows of small mammals.	**Low Potential.** No suitable burrow habitat; very rare in Sonoma County.
Vaux's swift *Chaetura vauxi*	FSC, CSC	Forages high in the air over most terrain and habitats but prefers rivers/lakes. Requires large hollow trees for nesting.	**Low Potential.** May occasionally forage over the site; no suitable nesting habitat.
black swift *Cypseloides niger*	FSC, CSC	Nests in riparian jungles of willow, often mixed with cottonwoods with thick lower story.	**Low Potential.** May occasionally forage over the site; no suitable nesting habitat.
rufous hummingbird *Selasphorus rufus*	FSC	Found in a wide variety of habitats that provide nectar-producing flowers. A common migrant and uncommon summer resident of California.	**Low Potential.** May migrate through site in spring; does not nest in California.
Allen's hummingbird *Selasphorus sasin*	FSC	Breeds in sparse and open woodlands, coastal redwoods, and sparse to dense scrub habitats. Distribution highly dependent on abundance of nectar sources.	**Moderate Potential.** Common breeding species in riparian and scrub habitats. May breed along Petaluma River.
Lewis's woodpecker *Melanerpes lewis*	FSC	Uncommon winter resident occurring on open oak savannahs, broken deciduous and coniferous habitats.	**Not Present.** Typical oak savannah habitat not present.

SPECIES	STATUS*	HABITAT *Blooming Period for Plants*	POTENTIAL FOR OCCURRENCE
little willow flycatcher *Empidonax traillii brewsteri*	FSC, SE	Most numerous where extensive thickets of low, dense willows edge on wet meadows, ponds, or backwaters. Winter migrant.	**Not Present.** May rarely migrate through area; no suitable nesting habitat.
loggerhead shrike *Lanius ludovicianus*	FSC, CSC	Prefers open habitats with scattered shrubs, trees, pots, utility lines from which to forage for large insects. Nest well concealed above ground in densely-foliaged shrub or tree.	**Moderate Potential.** Grasslands and adjacent shrubs and riparian trees provide suitable foraging and nesting habitat.
California thrasher *Toxostoma redivivum*	FSC	Common resident of foothills and lowlands in cismontane California. Occupies moderate to dense chaparral habitats and extensive thickets in young or open valley foothill riparian habitat.	**Low Potential.** May be present in riparian habitat along Petaluma River; however, seems to prefer more dense vegetation.
saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	FSC, CSC	Frequents low, dense vegetation near water including fresh to saline emergent wetlands. Brushy habitats used in migration. Forages among wetland herbs and shrubs for insects primarily.	**Moderate Potential.** May nest along Petaluma River in emergent vegetation or willows.
tricolored blackbird *Agelaius tricolor*	FSC, CSC	Usually nests over or near freshwater in dense cattails, tules, or thickets of willow, blackberry, wild rose or other tall herbs.	**Low Potential.** Typical nesting habitat is not present; nomadic winter flocks may forage on the site in winter.
Reptiles and Amphibians			
western pond turtle *Clemmys marmorata*	FSC, CSC	Occurs in perennial ponds, lakes, rivers and streams with suitable basking habitat (mud banks, mats of floating vegetation, partially submerged logs) and submerged shelter.	**Low Potential.** Suitable aquatic habitat is not present on the site; turtles may occasionally nest near project boundary.
California horned lizard *Phrynosoma coronatum frontale*	FSC, CSC	Occurs in valley-foothill hardwood, conifer and riparian habitats, as well as in pine-cypress juniper and annual grass habitats. Prefers sand areas, washes, flood plains and wind-blown deposits.	**Low Potential.** Probably extirpated in Sonoma County (Jennings and Hayes 1994).

SPECIES	STATUS*	HABITAT *Blooming Period for Plants*	POTENTIAL FOR OCCURRENCE
California tiger salamander *Ambystoma californiense*	FPT, CSC	Inhabits annual grass habitat and mammal burrows. Seasonal ponds and vernal pools crucial to breeding	**Not Present.** Site is not within the potential range of this species (USFWS 2003).
California red-legged frog *Rana aurora draytonii*	FT, CSC	Associated with quiet perennial to intermittent ponds, stream pools and wetlands. Prefers shorelines with extensive vegetation. Documented to disperse through upland habitats after rains.	**Not Present.** No suitable breeding habitat on the site; nearby Petaluma River supports non-native predators.
foothill yellow-legged frog *Rana boylii*	FSC, CSC	Found in or near rocky streams in a variety of habitats. Feed on both aquatic and terrestrial invertebrates.	**Not Present.** Suitable stream habitat is not present in the Study Area.
Invertebrates			
California freshwater shrimp *Syncaris pacifica*	FE, SE	Endemic to Marin, Napa, and Sonoma Cos. Found in shallow pools away from streamflow in low gradient streams where riparian cover is moderate to heavy.	**Not Present.** Suitable slow stream habitat is not present.
Plants			
Allium peninsulare var. franciscanum Franciscan onion	FSC, List 1B	Cismontane woodland, valley and foothill grassland. Clay Soils; often on serpentine. Dry Hillsides. 100-300M. *May-June*	**Not Present.** Serpentine soils are not present; hillside habitat not present; site is below typical elevation.
Alopecurus aequalis var. sonomensis Sonoma alopecurus	FE, List 1B	Freshwater marshes and swamps, riparian scrub. Known from a few occurrences in Sonoma and Marin Counties. Wet areas, marshes, and riparian banks with other wetland species. 5-360 M. *May-July*	**Low Potential.** The site does not contain marshes, swamps, or riparian scrub.
Amorpha californica var. napensis Napa false indigo	FSC, List 1B	Broadleafed upland forest, chaparral, cismontane openings in forest or woodland or in chaparral. 150-2000M *April-July*	**Not Present.** The site is below the typical elevation of this species.

SPECIES	STATUS*	HABITAT *Blooming Period for Plants*	POTENTIAL FOR OCCURRENCE
Amsinckia lunaris bent-flowered fiddleneck	FSC, List 1B	Coast bluff scrub, cismontane woodland, valley and foothill grassland. 3-500M. *March-June*	**Low Potential.** Coastal bluffs and woodland habitat are not present. Non-native annual grassland provides poor habitat.
Arctostaphylos canescens ssp. sonomensis Sonoma manzanita	FSC, List 1B	Chaparral, lower montane coniferous forest. Sometimes found on serpentine. 180-1700M. *Jan-April.*	**Not Present.** The site is below the typical elevation of this species.
Arctostaphylos densiflora Vine Hill manzanita	FSC, SE, List 1B	Chaparral. Only known from one site in Sonoma County. Acid marine sand. 50-100 M. *Feb.-April*	**Not Present.** The site is below the typical elevation of this species.
Arctostaphylos stanfordiana ssp. decumbens Rincon manzanita	FSC, List 1B	Chaparral. Endemic to Sonoma County. Highly restricted to red rhyolites in Sonoma County. 75-310 M. *Feb.-April*	**Not Present.** The site is below the typical elevation of this species.
Astragalus claranus Clara Hunt's milk-vetch	FE, ST, List 1B	Cismontane woodland, valley and foothill grassland, chaparral. Endemic to Napa and Sonoma Counties. Open grassy hillsides, especially on exposed shoulders in thin volcanic clay soil moist in spring. 75-235 M. *March-June*	**Not Present.** The site is below the typical elevation of this species.
Astragalus tener var. tener alkali milk-vetch	FSC, List 1B	Alkali playa, valley and foothill grassland, vernal pools. Low ground, alkali flats, and flooded lands; in annual grassland or in playas or vernal pools. 1-170M. *March-June*	**Low Potential.** Alkali habitat is not present.
Balsamorhiza macrolepis var. macrolepis big-scale balsamroot	FSC, List 1B	Valley and foothill grassland, cismontane woodland. Sometimes on serpentine. 35-1000M. *March-June*	**Not Present.** Site is below typical elevation; serpentine soils not present.

SPECIES	STATUS*	HABITAT *Blooming Period for Plants*	POTENTIAL FOR OCCURRENCE
Blennosperma bakeri Sonoma sunshine	FE, SE, List 1B	Vernal pools, valley and foothill grassland. Endemic to Sonoma County. Vernal pools and swales. 10-100M. *March-May*	**Low Potential.** Vernal pools habitat not present.
Brodiaea californica var. leptandra narrow-anthered California brodiaea	FSC, List 1B	Broadleafed upland forest, chaparral, lower montane coniferous forest. 110-915M. *May-July*	**Not Present.** The site is below the typical elevation of this species.
Calamagrostis crassiglumis Thurber's reed grass	FSC, List 2	Coastal scrub, freshwater marsh. Usually in Marshy swales surrounded by grassland or coastal scrub. 10-45M. *May-July*	**Low Potential.** Coastal scrub and freshwater marsh are not present in the Study Area.
Campanula californica swamp harebell	FSC, List 1B	Bogs and fens, closed cone coniferous forest, coastal prairie, meadows, freshwater marsh, N. Coast coniferous forest. Bogs and marshes in a variety of habitats. Uncommon where it occurs 1-405M. *June-October*	**Not Present.** Bogs and similar habitats are not present in the Study Area.
Carex albida white sedge	FE, SE, List 1B	Freshwater marsh, bogs and fens, meadows and seeps. Endemic to Sonoma County. Wet meadows and marshes. 35-55M. *May-July*	**Not Present.** Wet meadows and marshes are not present in the Study Area.
Ceanothus confusus Rincon Ridge ceanothus	FSC, List 1B	Closed-cone coniferous forest, chaparral, cismontane woodland. Known from volcanic or serpentine soils, dry shrubby slopes 75-1065M. *Feb.-April*	**Not Present.** Woodland habitat with volcanic or serpentine soils are not present.

SPECIES	STATUS*	HABITAT *Blooming Period for Plants*	POTENTIAL FOR OCCURRENCE
Ceanothus divergens Calistoga ceanothus	FSC, List 1B	Chaparral, cismontane woodland. Endemic to Lake, Napa, and Sonoma Counties. Rocky, serpentine or volcanic sites. 165-950M. *Feb.-March*	**Not Present.** The site is below the typical elevation of this species.
Ceanothus foliosus var. vineatus Vine Hill ceanothus	FSC, List 1B	Chaparral. Endemic to Sonoma and Mendocino Counties; extinct in Mendocino County. Sandy, acidic soil in chaparral. 45-85M. *March-May*	**Not Present.** The site is below the typical elevation of this species.
Ceanothus masonii Mason's ceanothus	FSC, List 1B, SR	Chaparral. Endemic to Marin County. Serpentine ridges or slpes in chaparral or transition zone. 180-460M. *March-April.*	**Not Present.** The site is below the typical elevation of this species.
Ceanothus purpureus holly-leaved ceanothus	FSC, List 1B	Chaparral. Endemic to Napa and Solano Counties. Rocky, volcanic slopes. 120-640M. *February-June*	**Not Present.** The site is below the typical elevation of this species.
Ceanothus sonomensis Sonoma ceanothus	FSC, List 1B	Chaparral. Endemic to Napa and Sonoma Counties. Sandy, serpentine or volcanic soils. 210-800M. *Feb.-April.*	**Not Present.** The site is below the typical elevation of this species.
Chorizanthe valida Sonoma spineflower	FE, SE, List 1B	Coastal prairies. Known only from Marin and Sonoma Counties; extinct in Sonoma County. Sandy soil. 10-50M. *June-August*	**Not Present.** Extinct in Sonoma County.
Cirsium andrewsii Franciscan thistle	List 1B	Broadleafed upland forest, coastal bluff scrub, coastal prairie, coastal scrub/mesic, sometimes serpentinite. 0-135M. *March-July*	**Low Potential.** Forested habitats and coastal habitats are not present.

SPECIES	STATUS*	HABITAT *Blooming Period for Plants*	POTENTIAL FOR OCCURRENCE
Clarkia imbricata Vine Hill clarkia	FE, SE, List 1B	Chaparral, valley and foothill grassland. Endemic to Sonoma County; only two occurrences known and one is a transplant. Acidic, sandy soil. 50-75M. *June-August*	**Not Present.** Limited distribution; site is below the typical elevation of this species.
Delphinium bakeri Baker's larkspur	FE, List 1B	Coastal scrub, grasslands. Historically from Sonoma County; now only known from a few sites in Marin County. Only site occurs on NW facing slope, on decomposed shale. Hist. known from grassy areas along fencelines as well. 90-205M. *March-May*	**Not Present.** The site is below the typical elevation of this species.
Delphinium luteum yellow larkspur	FE,SR, List 1B	Chaparral, coastal prairie, coastal scrub. Endemic to Sonoma County; known from several locations in Sonoma County. North-facing rocky slopes. 0-100M. *March-May*	**Not Present.** Typical habitat characteristics are not present in the Study Area.
Downingia pusilla dwarf downingia	List 2	Valley and foothill grassland (mesic sites), vernal pools. Vernal pool and lake margins with a variety of associates in several types of vernal pools. 1-485M. *March-May*	**Low Potential.** Vernal pool habitat is not present in Study Area.
Erodium macrophyllum round-leaved filaree	List 2	Cismontane woodland, valley and foothill grassland. Clay soils. 15-1200M. *March-May.*	**Low Potential.** Woodland habitat and clay soils are not present. Non-native annual grassland provides poor habitat.
Fritillaria liliacea fragrant fritillary	FSC, List 1B	Coastal scrub, valley and foothill grassland, coastal prairies. Often on serpentine; various soils reported though usually clay, in grassland. 3-410M. *Feb.-April.*	**Low Potential.** Serpentine and clay soils are not present. Coastal plant communities not present. Non-native annual grassland provides poor habitat.

SPECIES	STATUS*	HABITAT *Blooming Period for Plants*	POTENTIAL FOR OCCURRENCE
Gilia capitata ssp. tomentosa woolly-headed gilia	List 1B	Coastal bluff scrub (rocky, outcrops). 15-155M. *May-July*	**Not Present.** Suitable habitat is not present in the Study Area.
Hesperolinon congestum Marin western flax	FT, ST, List 1B	Chaparral, valley and foothill grassland. Known only from Marin, S.F. and San Mateo Counties. In serpentine barrens and serpentine grassland and chaparral. 30-365M. *April-July*	**Not Present.** Not known from Sonoma County.
Horkelia tenuiloba thin-lobed horkelia	FSC, List 1B	Coastal scrub, chaparral. Sandy soils; mesic openings. 45-5000M. *May-July*	**Not Present.** The site is below the typical elevation of this species.
Lasthenia burkei Burke's goldfields	FE, SE, List 1B	Vernal pools, meadows and seeps. Critically endangered plant from Lake, Mendocino, and Sonoma Counties. Most often in vernal pools and swales. 15-580M. *April-June*	**Low Potential.** Vernal pools, meadows, and seeps are not present in the Study Area.
Layia septentrionalis Colusa layia	FSC, List 1B	Chaparral, cismontane woodland, valley and foothill grassland. Scattered colonies in fields and grassy slopes in sandy or serpentine soil. 145-1095M. *April-May*	**Not Present.** The site is below the typical elevation of this species.
Legenere limosa legenere	FSC, List 1B	Vernal pools. Many historical occurrences are extirpated. In beds of vernal pools. 1-880M. *April-June*	**Low Potential.** Vernal pool habitat is not present in the Study Area.
Lilium pardalinum ssp. pitkinense Pitkin Marsh lily	FE, SE, List 1B	Cismontane woodland, meadows and seeps, freshwater marsh. Only known from Sonoma County. Saturated, sandy soils w/grasses and shrubs. 35-65M. *April-June*	**Not Present.** Meadows, seeps, and marsh are not present in the Study Area.

SPECIES	STATUS*	HABITAT *Blooming Period for Plants*	POTENTIAL FOR OCCURRENCE
Limnanthes vinculans Sebastopol meadowfoam	FE, SE, List 1B	Mesic meadows, vernal pools, valley and foothill grassland. Known only from Napa and Sonoma Counties. Swales, wet meadows and marshy areas in valley oak savanna; on poorly drained soils of clays and sandy loam. 15-114M. *April-May*	**Low Potential.** Suitable seasonal wetlands are not present in the Study Area.
Linanthus jepsonii Jepson's linanthus	FSC, List 1B	Chaparral, cismontane woodland. Open to partially shaded grassy slopes. On volcanics or the periphery of serpentine substrates. 100-500M. *April-May*	**Not Present.** The site is below the typical elevation of this species.
Microseris paludosa marsh microseris	List 1B	Closed-cone coniferous forest, cismontane woodland , coastal scrub; foothill grassland, blooming period 5 - 300M. *April-June*	**Low Potential.** Woodlands and coastal scrub are not present; non-native annual grassland provides poor habitat.
Navarretia leucocephala ssp. bakeri Baker's navarretia	FSC, List 1B	Cismontane woodland, meadows and seeps, vernal pools, valley and foothill grassland, lower montane coniferous forest. Vernal pools and swales; adobe or alkaline soils. 5-950M. *May-July*	**Low Potential.** Vernal pool habitat is not present in the Study Area.
Navarretia leucocephala ssp. plieantha many-flowered navarretia	FE, SE, List 1B	Vernal pools, endemic to Lake and Sonoma Counties. Volcanic ash flow vernal pools. 30-950M. *May-June*	**Not Present.** The site is below the typical elevation of this species.
Penstemon newberryi var. sonomensis Sonoma beardtongue	List 1B	Chaparral. Crevices in rock outcrops and talus slopes. 180-1390M. *April-August*	**Not Present.** The site is below the typical elevation of this species.

SPECIES	STATUS*	HABITAT *Blooming Period for Plants*	POTENTIAL FOR OCCURRENCE
Pleuropogon hooverianus North Coast semaphore grass	FSC, ST, List 1B	Broadleafed upland forest, meadows and seeps, N. Coast coniferous forest. Wet, grassy, usually shady areas, sometimes freshwater marsh; associated with forest environments. 10-1150M. *May-August*	**Not Present.** Forested habitats are not present in the Study Area.
Polygonum marinense Marin knotweed	FSC, List 3	Marshes and swamps. Coastal salt marshes and bracksih marshes 0-10M. *April-October*	**Not Present.** Marshes and swamps are not present in the Study Area.
Potentilla hickmanii Hickman's cinquefoil	FE, SE, List 1B	Coastal bluff scrub, closed-cone coniferous forest, meadows and seeps, marshes and swamps. Freshwater marshes, seeps, and small streams in open or forested areas along the coast. 5-125M. *April-August*	**Low Potential.** Suitable wetland habitats are not present in the Study Area.
Rhynchospora californica California beaked-rush	FSC, List 1B	Bogs and fens, marshes and swamps, lower montane coniferous forest, meadows and seeps. Freshwater seeps and open marshy areas. 45-1000M. *May-July*	**Not Present.** The site is below the typical elevation of this species.
Rhynchospora capitellata brownish beaked-rush	List 2	Lower montane coniferous forest, meadows and seeps, marshes and swamps, upper montane coniferous forest. Mesic sites. 455-2000M. *July-August*	**Not Present.** The site is below the typical elevation of this species.
Rhynchospora globularis var. globularis round-headed beaked-rush	List 2	Marshes and swamps; known only from Sonoma County. Freshwater marsh. 45-60M. *July-August*	**Not Present.** The site is below the typical elevation of this species.
Sidalcea calycosa ssp. rhizomata Point Reyes checkerbloom	FSC, List 1B	Freshwater marshes and swamps near the coast. 5-75 M. *April-Sept.*	**Low Potential.**

SPECIES	STATUS*	HABITAT *Blooming Period for Plants*	POTENTIAL FOR OCCURRENCE
Sidalcea oregana ssp. valida Kenwood Marsh checkerbloom	FE, SE, List 1B	Edges of freshwater marshes and swamps. Endemic to Sonoma County. 115-150M. *June-Sept.*	**Not Present.** The site is below the typical elevation of this species.
Trifolium amoenum showy Indian clover	FE, List 1B	Valley and foothill grassland, coastal bluff scrub. Sometimes on serpentine soil, open sunny sites, swales. Most recently sited on roadside and eroding cliff face. 5-560M. *April-June*	**Low Potential.** Coastal bluffs not present; serpentine soils not present; non-native annual grassland provides poor habitat.
Trifolium depauperatum var. hydrophilum saline clover	FSC, List 1B	Marshes and swamps, valley and foothill grassland, vernal pools. Mesic, alkaline sites. 0-300M. *April-June*	**Low Potential.** Alkaline habitats not present.
Viburnum ellipticum oval-leaved viburnum	List 2	Chaparral, cismontane woodland, lower montane coniferous forest. 215-1400M. *May-June*	**Not Present.** The site is below the typical elevation of this species.

SPECIES	STATUS*	HABITAT *Blooming Period for Plants*	POTENTIAL FOR OCCURRENCE

***Status codes used above are:**

FE - Federal Endangered
FT - Federal Threatened
FC - Federal Candidate
FPD - Federal Proposed Delisted
FPT - Federal Proposed Threatened
FSC - United States Fish and Wildlife Service Federal Species of Concern
NMFS - Species under the Jurisdiction of the National Marine Fisheries Service
SE - State Endangered, CFP - CDFG Fully Protected Animal
CSC - CDFG Species of Special Concern, CSC (Draft) - 4 April 2001 Draft
CDFG Species of Special Concern
CFP - California Fully Protected Species
SLC - Species of Local Concern
None - No status given but rookery sites are monitored by CDFG
List 1A - CNPS 1A List plants are presumed extinct in California
List 1B - CNPS 1B List, Endangered, Threatened, or Rare in California
List 2- CNPS List 2 Plants are rare, threatened, or endangered in California, but more common elsewhere

Appendix 6B

Habitat Mitigation and Monitoring Plan, Sid Commons and Petaluma River Terrace Project

WRA, June 2016

Habitat Mitigation Monitoring Plan

SID COMMONS AND PETALUMA RIVER TERRACE PROJECT
PETALUMA, SONOMA COUNTY, CALIFORNIA

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WRA Project No. 10036

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1.0 INTRODUCTION

This Habitat Mitigation Monitoring Plan (HMMP) has been prepared in support of completing a combined habitat replacement and mitigation plan for impacts that will be caused to riparian habitat by a river terracing project intended to remediate flooding along the Petaluma River and to seasonal wetlands by the Sid Commons residential development in Petaluma, CA (Figure 1). This plan is needed for meeting environmental review requirements for the City of Petaluma under CEQA and for completing regulatory permit applications for the United States Army Corps of Engineers (Corps) Section 404 Clean Water Act, Regional Water Quality Control Board (RWQCB) Section 401 Water Quality Certification, and California of Department Fish and Wildlife (CDFW) Code Section 1602 Notification of Streambed Alteration Agreement (SAA).

The Project Area is within the watershed of the Petaluma River (HUC 180500020801). The Petaluma River is a named blue-line stream on the Cotati USGS 7.5-minute quadrangle (USGS 1980) and has perennial flow; it flows southerly to San Pablo Bay approximately 17 miles downstream. One storm water detention basin is present in the Project Area that collects storm runoff from adjacent areas to the west and south. This basin has controlled outflow through a standpipe and accumulated sediment is occasionally removed as a maintenance activity.

The primary objectives of this HMMP are to describe the habitat replacement and mitigation creation activities designed to benefit the existing habitats to satisfy on-site mitigation for proposed project impacts. The HMMP therefore addresses the estimated impacts of the proposed projects, the proposed replacement and mitigation creation goals and activities, habitat replacement and mitigation creation implementation and planting plans, and maintenance and monitoring of the replaced and created habitats. In addition, the project was sensitive to preserving existing habitat along the Petaluma River that was determined to have significantly higher value than some habitat areas because the vegetation consisted of established, healthy, and well positioned native riparian species and existing seasonal wetlands.

On-site habitat replacement and creation will result in a net increase in the amount of potentially jurisdictional habitat than what is currently present; therefore no additional off-site mitigation is proposed. Additional temporary impacts may occur to upland habitat and other non-sensitive habitat features due to construction and re-contouring of the western bank of the Petaluma River along the Sid Commons reach.

The HMMP has been designed with the following objectives:

- To increase the acreage of aquatic habitat within the Project Area
- Increase the functions and values of the existing habitat
- To improve flood capacity of the Petaluma River
- Preserve existing native riparian “high value” habitat where practicable

1.1 Project Purposes and Description

The Project has two purposes: one is the river terrace project to improve flood attenuation and conveyance along the river that will also improve habitat values, preserve existing high value riparian and wetland habitat[1], and create additional habitat that provides ecological function and value along the Petaluma River. The other purpose is development of the Sid Commons residential neighborhood that will provide much needed housing for residents of Petaluma and Sonoma County (Figure 2).

For the river terrace project, the Applicant will re-contour the western bank of the Petaluma River channel to improve flood water attenuation and conveyance during floods, and this work is in conjunction with the overall Petaluma River Flood Control Project initiated by the Corps of Engineers. Riparian habitat will be unavoidably impacted during this process, however areas of non-native stands of plants, such as Himalayan blackberry were targeted for being impacted while existing high value riparian native willow habitat was avoided as much as practicable and will be preserved. Disturbed and re-contoured areas will be replanted with native riparian and wetland species of plants. The Sid Commons Residential Development Project will construct apartment buildings west of the river in an area that is mostly uplands and was disturbed in the past because of soil removal and continues to be disturbed annually for fire control. Approximately 0.34 acre of low quality seasonal wetlands were determined by the Corps of Engineers to be present in the Sid Commons development area that will be unavoidably filled, however another 0.28 acre of higher quality seasonal wetlands will be avoided and preserved. Mitigation for the impacted seasonal wetlands will be provided on-site. The Project for both the terracing and residential development is to begin in the summer of 2017 with work expected to occur only during the dry season. Specific Project tasks related to this HMMP will include the following:

- Grading/re-contouring of western bank of the Petaluma River through Sid Commons reach
- Removal of invasive monocultures of Himalayan blackberry (*Rubus armeniacus*) patches
- Creation of floodplain terraces
- Creation and restoration of riparian habitat to provide at a minimum the same beneficial functions and values
- Creation of perennial and seasonal wetlands habitat within the terrace and Sid Commons project areas as mitigation for impacted wetlands that will augment habitat value and increase habitat complexity along the river,
- Revegetating the graded and re-contoured terrace area with native riparian vegetation.

The Project has been designed to avoid, preserve, or minimize impacts to sensitive habitats and species.

1.2 Responsible Parties

The Applicant is solely responsible for developing, implementing, maintaining and monitoring the proposed habitat restoration and creation activities associated with the Project. This includes providing the land, property management, compliance with local, state, and federal

[1] High value riparian habitat was determined by presence of native woody species of plants, such as willows, that were well established and in good health and structure. High value seasonal wetlands habitat was based on wetlands with long inundation or saturation duration, occupied by native wetland plant species or non-native species that provide wildlife value, relatively undisturbed, and in proximity to other high value natural habitat.

laws and regulations, implementation of habitat improvements, and monitoring and reporting on the success of the mitigation.

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2.0 EXISTING CONDITIONS

The Project will involve work in two areas, the Petaluma river terrace construction which involves the area immediately adjacent to the river and the Sid Commons residential development which will affect areas west of the river consisting of mostly uplands but with some seasonal wetlands. Therefore, habitats considered sensitive and jurisdictional and uplands considered non-sensitive will be affected.

No special-status plant species are known to be present on the Project area and none are likely to be present based on past disturbances and the presence of extensive non-native weedy species. Special-status wildlife that are known to be present include steelhead (*Oncorhyncus mykiss*) and Sacramento splittail (*Pogonichthys macrolepidotus*) in the Petaluma River while a few others have a potential for presence, including California red-legged frog (*Rana draytonii*), western pond turtle (*Emys marmorata*), and others. It was beyond the scope of this HMMP to evaluate special-status plant and wildlife species and additional information may be required in order to complete regulatory permit applications at a future time.

2.1 Existing Conditions of Jurisdictional Areas

2.1.1 River Terrace

A routine protocol-level wetland delineation and biological resources assessment for the Project Area was conducted by WRA, Inc. (WRA) in 2013, and a wetlands delineation was approved by the Corps of Engineers the same year which is valid until 2018. The Project Area included a total of 1.26 acres of waters of the U.S. jurisdictional under Section 404 of the Clean Water Act (CWA) and regulated by the Corps, which includes 0.34 acre of seasonal wetland and 0.92 acre of non-wetland waters (Figure 3). These wetlands and non-wetland waters are also considered Waters of the State and regulated by the Regional Water Quality Control Board, San Francisco District (RWQCB) under CWA Section 401 and/or Porter-Cologne Act. In addition, a total of approximately 1.97 acres of riparian scrub habitat are present along the Petaluma River within the Study Area which are subject to the jurisdiction under Fish and Game Code 1602 and regulated by California Department of Fish and Wildlife (CDFW).

Three general vegetation types are present in riparian habitat along the river (Figure 4). Red willow (*Salix laevigata*) riparian thickets are situated on and above the banks of the Petaluma River and may contain other riparian species including sandbar willow (*S. exigua*), arroyo willow (*S. lasiolepis*), box elder (*Acer negundo*), and blue elderberry (*Sambucus nigra* ssp. *caerulea*). In areas adjacent to willow riparian thicket, non-native Himalayan blackberry (*Rubus armeniacus*) is dominant and forms homogenous stands along the river. In more permanent water of the river there are occasional patches of tules that include hardstem bulrush (*Schoenoplectus acutus*), California bulrush (*Schoenoplectus californicus*), and cattail (*Typha* sp.).

The functions and values of the riparian habitat along the river range from low to high. Under existing conditions the flood attenuation during flooding conditions is low for habitats (and their topography) along the river, thus the purpose of the terracing project. The dense vegetation along the river does rate high for river bank protection and preventing erosion, and the dense vegetation also acts to improve water quality by reducing toxicants and excess nutrients in the water. As habitat value, the patches of non-native Himalayan blackberry rate lower because of the homogeneous stands that it creates and becomes nearly impenetrable to most species of wildlife. The willows and other native vegetation along the river, some of which was targeted to be avoided and preserved, have a high rating for wildlife habitat value. The dense vegetation also contributes a high amount of primary production with gradual decomposition that provides a steady food chain source in the Project area and downstream.

2.1.2 Sid Commons

Seasonal wetlands are present in the Sid Commons uplands area, exist as depressions and swales covering 0.62 acre, and generally hold low volumes of storm water that contributes, but do not contribute substantially, to floodflow attenuation. The vegetation in these seasonal wetlands is dominated by non-native FAC to FACW grasses and herbs, with native species typically not represented as dominant species. The most frequently observed species included Mediterranean barley (*Hordeum marinum*), Italian rye grass (*Festuca perenne*), and fiddle dock (*Rumex pulcher*, FAC).

The functions and values of the seasonal wetlands rate low to moderate. There is some floodflow storage in one of the deeper seasonal wetlands, but for the most part the seasonal wetlands are shallow and do not contribute substantially to floodflow attenuation, giving a low rating. These wetlands are also relatively isolated from the river and above the 100-year flood elevation and do not provide the opportunity for contributing to river water quality improvement through toxicant and/or excess nutrient removal. The seasonal wetlands are dry most of the year and subject to discing as part of the non-native grassland fire control which reduces their value to wildlife, both aquatic and terrestrial species.

2.2 Existing Conditions of Mitigation Sites

2.2.1 River Terrace

Replacement of riparian and wetland habitat and created mitigation for habitat impacts will be along the Petaluma River from OHW and farther into existing uplands areas west of the river within the footprint of the terrace grading plan. As described in jurisdictional areas section above, wide areas of existing non-native Himalayan blackberry along the river will be removed for terrace grading and also some native vegetation which cannot be avoided. Terrace grading will also extend into non-native annual grassland vegetation community in the uplands west of the existing riparian habitat that will impact one small (0.01 acre) seasonal wetland. However, some higher value native willow thicket along the river will be avoided and preserved and an existing high value seasonal wetland (0.28 acre) will also be avoided and preserved.

2.2.2 Sid Commons

In the portion of the Sid Commons area where 0.21 acre of seasonal wetlands will be created for mitigation purposes, the existing condition is non-native grassland. Within the non-native annual grasslands there are scattered oak trees, including Coast live oak (*Quercus agrifolia*) and valley oak (*Quercus lobata*), and a few depressions where rain water collects and seasonal wetlands have formed. Non-native grassland plants include soft chess (*Bromus hordeaceus*), ripgut brome (*B. diandrus*), Italian rye grass (*Festuca perennis*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*, FAC), and mouse barley (*H. murinum*). The area was subjected to soil excavation and removal in the past and continues to be disturbed annually by discing for fire control. Existing oak trees in this area will be avoided and will remain.

3.0 PROPOSED PROJECT ACTIVITIES

The goals of the wetland and riparian replacement and creation include:

- Replacement of existing on-site wetlands and riparian habitat;
- Creation of additional high quality wetlands and riparian habitat;
- Increase the overall functions and values of the wetlands and riparian habitat present in the Project Area; and
- Improve flood capacity of reach of Petaluma River along the Sid Commons project.

3.1 Description of Proposed Activities

3.1.1 River Terrace

The Applicant proposes to re-contour the upland area along the western bank of the Petaluma River to improve flood capacity and flow efficiency, and create a more diverse assemblage of riparian and wetland (perennial and seasonal) habitats. The proposed Project design will replace and create new seasonal and perennial wetlands and riparian habitat while further enhancing the existing riparian and wetlands habitats within the Project Area that will be preserved (Figure 5). The Project is expected to be under construction in 2017 with work only occurring during the dry season.

Construction activities will entail removal of existing Himalayan blackberry and tree removal via tree cutting, grinding, and grubbing followed by bank grading and re-contouring to achieve a floodway and floodplain terrace adequate to attenuate flood flows along the Petaluma River as well as replace and create seasonal and perennial wetlands and riparian habitat. Following grading activities, native plantings will be installed consistent with the planting plan included on Sheet L-1 in the Engineering Design Drawings and attached to this HMMP (Figure 5).

All construction activities will avoid disturbance to river waters habitat within the terracing Project Area because construction activities will be confined to occur above the ordinary high water mark (OHWM) of the Petaluma River. Temporary equipment staging areas will be established in upland areas during construction phases of the project.

3.1.2 Sid Commons

The seasonal wetlands mitigation area on the northern portion of the Sid Commons development will be graded/excavated to form two separate seasonal wetlands. After grading, both will be planted and seeded with native wetland plants suitable to seasonal wetlands habitat. Grading and planting plans are provided on Sheet L-1 in the Engineering Design Drawings and attached to this HMMP. Temporary equipment staging areas will be established in upland areas during construction phases of the project.

3.2 Project Avoidance and Impacts to Jurisdictional Features

Project avoidance and impacts to jurisdictional features are summarized below in Table 1. The Project terracing will not result in permanent or temporary loss of waters below OHW and infrequent patches of tules in the river. The 0.34 acre of existing seasonal wetlands that will be impacted in the Sid Commons Project is unavoidable, however, 0.28 acre of seasonal wetland (45% of existing) closer to the river will be avoided and preserved. The terrace project will avoid 0.30 acre of high quality native riparian vegetation and will unavoidably impact 1.62 acres of riparian habitat during grading, most of which is considered lower quality non-native Himalayan blackberry vegetation. Areas occupied by native willows that were considered high value were avoided where it was practicable to do so without severely diminishing the hydraulic floodflow calculations, the main purpose of the terracing project.

Table 1. Project Avoidance and Impacts to Jurisdictional Features

Feature (Existing Acres/Feet)	Avoided Jurisdictional Areas (acres/feet)	Section 404/401 Jurisdictional Areas		Section 1600 Jurisdictional Areas	
		Temporary Impacts (acres)	Permanent Impacts (acres)	Temporary Impacts (acres/ linear feet)	Permanent Impacts (acres/ linear feet)
Non-wetland waters (below OHWM) (0.92 ac)	0.92	0	0	0	0
Seasonal wetland (0.62 ac)	0.28	0	0.34	-	-
Riparian (1.92 ac/1,485 ft.)	0.30/169	-	-	0	1.62/1,316
TOTAL	1.50/169	0	0.34	0	1.62/1,316

Tree removal in uplands areas will entail the removal of some trees from the Project Area as indicated in the Project arborist report (Duckles 2016) including coast live oak (*Quercus agrifolia*), valley oak (*Quercus agrifolia*), and coast redwood (*Sequoia sempervirens*) which will be replaced according to the Petaluma City Tree Ordinance. However, to augment existing trees that will be avoided and preserved, replacement of removed trees will include installing new trees and shrubs in positions in the ecotone between the Sid Commons development uplands and the riparian and wetlands mitigation habitat areas that will create a transition between the two habitat areas. This transition is shown on Sheet L-1 of the Engineering Design Drawings and the attached HMMP.

The approximately 1.62 acres of riparian habitat that will be impacted will be replaced following grading activities with the replacement area covering 2.08 acres planted with riparian trees and shrubs and an additional area along the river planted with wetland plants for a total of 2.79 acres, an increase of 1.17 acres (1.7:1 ratio) of newly created riparian and wetlands habitat. With the 0.30 acre of avoided high quality riparian habitat the total result of on-site riparian habitat will be 3.09 acres. Willows including sandbar willow, red willow, and arroyo willow within the existing riparian zone will be sourced for species harvesting to revegetate the newly established riparian areas. Riparian plants installed following grading activities along the existing riparian corridor and along the new terraced floodplain will be more than adequate to restore the average percent cover of the existing riparian canopy.

In addition to planting of riparian vegetation, wetland plants will be planted in lower elevation zones along the river as indicated on the planting plan drawing. Because there could be residual salt in subsurface soils remaining from when this reach of the Petaluma River was more tidal than it is today[2], some of the plants in the planting palette have been selected because they are salt tolerant (halophytes). Soil sampling and testing may confirm presence or absence of saline soils, and the plant palette may need to be adjusted accordingly based on test results.

4.0 HABITAT REPLACEMENT AND MITIGATION IMPLEMENTATION PLAN

Wetland and riparian replacement and mitigation creation construction is tentatively scheduled to begin in summer 2017, concurrent with expected impacts to existing habitats, and be completed by fall. Planting of the habitat replacement and mitigation creation areas will occur in the late fall to take advantage of soil moistening by fall and winter rains and to increase the probability for successful plant establishment. If planting occurs prior to the fall rains and the planting areas are not naturally moistened, installed plants will be irrigated to increase probability of proper establishment. A person qualified in wetland restoration will monitor construction and planting to ensure specifications in the final detailed construction drawings are met. Created aquatic resources are summarized in Table 2 below.

Riparian habitat impacted by terrace grading will be replaced and expanded as indicated in Table 2. Riparian plantings are expected to not only replace the ecological functions and values that the removed riparian trees provided to the Petaluma River, but increase the habitat in area and functional value. The 1.62 acres of impacted riparian habitat will be restored and additional riparian habitat totaling 0.46 acres will be created along the channel below the expanded top of bank (TOB). The new riparian habitat will be of higher quality as the tree composition will be similar to existing tree riparian, but be expanded in area and will no longer contain invasive monocultures of non-native invasive species, such as Himalayan blackberry. Additionally, approximately 0.71 acre of wetlands will be created along the river as a result of terrace grading activities. When grading and planting is completed, the amount of existing riparian and wetlands habitat will be increased by 1.17 acres in total area as compared to existing, and much of the lower quality habitat will be replaced by higher quality habitat planted with native trees, shrubs, and wetlands plants.

Seasonal wetland creation within the Project Area will occur in the graded terrace floodway area as mitigation for impacts to seasonal wetlands caused by the Sid Commons Project. Given that created wetlands have been designed to ensure appropriate wetland hydrology and native wetland plant establishment, the creation of approximately 0.54 acre of seasonal wetland habitat will replace and/or exceed the functions and values of the approximately 0.34 acre of

[2] Previous (prior to 2004) Army Corps of Engineers flood control project downstream of the Sid Commons Project installed a weir across the river which precludes most tidal action in the river upstream of the weir.

seasonal wetland impacted within the Sid Commons Project Area through increased area and volume to better attenuate floodflows, increased coverage by native vegetation, protection from disturbances that will increase wildlife habitat value, and closer proximity to the Petaluma River for increased habitat complexity and sustainability as well as improvement of water quality.

Table 2. Replaced, Created, Preserved Habitat Features within the Project Area

Feature	**Existing Jurisdictional Areas (acres)**	**Section 404/401 Jurisdictional Areas (acres)**		**Section 1600 Jurisdictional Areas (acres)**			**Total Jurisdictional Area [net gain] (acres)**
		Preserved	**Created**	**Preserved**	**Restored**	**Created**	
Non-wetland water (below OHWM)	0.92	0.92	0.71	-	-	-	**1.63 [0.71]**
Seasonal wetland	0.62	0.28	0.54	-	-	-	**0.82 [+0.20]**
Riparian	1.92	-	-	0.30	1.62	0.46	**2.38 [+0.46]**
TOTAL	3.46	1.20	1.25	1.22	1.62	0.46	**4.83 [+1.37]**

4.1 Wetland Mitigation Soils

All soil used for Project activity will be native soil excavated from the Project Area or quarried material, and no soil will be imported. Because the reach of the Petaluma River along the Sid Commons Project was once more tidal than it is now and because there are still plants in the area that are known to be halophytes (e.g., salt tolerant gum plant), there may still be residual salt in subsurface soils despite installation of a weir by the Corps of Engineers across the river downstream as a flood control measure that limits tidal action upstream of the weir. Subsurface soils will be tested for salinity during excavation in order to determine if saline soils are present or not. The planting palette for the project presented on Sheet L-1 of the planting plans include salt tolerant plants because saline soils are possible. However, if soil testing determines saline soils are not present the plant palette may need to be revised to a more freshwater plant list.

4.2 Grading Plan

The wetland creation will be implemented by grading areas to the elevations appropriate for wetland and riparian habitat formation. The preliminary plan for habitat replacement and creation is shown Sheet L-1 of the Engineering Design Drawings and attached to this HMMP. Equipment used will include standard construction equipment such as a long arm excavator and a front-end loader. Erosion control measures, such as silt fencing, straw wattles, and hay bales, will be implemented that will conform to BMPs as required by the RWQCB.

Soil will be excavated from the upland areas east of the Petaluma River and either used on the site or hauled off-site to an approved location.

4.3 Created Wetland Hydrology

The created wetland habitat will be graded to the elevations appropriate for wetland formation and sustainability within the Project Area. The proposed seasonal wetland creation areas will be excavated to a depth sufficient to inundate for duration that will support a seasonal wetland community from ground water, direct precipitation, and/or treated clean storm water from the Sid Commons development. Flow from Petaluma River during peak flows will also possibly provide additional hydrologic contribution to the habitat areas.

4.4 Planting Plan

Replacement and creation activities will involve the planting of native vegetation known to locally establish successfully within wetlands and along non-wetland waters. Plant materials include seeds and container plants of native grasses, forbs, shrubs, and trees. Additionally, riparian plantings will be salvaged from removed vegetation and replanted or may be sourced for live staking (such as willows (*Salix* spp.) in the riparian areas after grading is completed. This will help to control erosion of any newly disturbed soils on the upland side of the wetlands and reduce the invasion of non-native vegetation onto the site.

Plants expected to grow in the created wetlands and riparian habitat after restoration will consist of native and non-native vegetation characteristic of the area, with native seasonal wetland plant species similar to those found in similar habitats in the region. Suitable habitat for these species is expected to be present within the created wetlands and riparian habitat following grading to an elevation appropriate for the site. Plants expected to grow in upland areas after restoration will consist of native and non-native vegetation, with native upland species planted similar to those found in existing upland habitat in the vicinity.

Details on Sheet L1 give planting specifics including species, seed rate, size, and installation spacing. The plant material type, size, and spacing is planned to encourage quick establishment of native wetland species and discourage colonization by invasive species, exclusive of non-native annual grasses and forbs found currently in the Project vicinity that are ubiquitous to the naturalized California landscape. Species are expected to spread vegetatively and by seed once planted. The plant palette provided in this plan are preliminary and may be refined as Project details are finalized and soil testing confirms soil conditions, especially salinity. Additionally, species and planting quantities may be adjusted as Project details are finalized but will be sufficient to ensure the successful establishment of each habitat.

The overarching goal of planting is to establish coverage of native vegetation and for riparian areas to re-establish to the existing percent coverage of riparian canopy. Some planted species listed may not establish and/or may be outcompeted by other native species. Replacement plant materials, if needed, would include those species that have been most successful in establishment. Habitat-specific planting requirements are discussed in further detail below:

The restored and created seasonal wetland areas will be irrigated on an as-needed basis. The seasonal wetlands will be excavated to a depth to provide adequate inundation for seasonal wetland establishment during normal rainfall years and will be augmented by treated and clean storm water from the Sid Commons development. However, seasonal wetland and upland plantings may require irrigation during establishment if seasonal precipitation and runoff is not initially adequate. If irrigated, seasonal and upland plantings will be irrigated until they become established and are self-sufficient. Irrigation will be provided by an automated irrigation system, use of DRiWater ®, or by hand as needed through a 5-year establishment period. Riparian plantings will be planted at elevations adequate to provide access to groundwater; however, some plantings may require irrigation for the first few years following installation until sufficient root development occurs.

4.5 Maintenance Specifications

Maintenance activities in the creation areas during the five-year monitoring period following planting will include the following tasks as needed: (1) erosion control and repair should an extreme storm event occur; (2) inspection for signs of vandalism or other disturbance of the creation and restoration area by people; (3) inspections for colonization of problematic non-native plants and action to control their spread. Removal of non-native species in the creation and restoration area will be conducted as needed and recommended in the annual Monitoring Report (see Section 7.2 below). Removal of non-native species may be conducted by a qualified wetland plant biologist or by Applicant maintenance personnel as directed by a qualified wetland plant biologist. However, upland and wetland habitats within the Project Area currently support predominantly non-native grasses and forbs with occasional native species. These non-native annual grasses have become ubiquitous throughout California such that they are considered to be part of the naturalized landscape. Therefore, plants considered by the California Invasive Plant Council (Cal-IPC) Inventory List (2016) as “Moderate,” including non-native annual grasses, are expected to be present following plant installation due to their prolific nature in adjacent lands and would be impractical to eradicate completely.

4.6 As-Built Conditions

A brief letter report outlining the as-built conditions of the creation and restoration area will be prepared and submitted to the RWQCB, Corps, CDFW, and other interested agencies within 45 days of creation and restoration planting plan implementation. The report shall document construction activities, report final impact acreages, provide final drawings of construction for the created and restored areas, explain any substantive changes made from the plan, and include before and after photographs.

5.0 SUCCESS CRITERIA AND MONITORING

5.1 Success Criteria

Monitoring of the habitat replacement and mitigation areas will occur annually over a period of five years beginning after one full rainy season following construction and planting. Data will be collected each year in order to assess the successful creation of wetland hydrology and establishment of native vegetation.

Methods for monitoring the performance of the Project Area to evaluate success criteria are described below and summarized in Table 3. Monitoring will be performed by a qualified wetland biologist with experience in created and restored wetland monitoring, with the exception of hydrology monitoring, which may be conducted by Applicant personnel as discussed below.

Table 3. Summary of Monitoring and Success Criteria

Success Criteria	Methods	Year 1	Year 3	Year 5
Wetlands Hydrology – Duration of Surface Saturation/Inundation	Visual assessment; photo-monitoring	14 consecutive days of surface saturation or inundation	14 consecutive days of surface saturation or inundation	14 consecutive days of surface saturation or inundation
Wetlands Soils – Hydric Soil Indicators	Soil sampling for hydric soil indicators; hydrology and vegetation monitoring	Meets hydrology and vegetation criteria	Meets hydrology and vegetation criteria	Meets hydrology and vegetation criteria
Wetlands Vegetation – Dominance of Hydrophytes	Random quadrat sampling; Site-wide photo-monitoring	-	Wetland vegetation will meet the Corps 50/20 dominance rule	Wetland vegetation will meet the Corps 50/20 dominance rule
Wetlands Vegetation – Native and Naturalized Plant Components	Random quadrat sampling; Site-wide photo-monitoring	Native and naturalized target plant species in the herb strata ≥ 25% average absolute cover	Native and naturalized target plant species in the herb strata ≥ 50% average absolute cover	Native and naturalized target plant species in the herb strata ≥ 50% average absolute cover
Riparian Vegetation-Survival of Installed Plantings	Visual assessment of health and survival	Recommended ≥ 85% survival target	Recommended ≥ 80% survival target	Survivorship of tree, shrub, and herb strata container plants ≥ 75%
Exotic Vegetation – Control of Exotics	Random quadrat sampling; Site-wide photo-monitoring	≤10% absolute cover of non-graminoids considered highly invasive per Cal-IPC or equivalent	≤10% absolute cover of non-graminoids considered highly invasive per Cal-IPC or equivalent	≤10% absolute cover of non-graminoids considered highly invasive per Cal-IPC or equivalent

The monitoring will measure and evaluate changes in functional condition as a result of specific habitat replacement and creation interventions. If the project results in an improved functional condition at the end of the monitoring period, then it will be concluded that the project was effective and successful. The criteria that will be used to determine the success of the HMMP are described in detail below.

Year 1

- The created wetlands will be inundated and/or saturated for 14 consecutive days during the rainy season.
- Vegetation percent cover in the created seasonal wetland and riparian areas should average at least 25 percent absolute cover of the appropriate target native plant species.
- Survival of trees, shrubs, and herb strata container plants will be 85 percent of plantings. This is not a required agency standard but is intended to be a guideline to help ensure that the Project meets final success criteria.

- Invasive weeds, exclusive of non-native annual forbs that are ubiquitous to the area, found on the Cal-IPC Inventory List (2015) with rating of High will not exceed ten percent cover within the created wetland sites. Invasive plant species with a Moderate rating are expected to be present due to their prolific nature in adjacent lands.

Year 3

- The created wetlands will be inundated and/or saturated for 14 consecutive days during the rainy season.
- Vegetation percent cover in the created seasonal wetland and riparian areas should average at least 50 percent absolute cover of the appropriate target native plant species.
- Survival of trees, shrubs, and herb strata container plants will be 80 percent of the original number of plantings. This is not a required agency standard but is intended to be a guideline to help ensure that the Project meets final success criteria.
- Within created wetlands, vegetation will meet the Corps 50/20 rule for hydrophytic vegetation.
- Invasive weeds, exclusive of non-native annual forbs that are ubiquitous to the area, found on the Cal-IPC Inventory List (2015) with rating of High will not exceed ten percent cover within the created wetland sites. Invasive plant species with a Moderate rating are expected to be present due to their prolific nature in adjacent lands.

Year 5

- The created wetland will be inundated and/or saturated for 14 consecutive days during the rainy season.
- Vegetation percent cover in the seasonal wetland and riparian areas should average at least 50 percent absolute cover of the appropriate target native plant species.
- Survival of trees, shrubs, and herb strata container plants will be 75 percent of plantings.
- Within created wetlands, vegetation will meet the Corps 50/20 rule for hydrophytic vegetation.
- Invasive weeds, exclusive of non-native annual forbs that are ubiquitous to the area, found on the Cal-IPC Inventory List (2016) with rating of High will not exceed ten percent cover within the created wetland sites. Invasive plant species with a Moderate rating are expected to be present due to their prolific nature in adjacent lands.
- At the end of five years, vegetation cover will be examined to determine if it meets the Corps' wetland criteria of more than 50 percent of the dominant species being classified as either obligate (OBL), facultative wet (FACW), or facultative (FAC) according to the wetland status assigned by the U.S. Fish and Wildlife Service (Lichvar 2016).

Monitoring in Years 2 and 4 will consist of a site visit to inspect conditions and take annual photographs for reporting purposes, to ensure that the created and restored habitats are on trajectory to meet the performance criteria established. If necessary, appropriate recommendations will be identified for adaptive management practices.

5.2 Monitoring

5.2.1 Methods

Hydrology

Each year of the monitoring period, hydrology of the created wetlands and riparian habitat will be monitored approximately twice a month during the rainy season to ensure that the sites are functioning hydrologically. Based on methodologies outlined in the *1987 U.S. Army Corps of Engineers Wetland Delineation Manual: Arid West Region* (Corps 2008), the wetlands will be monitored to ensure that soils are either inundated (visual observation of ponding) or saturated within the root zone (12 inches from the soil surface). Observations of surface ponding and duration of inundation will be conducted on a semi-monthly basis during the winter and spring rainy season. Soils within the created wetland areas will be saturated for 14 consecutive days during the rainy season. Photographs will be taken as necessary to document hydrologic conditions within the created sites.

Vegetation

Vegetation monitoring involves two components: (1) making an estimate of overall plant establishment and cover and (2) surveying for the presence of invasive exotic herbaceous weeds.

The overall plant establishment within the created wetlands and riparian habitat will be estimated by determining percent plant cover. Transects will be established throughout the created and restored wetland site. Plant species percent cover will be measured using percent cover classes within a 0.5 square meter quadrat set distances along the transect. Sufficient transects will be established to obtain a statistically significant sampling size. These data will be tabulated and analyzed to assess whether or not vegetation coverage is meeting the performance criteria goals outlined in Section 5.1. Photographs will be taken at selected permanent photo-points during the vegetation monitoring visit each monitoring year for year-to-year comparison. Monitoring will be conducted at the end of the growing season for these wetland plant species, typically late spring (June) or summer (July-August).

Results of the vegetation sampling will be used to compare plant establishment with specific vegetative performance criteria outlined in Section 5.1. Specifically, the created wetlands should be dominated by native and naturalized seasonal wetland plant species. In addition, at the end of five years, vegetation cover will be examined in the created wetland site to determine if it meets the Corps' wetland criteria of greater than 50 percent of the dominant plant species being classified as OBL, FACW, or FAC according to the wetland status assigned by the U.S. Fish and Wildlife Service (Lichvar 2016). For installed trees and shrubs, plants will be counted and their condition and health evaluated (e.g., good, fair, poor, dead). Those with good and fair ratings will be considered to meet performance for that year.

Surveying for the presence of invasive exotic plant species within the habitat areas will occur annually during the vegetation monitoring visit. Weeds identified on the Cal-IPC list as “High” invasive will be controlled if these species are observed within these areas and at frequencies that exceed performance criteria. Methods of control will include hand removal, if feasible, however other more efficient methods, such as mechanized or approved chemical, may be used, if necessary.

Soils

Soil profiles in wetlands will be examined to confirm development of hydric soil conditions. This may be represented by redoximorphic features such as oxidized rhizospheres, gleying, or mottling. Any excessive sediment deposition or erosion occurring will also be noted, and remediation measures will be recommended if the problem is deemed severe.

5.2.2 Monitoring Schedule

Monitoring of the wetland restoration and creation will occur over a period of 5 years to document habitat development and determine if habitat performance criteria have been met. Monitoring will be conducted for seasonal wetlands and riparian areas in years 1, 2, 3, 4, and 5.

6.0 MAINTENANCE DURING MONITORING PERIOD

6.1 Maintenance Activities

6.1.1 Contingency Measures

If annual or final success criteria are not met, the Applicant will prepare an analysis of the cause(s) of failure to meet success criteria and, if determined necessary by the agencies and the Applicant, propose remedial action for approval. The Applicant will be responsible at that time for reasonably funding the contingency procedures necessary for completion of the restoration project.

6.1.2 Invasive Species Control

After construction, weed maintenance will focus on invasive species with a Cal-IPC rating of High. Weed removal activity will be conducted using methods specifically identified as effective for those target species.

Surveying for the presence of invasive exotic plant species will occur during the spring or summer monitoring visit. Removal by hand will occur if possible wherever these species are observed on the restoration site. Invasive non-native plant species monitoring will occur once per year concurrent with vegetation monitoring.

7.0 MONITORING REPORTS

7.1 As-Built Plan

A letter report outlining the as-built conditions of the post-construction Project Area will be prepared and submitted to the Corps and other interested agencies within 45 days of completion of creation and restoration planting plan implementation.

7.2 Annual Reports

Annual reports will be prepared that discuss monitoring methodology and results. Reports may be prepared by Applicant staff or consultants. Full annual reports will be provided for each monitoring year, which will be submitted to the Corps and other interested agencies by

December 31st of each monitoring year. If habitats within the Project Area demonstrate that they are successfully meeting established performance criteria early into the monitoring period, the Applicant will request early signoff from the agencies. A qualified biologist with experience in biological monitoring will supervise the report preparation. These reports will assess progress in meeting success criteria and identify any problems with flooding, sedimentation, vandalism, and/or other general causes of poor survival or wetland degradation. If necessary, recommendations or improvements will be made to ensure the success criteria will be met during the monitoring period.

7.3 Notification of Completion

Upon completion of five years of monitoring, a final report will be sent to the RWQCB, Corps, CDFW, and other interested agencies detailing the results of the final year of monitoring. If the created and restored area has met the success criteria outlined in Section 5.0 by the end of the five-year period, then the proposed action in the final report will be for no further action. If the habitat areas have not met the success criteria outlined in Section 5.0 by the end of the five-year period, then the final report may recommend additional corrective measures and/or extending the monitoring period. When the created and restored area has met the success criteria outlined in Section 5.0 or revised criteria agreed to by the regulatory agencies, the Applicant will submit a signed Notice of Completion to the RWQCB, Corps, CDFW, and other interested agencies to confirm successful completion of the habitat replacement and creation effort.

8.0 REFERENCES

[Cal-IPC] California Invasive Plant Council. 2016. California Invasive Plant Inventory Database. Online at: http://www.cal-ipc.org/paf/

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U.S. Geological Survey (USGS). 1954 (Photorevised 1980). Cotati, California. 7.5-minute quadrangle topographic map.

WRA, Inc. 2013. Delineation of Jurisdictional Areas for Sid Commons Project - Petaluma, Sonoma County, California. WRA, Inc, San Rafael, CA.

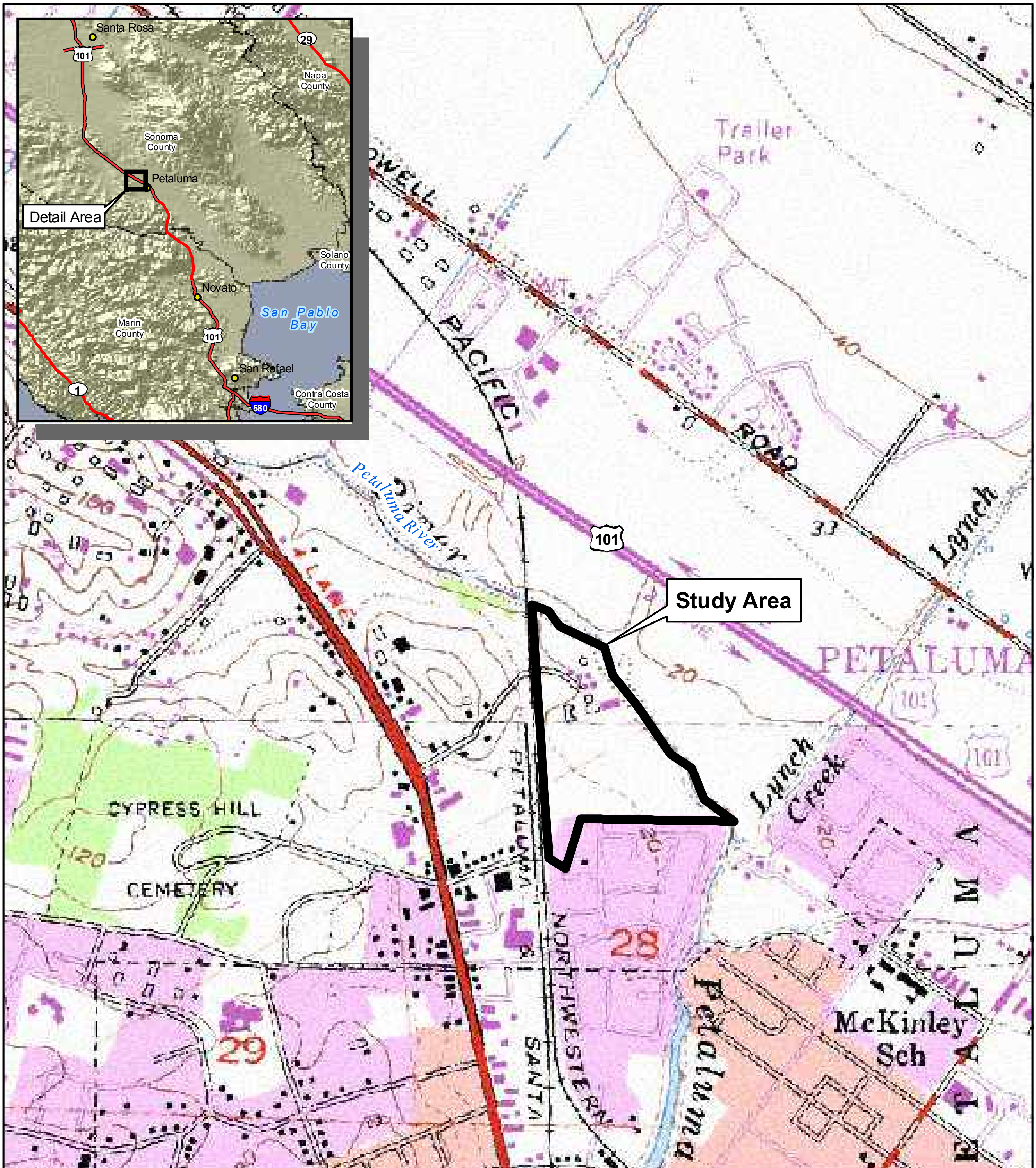

Figure 1. Study Area Location Map

Sid Commons - River Terrace Project
Petaluma, California

ENVIRONMENTAL CONSULTANTS

Date: March 2009
Image Source: NAIP, 2005
Map By: Derek Chan
Filepath: I:\ACAD2000\19002\GIS\ArcMap\Fig1_LocMap.mxd

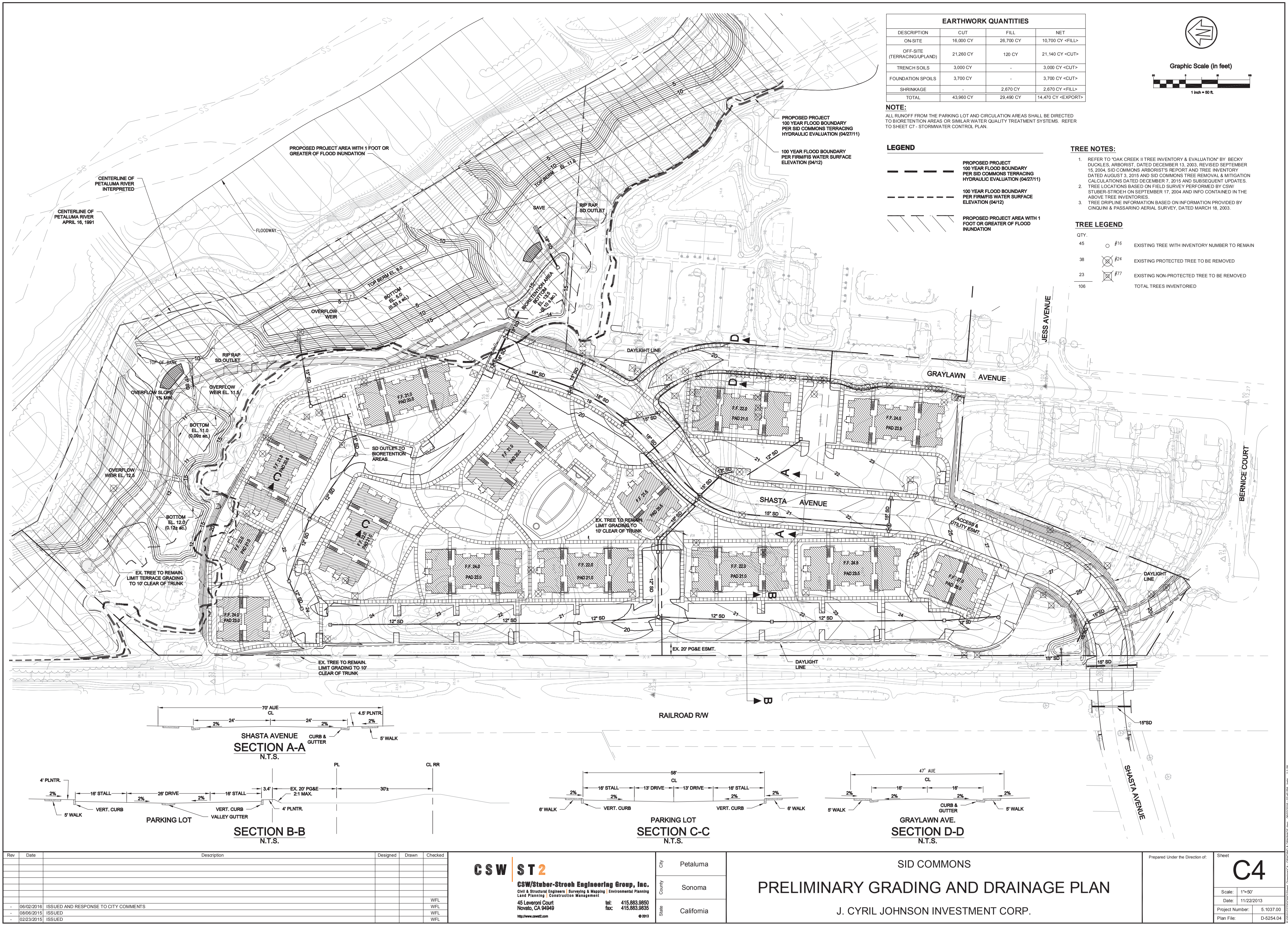

Figure 2. Site Plan Showing Grading for River Terrace and Sid Commons Project

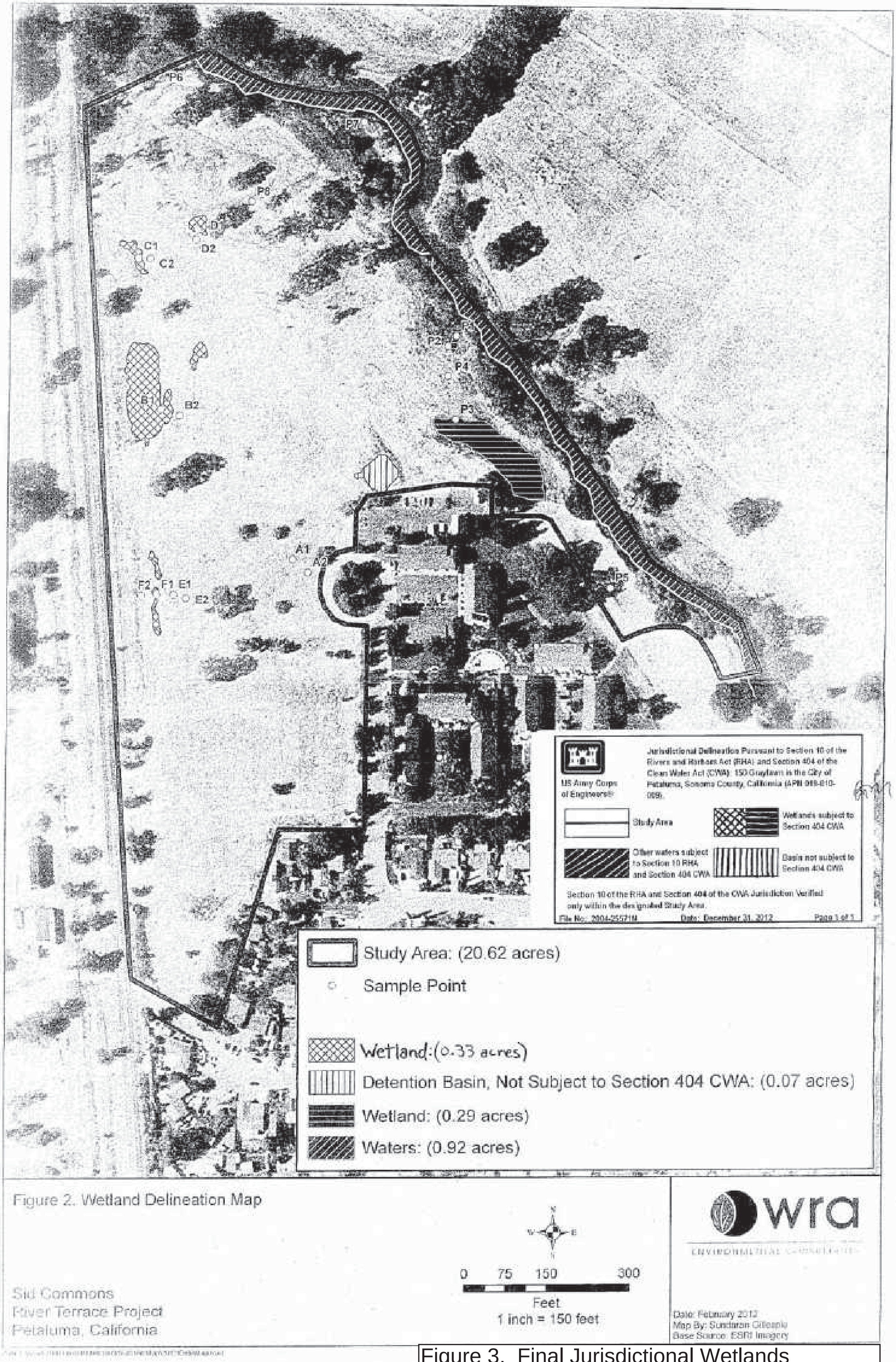

Figure 3. Final Jurisdictional Wetlands Determination Approved by Corps of Engineers

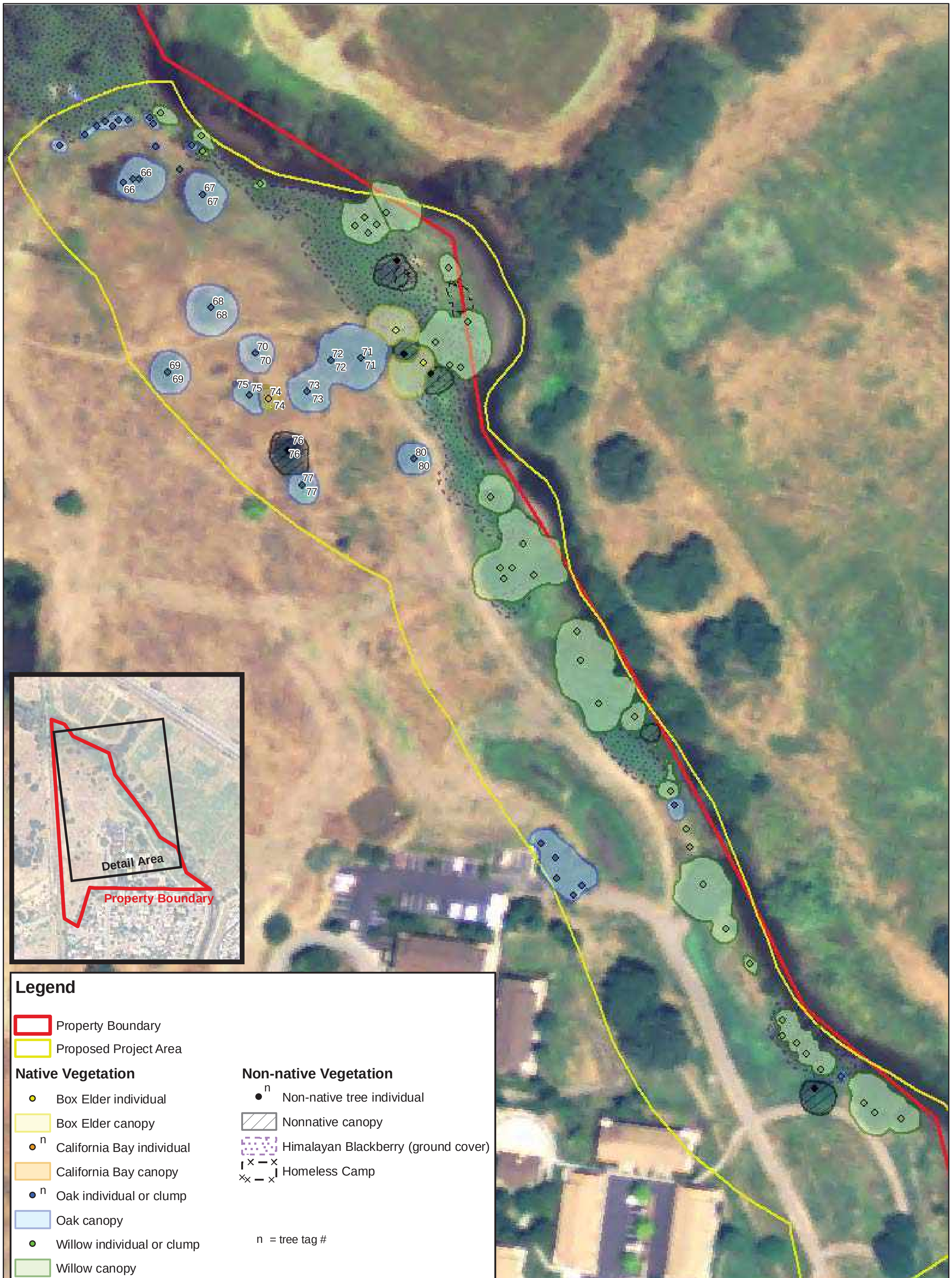

Figure 4. Map showing vegetation along the Petaluma River at the Sid Commons and River Terrace Project.

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Sid Commons - River Terrace Project
Petaluma, California

0 50 100 200 Feet

wra ENVIRONMENTAL CONSULTANTS

Date: March 2009
Image Source: NAIP, 2005
Map By: Derek Chan
Filepath: L:\Acad 2000 Files\10000\10036\GIS\ArcMap\ Fig2_Veg_20090324.mxd

PLANT LEGEND:

BOTANICAL NAME	COMMON NAME	SYMBOL
ACER NEGUNDO	BOX ELDER	
AESCULUS CALIFORNICA	CALIFORNIA BUCKEYE	
FRAXINUS LATIFOLIA	OREGON ASH	
JUGLANS HINDSII	BLACK WALNUT	
QUERCUS AGRIFOLIA	COAST LIVE OAK	
UMBELLULARIA CALIFORNICA	CALIFORNIA BAY LAUREL	
ATRIPLEX LENTIFORMIS	BREWER SALTBUSH	
BACCHARIS PILULARIS	COYOTE BRUSH	
BACCHARIS SALICIFOLIA	MULEFAT	
CLEMATIS LIGUSTICIFOLIA	CLEMATIS	
EPILOBIUM CANUM SSP. LATIFOLIUM	CALIFORNIA FUSCHIA	
FRANGULA CALIFORNICA	COFFEEBERRY	
HETEROMELES ARBUTIFOLIA	TOYON	
MIMULUS AURANTIACCUS	MONKEY FLOWER	
RIBES SANGUINEUM	RED FLOWERING CURRANT	
ROSA CALIFORNICA	CALIFORNIA WILD ROSE	
RUBUS URSINUS	CALIFORNIA BLACKBERRY	
SALIX HOOKERIANA	DUNE WILLOW	
SALIX LASIOLEPIS	ARROYO WILLOW	
SAMBUCUS NIGRA SSP. CAERULEA	BLUE ELDERBERRY	

PLANT LEGEND:

PLANT ZONE	SYMBOL
ZONE A - TOP OF BANK (7'+)	
ZONE B - MIDDLE AND UPPER BANK (4.5' - 7')	
ZONE C - RIVER TERRACE (3.7' - 4.5')	
ZONE D - UPPER MARSH (1.5' - 3.7')	
ZONE E - LOWER MARSH (-0.5' - 1.5')	
ZONE F - SEASONAL WETLAND - UPPER	
ZONE G - SEASONAL WETLAND - RIVER TERRACE	

RESTORATION AREA CONCEPTUAL CROSS SECTION: FRESH/BRACKISH TRANSITION HABITAT

(PETALUMA RIVER ACCESS AND ENHANCEMENT PLAN, 5.2.1, P. 164)

SEED

ZONE & QUANTITY ESTIMATES FOR SEED

ZONE A- TOP OF BANK (7'+)

ZONE B- MIDDLE AND UPPER BANK (4.5'-7')

ZONE C- RIVER TERRACE (3.7'-4.5')

ZONE D- UPPER MARSH (1.5'-3.7')

ZONE E- LOWER MARSH (-0.5'-1.5')

ZONE F- SEASONAL WETLAND - UPPER

ZONE G- SEASONAL WETLAND - RIVER TERRACE

wra ENVIRONMENTAL CONSULTANTS
2169-G East Francisco Blvd.
San Rafael, CA 94901
(415) 454-8868 Phone
(415) 454-0129 Fax

SID COMMONS

HABITAT MITIGATION AND MONITORING PLAN

J. CYRIL JOHNSON INVESTMENT CORP.

SONOMA COUNTY
PETALUMA, CALIFORNIA

Figure 5. Planting Plan

Date	Issues And Revisions	No.
06/07/16	HMMP	

PROJECT #10036
DRAWN BY: MAS
CHECKED BY: CS
ORIGINAL DRAWING SIZE: 30 X 42

0 40
SCALE: 1" = 40'

N

PLANT & SEED PLAN

Sheet

L-1

Appendix 6C

Oak Creek II Tree Inventory and Evaluation

Becky Duckles, Landscape Consultant and Arborist

December 2003 through May 2016

BECKY DUCKLES
LANDSCAPE CONSULTANT & ARBORIST
8876 OCCIDENTAL ROAD, SEBASTOPOL, CA., 95472
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OAK CREEK II
Petaluma, Ca

TREE INVENTORY & EVALUATION
December 13, 2003
Revised September 15, 2004

This is a gently sloping site, most recently used as pasture, adjacent to an old railroad right-of-way. It is bordered on the east side by Oak Creek I apartments, private homes on the southeast side, on the west by the railroad right-of-way, and by the Petaluma River floodway on the northeast side. All trees over 3" d.b.h. on this site that may be impacted by construction have been measured, identified and evaluated. They have been tagged in the field with numbers which relate to the enclosed Tree Location Map and the report.

Recently a grass fire started near the railroad ROW and covered several acres, including damage to one home and several trees. Their current condition is listed, assessing fire damage where it occurred. Most of the Monterey cypress which were growing near the old railroad right of way were badly damaged by fire. I had previously recommended that they all be removed anyway because of poor form and condition.

For this review I was supplied with the Preliminary Grading and Drainage Plan, dated 3/23/04, by CSW/Stuber Stroeh, project planners and engineers, and the Conceptual Landscape Plan dated 3/15/04 by The Guzzardo Partnership, landscape architects. This preliminary arborist's report will provide information regarding existing tree species, size and condition that will be applied to tree preservation decisions on the Improvement Plans.

In response to a request from the Planning Dept. in Petaluma, several areas of tree preservation are being discussed in detail among the project owner, engineer, landscape architect and arborist. Survey work is being done at this time to determine the exact locations of trees which had not been surveyed previously. This will help determine their positions relative to planned grading and other construction operations, as well as the likelihood of their being preserved.

In some areas, (eg for tree #38, a 29/5" diameter valley oak) building footprint, grading, utility and sidewalk locations are being shifted to preserve specimen trees.

A row of young healthy redwood trees grows along Graylawn Avenue, opposite the existing apartments. They range from 3-17" diameter, averaging 15-20' height, generally in good to excellent condition. They have been stressed recently from lack of irrigation, and a few were slightly damaged by the fire, but all are worth preserving. The owner and engineer have concurred that if the sidewalk alignment can be placed to avoid their root zones, they will be preserved to provide significant evergreen screening between the existing residents and the new construction.

Where a meandering pedestrian path is shown on the north end of the project, it will be realigned to avoid mature trees to be preserved. Its composition must be as unobtrusive as possible, since there will be large roots near the surface. Some alternatives that the engineer and I are discussing are: reinforced concrete at grade, wooden boardwalk (if not to be used for vehicular access), gravel, etc.

The Planning Dept. inquired whether the existing tree driplines shown on the plans to date are accurate. I have checked/measured them in the field, and they are. They were based on information derived from a recent aerial photograph. As mentioned above, fire damage has changed a few trees' condition since that aerial, which is reflected in the revised inventory.

Another question concerned the requirement from the geotech engineer regarding soil scarifying for the site. Where we are showing existing trees to be preserved, either no grading is proposed, or the extent of grading/scarification may be limited to areas outside the dripline. These areas will be designated on final plans.

We will incorporate the information derived from the new survey of tree locations into the civil engineering and landscape plans. I will maintain a dialog with project engineers and landscape architects to provide input regarding tree preservation. Tree Protection Notes will be provided for inclusion on the Grading Plan.

Report & Recommendations - The format of the Tree Inventory/Evaluation & Arborist's Report is as follows:

Tree Location Plan - The existing trees are located and numbered on a reduced plan, referenced for discussion in the Tree Evaluation. As survey information is available, the engineer will incorporate it into his plans, including tree numbers for reference.

Tree Inventory & Evaluation - A listing and discussion of the trees as numbered on the Tree Location Plan, including the following information:

Number - The number assigned to a tree for location reference on the Tree Location Map
Diameter - Trunk diameter at 54" above grade (d.b.h.), (unless noted otherwise)
Common Name
Botanical Name
Condition – Brief rating of tree's present overall health
Structure – Brief rating of tree's structural condition
Recommendations - Specific comments regarding proposed plans or treatment for tree condition.

Respectfully submitted,

Becky Duckles

Becky Duckles, Project Arborist
ISA Certified Arborist #WE-796
Member, American Society of Consulting Arborists

BECKY DUCKLES
CONSULTING ARBORIST & LANDSCAPE ADVISOR
SEBASTOPOL, CA.

SID COMMONS
Petaluma, Ca

TREE INVENTORY & EVALUATION
May 18, 2016

This is a gently sloping site, most recently used as pasture, adjacent to an old railroad right-of-way. It is bordered on the east side by Oak Creek I apartments, private homes on the southeast side, on the west by the railroad right-of-way, and by the Petaluma River floodway on the northeast side. All trees over 4" d.b.h. on this site that may be impacted by construction have been measured, identified and evaluated. They have been tagged in the field with numbers which relate to the numbers shown on the Grading Plan, and the inventory/report. The fire on site several years ago damaged many trees which has been reflected in the revised inventories.

For this review I was supplied with the Preliminary Grading Plan, and terracing plan for the flood plain, by CSW/Stuber Stroeh, project planners and engineers. This report will provide information regarding existing tree species, size and condition that has been applied to tree preservation decisions on the Improvement Plans. In the inventory and mitigation list I have addressed the concerns listed in Olivia Ervin's letter of April 1, 2016.

Report & Recommendations - The format of the Tree Inventory/Evaluation & Arborist's Report is as follows:

- **Tree Location Plan** - The existing trees are located and numbered on the Grading Plan, referenced for discussion in the Tree Inventory & Evaluation.
- **Tree Inventory & Evaluation** - A listing and discussion of the existing trees on site, including the following information:
- Number - The number assigned to a tree for location reference on the Tree Location Map
- Diameter - Trunk diameter at 54" above grade (d.b.h.), (unless noted otherwise)
- Common Name
- Botanical Name
- Condition – Brief rating of tree's present overall health
- Structure – Brief rating of tree's structural condition
- Recommendations - Specific comments regarding proposed plans or treatment for tree condition.
- **Tree Removal List & Mitigation Calculations** – Protected trees, size, condition and required mitigation
- **Tree Protection Measures** Measures to be observed during demolition, grading and construction of the project

Respectfully submitted,

Becky Duckles

Becky Duckles, Project Arborist
ISA Certified Arborist #WE-0796A

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CONSULTING ARBORIST & LANDSCAPE ADVISOR
SEBASTOPOL, CA
707.829.0555 PH

SID COMMONS, PETALUMA, CA
TREE REMOVAL & MITIGATION CALCULATIONS
May 18, 2016

Of the more than 100 existing trees on this site, the following 39 protected trees will be removed, based on the Site Plan and Preliminary Grading Plan by CSWST2. For trees in good-excellent condition replacement will be at the rate of one-to-one trunk diameter inch, and for trees in fair or marginal condition, replacement will be at a two-to-one basis, as per City of Petaluma IZO, Section 17.065.

PROTECTED TREES TO BE REMOVED

Tree #	Diameter	Species	Condition	Replacement ratio/trunk inches		
1	23"	Valley Oak	Good	1:1	23"	
2	23"	Valley Oak	Good	1:1	23"	
13	11,8"	Valley Oak	Good	1:1	19"	
17	20"	Valley Oak	Good	1:1	20"	
36	37"	Valley Oak	Fair	2:1	19"	
37	24"	Valley Oak	Fair	2:1	12"	
39	9,11,12"	Valley Oak	Fair	2:1	16"	
40	15"	Valley Oak	Good	1:1	15"	
41	6,7"	Valley Oak	Fair	2:1	7"	
42	21"	Coast Redwood	Good	1:1	21"	
43	24"	Coast Redwood	Excellent	1:1	24"	44
46	25"	Coast Redwood	Good	1:1	25"	
47	26"	Coast Redwood	Good	1:1	26"	
48	26"	Coast Redwood	Good	1:1	26"	
49	18"	Coast Redwood	Good	1:1	18"	
50	21"	Coast Redwood	Good	1:1	21"	
52	21"	Coast Redwood	Good	1:1	21"	
53	18"	Coast Redwood	Good	1:1	18"	
59	34"	Valley Oak	Good	1:1	34"	
60	36"	Valley Oak	Good	1:1	36"	
61	21"	Valley Oak	Good	1:1	21"	
62	18,20,24"	Valley Oak	Good	1:1	62"	
67	36"	Valley Oak	Good	1:1	36"	
69	26"	Valley Oak	Good	1:1	26"	
75	27"	Valley Oak	Fair	2:1	14"	
77	28"	Valley Oak	Fair	2:1	14"	
79	11"	Valley Oak	Good	1:1	11"	
80	21"	Valley Oak	Good	1:1	21"	
82	26"	Coast Redwood	Excellent	1:1	26"	
85	19"	Coast Redwood	Good	1:1	19"	
86	23"	Coast Redwood	Good	1:1	23"	

Tree #	Diameter	Species	Condition	Replacement ratio/trunk inches	
100	6,7,9"	Valley Oak	Fair	2:1	11"
101	5,9"	Coast Live Oak	Excellent	1:1	14"
102	5,6"	Valley Oak	Good	1:1	11"
103	9"	Valley Oak	Good	1:1	9"
104	8"	Valley Oak	Excellent	1:1	8"
200	11,13,13,14"	Coast Live Oak	Good	1:1	51"
202	5"	Valley Oak	Excellent	1:1	5"

Total number of diameter inches of protected trees to be removed = 831"

Mitigation required per ordinance:

If 24" box trees are used, 1 = 2" trunk diameter, 1 - 36" box tree = 3" trunk diameter, 1 – 48" box tree = 4" trunk replacement diameter
If all were 24" boxes that would require 416 24" box trees (831 divided by 2" = 416), all 36" box = 277 trees (831 divided by 3"), 48" box trees = 208 trees. Any combination of those sizes to meet the required number of removed trunk inches is acceptable. If the City agrees, 15 gallon size containers may also be used for replacement mitigation, most likely at the ratio of 1" per 15 gal. tree. Smaller container sizes would be especially suitable for planting valley oaks or other native species in terraced areas or other areas designated by the biological consultants.

There is a provision in the ordinance for in-lieu fees for mitigation trees based on the actual cost of an installed tree, to be detrmined by a qualified arborist, according to the standards and formulas in the 9th Edition of the Guide for Plant Appraisal. I can provide that if needed.

Respectfully submitted,

Becky Duckles

Becky Duckles, Certified Consulting Arborist #WE-0796A

SID COMMONS
Petaluma, Ca

TREE PROTECTION NOTES

1. Plastic or chain link tree protection fencing should be installed at the driplines of trees to remain, (or the outer edge of the dripline of groups of trees). If it must be removed during construction for access, it should be replaced immediately after work is completed.

2. Pruning should be the minimum necessary for hazard reduction or necessary access, (i.e. the removal of deadwood 2" and larger, etc.), pedestrian and vehicular clearance, and crown restoration. It should be done by trained, qualified tree workers according to ISA Pruning Guidelines, prior to construction activity and fencing.

3. Where drainage swales or utilities must pass within protected tree driplines, they should be hand dug or excavated under the supervision of an arborist. Roots 2"+ should be preserved where possible, carefully exposing them and installing pipe or lines under them.

4. If any roots larger than 1" are encountered that cannot be preserved, they should be cut cleanly across the face of the root with a sharp saw.

5. Arbormulch (chipped wood, bark and foliage) generated from pruning should be spread under protected trees to serve as a permanent top dressing and mulch. It should be augmented to provide a 4” layer of mulch within the driplines of all trees to remain within the limits of construction.

6. No parking, storage or disposal of materials (such as concrete slurry, paint, etc.), or other construction activity shall occur within driplines of protected trees to remain.

7. Fill within terraced areas shall be kept a minimum of 10' from trunks of protected trees. Rip rap or large boulders may be used to retain soil away from tree trunks.

SID COMMONS
Petaluma, California
TREE EVALUATION and INVENTORY

TREE #	SPECIES	TRUNK DIAMETER (In.)	GENERAL HEALTH	STRUCTURAL INTEGRITY	COMMENTS/RECOMMENDATIONS
1	Valley Oak/*Quercus lobata*	23"	Good	Good/Excellent	Low-branched, dripline 24' diameter; to be removed for EVA
2	Valley Oak/*Quercus lobata*	23"	Good/Excellent	Good/Excellent	Outside zone of construction impact; to be removed for EVA
3	Black Walnut/*Juglans* sp.	11"	Fair	Good	Extensive branch dieback; outside zone of construction impact; to be preserved
4	Black Walnut/*Juglans* sp.	13"	Fair	Fair	Extensive dieback; to be preserved
5	Bailey Acacia/*Acacia baileyana*	5"	Good	Good	Preservable tree, but undesirable, non-protected species; outside zone of construction impact
6	Black Walnut/*Juglans* sp.	6"	Good	Fair	Tall; outside zone of construction impact; to be preserved
7	Bailey Acacia/*Acacia baileyana*	6/7"	Poor	Poor	Part of a group of acacias in poor condition; 1 large tree down (almost dead); not recommended for preservation (not protected
8	Bailey Acacia/*Acacia baileyana*	4"	Fair	Poor	Not recommended for preservation
9	Bailey Acacia/*Acacia baileyana*	10"	Fair	Poor	Not recommended for preservation
10	Bailey Acacia/*Acacia baileyana*	11/9/5"	Fair	Poor	Not recommended for preservation
11	Bailey Acacia/*Acacia baileyana*	13"	Fair	Poor	Not recommended for preservation
12	English Walnut/*Juglans* sp.	8"@3'	NA	NA	Gone
13	Valley Oak/*Quercus lobata*	11/8"	Good/Excellent	Good	To be removed for construction
14	Valley Oak/*Quercus lobata*	9/11/13"	Good	Good	To be preserved
15	Olive/*Olea europaea*	11/14" @ 4'	Good/Excellent	Good	To be removed for construction; could be transplanted on site if desired; not a protected tree
16	Coast Live Oak/*Quercus agrifolia*	11"	Excellent	Good/Excellent	To be preserved
17	Valley Oak/*Quercus lobata*	20"	Good	Good	Epicormic growth; small branch dieback; 25' canopy diameter; to be removed for road grading
18	California Sycamore/*Platanus racemosa*	24"	Dead/burned	Dead	NA
19	Chinese Photinia/*Photinia serratifolia*	5"	Gone	NA	NA
20	Monterey Cypress/*Cupressus macrocarpa*	32"	Good	Poor	Very twisted, partially failed trunk; outside zone of construction impact
21	Valley Oak/*Quercus lobata*	3"	Gone	NA	NA
22	Coast Live Oak/*Quercus agrifolia*	7"	Gone	NA	NA

TREE #	SPECIES	TRUNK DIAMETER (In.)	GENERAL HEALTH	STRUCTURAL INTEGRITY	COMMENTS/RECOMMENDATIONS
23	Coast Live Oak/*Quercus agrifolia*	5"	Gone	Dead	NA
24	Monterey Cypress/*Cupressus macrocarpa*	24"	Gone	NA	NA
25	Valley Oak/*Quercus lobata*	4"	Gone	NA	NA
26	Coast Live Oak/*Quercus agrifolia*	12/14"	Good	Good	A few feet on west side of property line; fence at limit of required grading and preserve
27	Monterey Cypress/*Cupressus macrocarpa*	24"	Poor	Poor	All these Monterey cypress trees have been repeatedly topped (past overhead line clearance) and are breaking up; many large scaffold branches and leaders have failed; several were burned; and should be replaced with more appropriate species for the new site use; many were badly burned in the fire; not a protected species; to be removed
28	Monterey Cypress/*Cupressus macrocarpa*	24"	Fair	Poor form	15% burned; removal recommended/shown
29	Monterey Cypress/*Cupressus macrocarpa*	26"	Poor	Poor	Removal recommended/shown
30	Valley Oak/*Quercus lobata*	5"	Gone	NA	Burned
31	Monterey Cypress/*Cupressus macrocarpa*	26"	95% burned	Fair	Burned previously; shown to be preserved
32	Monterey Cypress/*Cupressus macrocarpa*	29"	Trunk burned	Fair	Burned previously; shown to be preserved
33	Monterey Cypress/*Cupressus macrocarpa*	22"	Dead/burned	NA	Trunk burned severely; extensive dieback; very little foliage; removal recommended
34	Monterey Cypress/*Cupressus macrocarpa*	24"	40% burned	Good	Burned previously; shown to be preserved
35	Valley Oak/*Quercus lobata*	11/15/15"	Good	Fair/Good	Burned, multiple trunks; to be preserved
36	Valley Oak/*Quercus lobata*	37"	Good	Good/Excellent	To be removed for construction
37	Valley Oak/*Quercus lobata*	24"	Fair	Fair/Good	Burned; would be removed for construction
38	Valley Oak/*Quercus lobata*	33"	Good	Good	Lo-branched on south side; grading, utilities, walks and grading all being adjusted to preserve
39	Valley Oak/*Quercus lobata*	9/11/12"	Fair/Good	Fair	To be removed for construction
40	Valley Oak/*Quercus lobata*	15"	Good	Good	To be removed for construction
41	Valley Oak/*Quercus lobata*	6/7"	Fair/Good	Fair/Good	To be removed for construction
42	Coast Redwood/*Sequoia sempervirens*	21"	Good/Excellent	Excellent	To be removed for construction
43	Coast Redwood/*Sequoia sempervirens*	24"	Excellent	Excellent	To be removed for construction

SID COMMONS
Petaluma, California
TREE EVALUATION and INVENTORY

TREE #	SPECIES	TRUNK DIAMETER (In.)	GENERAL HEALTH	STRUCTURAL INTEGRITY	COMMENTS/RECOMMENDATIONS
44	Coast Redwood/*Sequoia sempervirens*	25"	Excellent	Excellent	To be removed for construction
45	Western Redbud/*Cercis occidentalis*	4"	Poor	Poor	To be removed for construction
46	Coast Redwood/*Sequoia sempervirens*	25"	Good	Good/Excellent	To be removed for construction
47	Coast Redwood/*Sequoia sempervirens*	26"	Good/Excellent	Good	To be removed for construction
48	Coast Redwood/*Sequoia sempervirens*	26"	Good/Excellent	Good/Excellent	To be removed for construction
49	Coast Redwood/*Sequoia sempervirens*	18"	Good/Excellent	Good/Excellent	To be removed for construction
50	Coast Redwood/*Sequoia sempervirens*	21"	Good/Excellent	Good/Excellent	To be removed for construction
51	Coast Redwood/*Sequoia sempervirens*	10"	Good/Excellent	Good/Excellent	To be removed for construction
52	Coast Redwood/*Sequoia sempervirens*	21"	Good/Excellent	Good/Excellent	To be removed for construction
53	Coast Redwood/*Sequoia sempervirens*	18"	Good	Good/Excellent	To be removed for construction
54	Coast Redwood/*Sequoia sempervirens*	15"	Good/Excellent	Good/Excellent	To be removed for construction
55	Coast Redwood/*Sequoia sempervirens*	15"	Good	Good/Excellent	To be removed for construction
56	Coast Redwood/*Sequoia sempervirens*	14"	Good	Good/Excellent	To be removed for construction
57	Coast Redwood/*Sequoia sempervirens*	13"	Good	Good/Excellent	To be removed for construction
58	Coast Redwood/*Sequoia sempervirens*	16"	Good/Excellent	Good/Excellent	To be removed for construction
59	Valley Oak/*Quercus lobata*	34"	Good	Good	Leans east; low-branched to SE; to be removed for construction
60	Valley Oak/*Quercus lobata*	36"	Good	Good/Excellent	To be removed for construction
61	Valley Oak/*Quercus lobata*	21"	Good	Good	To be removed for construction
62	Valley Oak/*Quercus lobata*	18/20/24"	Good/Excellent	Good/Excellent	To be removed for construction
63	Valley Oak/*Quercus lobata*	10"	Good	Good	Very low branching; to be removed for construction
64	Valley Oak/*Quercus lobata*	19"	Fair/Good	Good	To be preserved
65	Valley Oak/*Quercus lobata*	7"	Good	Good	To be preserved
66	Valley Oak/*Quercus lobata*	40"	Good	Good	Cavity on north side; grading for terrace will be kept 10' from trunk; to be preserved

SID COMMONS
Petaluma, California
TREE EVALUATION and INVENTORY

TREE #	SPECIES	TRUNK DIAMETER (In.)	GENERAL HEALTH	STRUCTURAL INTEGRITY	COMMENTS/RECOMMENDATIONS
67	Valley Oak/*Quercus lobata*	36"	Good	Good	To be removed for construction
68	Valley Oak/*Quercus lobata*	30"	Good	Good	All canopy development east and south; to be preserved
69	Valley Oak/*Quercus lobata*	26"	Good	Good/Excellent	To be removed for construction
70	Valley Oak/*Quercus lobata*	13/15"	Fair	Fair	To be preserved
71	Valley Oak/*Quercus lobata*	45"	Fair/Good	Fair/Good	Large branch failures (canker); hazard reduction pruning needed; to be preserved
72	Valley Oak/*Quercus lobata*	34"	Good	Good	Large branch failures (canker); to be preserved
73	Valley Oak/*Quercus lobata*	40"	Good	Good	Fire damage (old); cavity at base & undersides of branches; to be preserved
74	California Bay Laurel/*Umbellularia californica*	Many 3-8" stems	Good	Poor (mult. trunks)	To be removed for construction
75	Valley Oak/*Quercus lobata*	27"	Fair	Fair	Fire damage (old); to be removed for construction
76	Blue Gum Eucalyptus/*Eucalyptus globulus*	37	Fair	Good	To be removed for construction
77	Valley Oak/*Quercus lobata*	28"	Fair/Good	Good	Beehive in base of trunk (cavity); 24' canopy radius to south; to be removed for construction
78	Box Elder/*Acer negundo*	4/5/6/6/8"	Poor	Poor	Main stem gone; all suckers; to be removed for construction
79	Valley Oak/*Quercus lobata*	11"	Good	Good	To be removed for construction
80	Valley Oak/*Quercus lobata*	23"	Good	Good/Excellent	To be removed for construction
81	White Alder/*Alnus rhombifolia*	18"	Good/Excellent	Good/Excellent	To be removed for construction
82	Coast Redwood/*Sequoia sempervirens*	26"	Excellent	Good/Excellent	To be removed for construction
83	White Alder/*Alnus rhombifolia*	18"	Good	Good/Excellent	To be removed for construction
84	White Alder/*Alnus rhombifolia*	31"	Excellent	Good/Excellent	To be removed for construction
85	Coast Redwood/*Sequoia sempervirens*	19"	Good/Excellent	Good/Excellent	To be removed for construction
86	Coast Redwood/*Sequoia sempervirens*	23"	Good/Excellent	Good/Excellent	To be removed for construction
87	Coast Redwood/*Sequoia sempervirens*	17"	Fair	Good/Excellent	To be removed for construction
88	Coast Redwood/*Sequoia sempervirens*	13"	Fair/Good	Good	To be removed for construction
89	White Alder/*Alnus rhombifolia*	22"	Good	Good	To be removed for construction

SID COMMONS
Petaluma, California
TREE EVALUATION and INVENTORY

TREE #	SPECIES	TRUNK DIAMETER (In.)	GENERAL HEALTH	STRUCTURAL INTEGRITY	COMMENTS/RECOMMENDATIONS
100	Valley Oak/*Quercus lobata*	6/7/9"	Fair/Good	Fair/Good	To be removed for construction (near tree #17)
101	Coast Live Oak/*Quercus agrifolia*	5/9"	Excellent	Good	To be removed for construction (near tree #38)
102	Valley Oak/*Quercus lobata*	5/6"	Good	Good	To be removed for construction (near tree #40)
103	Valley Oak/*Quercus lobata*	9"	Good	Good	To be removed for construction
104	Valley Oak/*Quercus lobata*	8"	Excellent	Excellent	To be removed for construction (near tree #49)
105	Coast Live Oak/*Quercus agrifolia*	7/8"	Excellent	Good	To be preserved (near tree #64)
106	Valley Oak/*Quercus lobata*	6"	Fair	Fair	To be preserved (near tree #65)
107	Valley Oak/*Quercus lobata*	7"	Good	Good	To be preserved (near tree #65)
200	Coast Live Oak/*Quercus agrifolia*	11,13,13,14"	Good/Excellent	Good (low-branched, multi-trunk)	To be removed for construction
201	Valley Oak/*Quercus lobata*	4"	Poor: extensive branch dieback	Poor	To be removed for construction; though protected, it is in poor condition and requires no mitigation
202	Valley Oak/*Quercus lobata*	5"	Excellent	Good	To be removed for Shasta Ave.extension
203	Black Oak/*Quercus kelloggii*	4"	Poor: needs water	Good	To be preserved
204	Black Oak/*Quercus kelloggii*	5"	Fair/Good	Good	To be preserved
205	Valley Oak/*Quercus lobata*	32"	Fair/Good	Fair/Good	To be preserved; new walk should be gravel, at grade to avoid damaging roots
206	Valley Oak/*Quercus lobata*	20,28"	Good	Fair/Good	To be preserved; no impact from construction
207	Valley Oak/*Quercus lobata*	35"	Fair/Good	Good	To be preserved; no impact from construction; recheck condition at end of construction; may need pruning to reduce hazard - cankers on branches
208	Valley Oak/*Quercus lobata*	21"	Good	Fair/Good	To be preserved; no impact from construction

SID COMMONS
Petaluma, California
TREE EVALUATION and INVENTORY

TREE #	SPECIES	TRUNK DIAMETER (In.)	GENERAL HEALTH	STRUCTURAL INTEGRITY	COMMENTS/RECOMMENDATIONS
1	Valley Oak/*Quercus lobata*	23"	Good	Good/Excellent	Low-branched, dripline 24' diameter; to be removed for EVA
2	Valley Oak/*Quercus lobata*	23"	Good/Excellent	Good/Excellent	Outside zone of construction impact; to be removed for EVA
5	Bailey Acacia/*Acacia baileyana*	5"	Good	Good	Preservable tree, but undesirable, non-protected species; outside zone of construction impact
7	Bailey Acacia/*Acacia baileyana*	6/7"	Poor	Poor	Part of a group of acacias in poor condition; 1 large tree down (almost dead); not recommended for preservation (not protected
8	Bailey Acacia/*Acacia baileyana*	4"	Fair	Poor	Not recommended for preservation
9	Bailey Acacia/*Acacia baileyana*	10"	Fair	Poor	Not recommended for preservation
10	Bailey Acacia/*Acacia baileyana*	11/9/5"	Fair	Poor	Not recommended for preservation
11	Bailey Acacia/*Acacia baileyana*	13"	Fair	Poor	Not recommended for preservation
13	Valley Oak/*Quercus lobata*	11/8"	Good/Excellent	Good	To be removed for construction
15	Olive/*Olea europaea*	11/14" @ 4'	Good/Excellent	Good	To be removed for construction; could be transplanted on site if desired; not a protected tree
17	Valley Oak/*Quercus lobata*	20"	Good	Good	Epicormic growth; small branch dieback; 25' canopy diameter; to be removed for road grading
20	Monterey Cypress/*Cupressus macrocarpa*	32"	Good	Poor	Very twisted, partially failed trunk; outside zone of construction impact
27	Monterey Cypress/*Cupressus macrocarpa*	24"	Poor	Poor	All these Monterey cypress trees have been repeatedly topped (past overhead line clearance) and are breaking up; many large scaffold branches and leaders have failed; several were burned; and should be replaced with more appropriate species for the new site use; many were badly burned in the fire; not a protected species; to be removed
28	Monterey Cypress/*Cupressus macrocarpa*	24"	Fair	Poor form	15% burned; removal recommended/shown
29	Monterey Cypress/*Cupressus macrocarpa*	26"	Poor	Poor	Removal recommended/shown
33	Monterey Cypress/*Cupressus macrocarpa*	22"	Dead/burned	NA	Trunk burned severely; extensive dieback; very little foliage; removal recommended
36	Valley Oak/*Quercus lobata*	37"	Good	Good/Excellent	To be removed for construction
37	Valley Oak/*Quercus lobata*	24"	Fair	Fair/Good	Burned; would be removed for construction
39	Valley Oak/*Quercus lobata*	9/11/12"	Fair/Good	Fair	To be removed for construction
40	Valley Oak/*Quercus lobata*	15"	Good	Good	To be removed for construction

TREE #	SPECIES	TRUNK DIAMETER (In.)	GENERAL HEALTH	STRUCTURAL INTEGRITY	COMMENTS/RECOMMENDATIONS
41	Valley Oak/*Quercus lobata*	6/7"	Fair/Good	Fair/Good	To be removed for construction
42	Coast Redwood/*Sequoia sempervirens*	21"	Good/Excellent	Excellent	To be removed for construction
43	Coast Redwood/*Sequoia sempervirens*	24"	Excellent	Excellent	To be removed for construction
44	Coast Redwood/*Sequoia sempervirens*	25"	Excellent	Excellent	To be removed for construction
45	Western Redbud/*Cercis occidentalis*	4"	Poor	Poor	To be removed for construction
46	Coast Redwood/*Sequoia sempervirens*	25"	Good	Good/Excellent	To be removed for construction
47	Coast Redwood/*Sequoia sempervirens*	26"	Good/Excellent	Good	To be removed for construction
48	Coast Redwood/*Sequoia sempervirens*	26"	Good/Excellent	Good/Excellent	To be removed for construction
49	Coast Redwood/*Sequoia sempervirens*	18"	Good/Excellent	Good/Excellent	To be removed for construction
50	Coast Redwood/*Sequoia sempervirens*	21"	Good/Excellent	Good/Excellent	To be removed for construction
51	Coast Redwood/*Sequoia sempervirens*	10"	Good/Excellent	Good/Excellent	To be removed for construction
52	Coast Redwood/*Sequoia sempervirens*	21"	Good/Excellent	Good/Excellent	To be removed for construction
53	Coast Redwood/*Sequoia sempervirens*	18"	Good	Good/Excellent	To be removed for construction
54	Coast Redwood/*Sequoia sempervirens*	15"	Good/Excellent	Good/Excellent	To be removed for construction
55	Coast Redwood/*Sequoia sempervirens*	15"	Good	Good/Excellent	To be removed for construction
56	Coast Redwood/*Sequoia sempervirens*	14"	Good	Good/Excellent	To be removed for construction
57	Coast Redwood/*Sequoia sempervirens*	13"	Good	Good/Excellent	To be removed for construction
58	Coast Redwood/*Sequoia sempervirens*	16"	Good/Excellent	Good/Excellent	To be removed for construction
59	Valley Oak/*Quercus lobata*	34"	Good	Good	Leans east; low-branched to SE; to be removed for construction
60	Valley Oak/*Quercus lobata*	36"	Good	Good/Excellent	To be removed for construction
61	Valley Oak/*Quercus lobata*	21"	Good	Good	To be removed for construction
62	Valley Oak/*Quercus lobata*	18/20/24"	Good/Excellent	Good/Excellent	To be removed for construction
63	Valley Oak/*Quercus lobata*	10"	Good	Good	Very low branching; to be removed for construction
67	Valley Oak/*Quercus lobata*	36"	Good	Good	To be removed for construction

TREE #	SPECIES	TRUNK DIAMETER (In.)	GENERAL HEALTH	STRUCTURAL INTEGRITY	COMMENTS/RECOMMENDATIONS
69	Valley Oak/*Quercus lobata*	26"	Good	Good/Excellent	To be removed for construction
74	California Bay Laurel/*Umbellularia californica*	Many 3-8" stems	Good	Poor (mult. trunks)	To be removed for construction
75	Valley Oak/*Quercus lobata*	27"	Fair	Fair	Fire damage (old); to be removed for construction
76	Blue Gum Eucalyptus/*Eucalyptus globulus*	37	Fair	Good	To be removed for construction
77	Valley Oak/*Quercus lobata*	28"	Fair/Good	Good	Beehive in base of trunk (cavity); 24' canopy radius to south; to be removed for construction
78	Box Elder/*Acer negundo*	4/5/6/6/8"	Poor	Poor	Main stem gone; all suckers; to be removed for construction
79	Valley Oak/*Quercus lobata*	11"	Good	Good	To be removed for construction
80	Valley Oak/*Quercus lobata*	23"	Good	Good/Excellent	To be removed for construction
81	White Alder/*Alnus rhombifolia*	18"	Good/Excellent	Good/Excellent	To be removed for construction
82	Coast Redwood/*Sequoia sempervirens*	26"	Excellent	Good/Excellent	To be removed for construction
83	White Alder/*Alnus rhombifolia*	18"	Good	Good/Excellent	To be removed for construction
84	White Alder/*Alnus rhombifolia*	31"	Excellent	Good/Excellent	To be removed for construction
85	Coast Redwood/*Sequoia sempervirens*	19"	Good/Excellent	Good/Excellent	To be removed for construction
86	Coast Redwood/*Sequoia sempervirens*	23"	Good/Excellent	Good/Excellent	To be removed for construction
87	Coast Redwood/*Sequoia sempervirens*	17"	Fair	Good/Excellent	To be removed for construction
88	Coast Redwood/*Sequoia sempervirens*	13"	Fair/Good	Good	To be removed for construction
89	White Alder/*Alnus rhombifolia*	22"	Good	Good	To be removed for construction
100	Valley Oak/*Quercus lobata*	6/7/9"	Fair/Good	Fair/Good	To be removed for construction (near tree #17)
101	Coast Live Oak/*Quercus agrifolia*	5/9"	Excellent	Good	To be removed for construction (near tree #38)
102	Valley Oak/*Quercus lobata*	5/6"	Good	Good	To be removed for construction (near tree #40)
103	Valley Oak/*Quercus lobata*	9"	Good	Good	To be removed for construction
104	Valley Oak/*Quercus lobata*	8"	Excellent	Excellent	To be removed for construction (near tree #49)
200	Coast Live Oak/*Quercus agrifolia*	11,13,13,14"	Good/Excellent	Good (low-branched, multi-trunk)	To be removed for construction

SID COMMONS
Petaluma, California
TREE EVALUATION and INVENTORY

TREE #	SPECIES	TRUNK DIAMETER (In.)	GENERAL HEALTH	STRUCTURAL INTEGRITY	COMMENTS/RECOMMENDATIONS
201	Valley Oak/*Quercus lobata*	4"	Poor: extensive branch dieback	Poor	To be removed for construction; though protected, it is in poor condition and requires no mitigation
202	Valley Oak/*Quercus lobata*	5"	Excellent	Good	To be removed for Shasta Ave.extension

Appendix 7A

A Cultural Resources Evaluation of the Oak Creek Development Phase II

Archaeological Resource Service (ARS), field survey November 18, 2003, December 2003

[Note]: Appendices 7A is not included in this document to protect the confidentially of potentially sensitive cultural and/or tribal resource information, pursuant to the provisions of AB 52 (Pub. Resources Code section 21082.3(c). A Confidential Appendix of information generated for this environmental document is maintained by the City of Petaluma (as lead agency) under separate cover, and is not made available to the public.

Appendix 7B

Cultural Resources Assessment, Sid Commons Apartment Project

William Self Associates (WSA), November 2007

[Note]: Appendices 7B is not included in this document to protect the confidentially of potentially sensitive cultural and/or tribal resource information, pursuant to the provisions of AB 52 (Pub. Resources Code section 21082.3(c). A Confidential Appendix of information generated for this environmental document is maintained by the City of Petaluma (as lead agency) under separate cover, and is not made available to the public.

Appendix 8A

Geotechnical Investigation and Pavement Design

for Proposed Residential Development 150 Graylawn Avenue, Petaluma, CA

United Soil Engineering, Inc., October 21, 2003

REPORT TO

J. CYRIL JOHNSON INVESTMENT CORP.

MENLO PARK, CALIFORNIA

FOR

PROPOSED
RESIDENTIAL DEVELOPMENT

GRAYLAWN AVENUE
PETALUMA, CALIFORNIA

GEOTECHNICAL INVESTIGATION AND PAVEMENT DESIGN

OCTOBER, 2003

PREPARED BY

UNITED SOIL ENGINEERING, INC.
3476 EDWARD AVENUE
SANTA CLARA, CALIFORNIA

UNITED SOIL ENGINEERING, INC.
Geotechnical and Environmental Consultants

File No. 5286-S1
October 21, 2003

J. Cyril Johnson Investment Corp.
125 Willow Road
Menlo Park, CA 94025

Attention: Mr. Mark Johnson

Subject: Proposed Residential Development
Graylawn Avenue
Petaluma, California
GEOTECHNICAL INVESTIGATION
AND PAVEMENT DESIGN

Dear Mr. Johnson:

We are pleased to transmit herein the results of our geotechnical investigation and pavement design for the proposed residential development. The subject site is located on Graylawn Avenue in Petaluma, California.

Our findings indicate that the site is suitable for the proposed development provided the recommendations contained in this report are carefully followed. The suitability of the site was evaluated by field reconnaissance, drilling, sampling, and laboratory testing of the surface and subsurface material. The following report details our investigation, outlines our findings, and presents our conclusions based on those findings.

If you have any questions or require additional information, please feel free to contact our office at your convenience.

Very truly yours,

UNITED SOIL ENGINEERING, INC.

REGISTERED PROFESSIONAL ENGINEER
VIEN M. VO
RCE
32296
Exp. 12/31/2004
CIVIL
STATE OF CALIFORNIA

Sean A. Deivert
Project Manager

Vien Vo, P.E.

5286.gipd/Copies: 3 to J. Cyril Johnson Investment Corp.
3 to Hoover Associates

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GEOTECHNICAL INVESTIGATION AND PAVEMENT DESIGN

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INTRODUCTION

Per your authorization, United Soil Engineering, Inc. (USE) conducted a geotechnical investigation and pavement design. The purpose of this investigation was to determine the nature of the surface and subsurface soil conditions at the project site through field investigations and laboratory testing. This report presents an explanation of investigative procedures, results of the testing program, our conclusions, and our recommendations for earth work and foundation design to adapt the proposed development to the existing soil conditions.

PROJECT LOCATION AND DESCRIPTION

The subject site is located on Graylawn Avenue in Petaluma, California. Graylawn Avenue bound the subject site to the east, existing residential developments to the south, exiting railroad tracks to the west, and Petaluma Creek to the north and northeast. At the time of our investigation, the site was an irregular shaped, slightly sloping to the northeast parcel of land. Based on the preliminary plan prepared for the subject site by the Project Architect, the development will include the construction of residential developments and associate improvements. The location of the proposed residential development and our exploratory soil borings are presented in the Figure 2 - Site Plan.

FIELD INVESTIGATION

After considering the nature of the proposed development, and reviewing available data on the area, a field investigation was conducted at the project site by the project geologist under the direction of our geotechnical engineer. It included a site reconnaissance to detect any unusual surface features, and the drilling of fourteen exploratory test borings to determine the subsurface soil characteristics. The borings were drilled with a truck-mounted drill rig using

4-inch diameter solid stem augers. The borings were drilled on October 8, 2003 to the depths ranging from 3 to 20 feet below the existing ground surface. The approximate locations of the borings are shown on Figure 2.

The soils encountered were logged continuously in the field during the drilling operations. Relatively undisturbed soil samples were obtained by hammering a 2-½ inch I.D. split-tube sampler into the ground at various depths. A 140-pound hammer with a free fall of 30 inches was used to drive the sampler 18 inches into the ground. Blow counts were recorded on each 6-inch increment of the sampled interval. The blows required to advance the sampler the last 12 inches of the 18 inch sampled interval were recorded on the boring logs as penetration resistance. These values were also used to evaluate the liquefaction potential of the subsurface soils. After the completion of the drilling operation, the exploratory boring was backfilled from the bottom of the borehole to the surface with neat cement in accordance to the rules and regulations of the County of Sonoma Permit and Resource Management Department Well and Septic Section.

In addition, a disturbed bulk sample of the near-surface soil was collected for laboratory analyses. The Exploratory Boring Logs contained in the Appendix are a graphic representation of the encountered soil profile; and also show the depths at which the relatively undisturbed soil samples were obtained.

LABORATORY INVESTIGATION

A laboratory-testing program was performed to determine the physical and engineering properties of the soils underlying the site. Moisture content and dry density tests were performed on the relatively undisturbed soil samples in order to determine soil consistency and the moisture variation throughout the explored soil profile (Table I). The strength parameters of the foundation soils were determined from direct shear tests that were performed on a selected relatively undisturbed soil sample. A laboratory compaction test of the native soil material was performed to determine the maximum dry density per the ASTM D1557-91 test procedure. Atterberg Limits tests were also performed on the near-surface soil to assist in the classification of these soils and to obtain an evaluation of their expansion and shrinkage potential. An R-Value test was performed on a near-surface soil sample for pavement section design recommendations. The results of the laboratory-testing program are presented in the Tables and Figures at the end of this report.

SOIL CONDITIONS

In Boring B-8 (our deepest boring), the surface soil consisted of 2 inch of organic material. Below the organic layer to the end of the boring at 20 feet, a dark brown, damp, hard gravelly sandy clayey silt layer was encountered. Color changed light brown was noted at the depth of 3 feet. This material is fluvial deposit highly compressed and highly cemented. Similar soil profiles were encountered in the other boring.

Groundwater was initially encountered in Boring B-7 at the depths of 15 feet below the ground surface and rose to static level of 11 feet at the end of the drilling operation. It should be noted that the groundwater table would fluctuate as a result of seasonal changes and hydrogeologic variations such as seepage water, groundwater pumping and/or recharging. A detailed description of the soil profiles encountered is presented in Exploratory Boring Log contained in the Appendix.

GENERAL GEOLOGY

The subject site lies in Petaluma Valley within the Coast Range Geomorphic Province. Petaluma Valley is located between Sonoma Mountain to the northeast and the coast ranges to the southwest. Folds, thrust faults, steep reverse faults, and strikeslip faults have developed as a consequence of Cenozoic deformations and are widespread throughout the province.

Sonoma Mountain consists primarily of Pliocene age volcanic rocks including ryholite, andesite,basalt and pyroclastic rocks. The coast ranges in the vicinity of the subject site consist primarily of Upper Pliocene marine sedimentary rocks overlying an Upper Jurassic to Lower Cretaceous eugosynclinal assemblage known as the Franciscan Formation. The Franciscan Formation is primarily a rapidly deposited complexly intercalated and deformed mixture of clastic sedimentary, and altered mafic volcanic rocks, with some chert, limestone, and subordinate amounts of metamorphic rocks (CDMG; 1966). The Quaternary history of the region is recorded by sedimentary marine strata alternating with non-marine strata. The changes of the depositional environment are related to the fluctuation of sea level corresponding to the glacial and interglacial periods. The subject site lies on Pleistocene age alluvial fan deposits overlying Pleistocene age non-marine and Upper Pliocene marine sedimentary rocks (Koenig; 1967).

LIQUEFACTION

Liquefaction is the transformation of loose saturated silts and sands with less than 15% clay-sized particles from a solid state to semi-liquid state. This occurs under vibratory conditions such as those induced by a seismic event. To help evaluate liquefaction potential, samples of potentially liquefiable soil were obtained by hammering the split tube sampler into the ground. The number of blows required to drive the sampler the last 12 inches of the 18 inch sampled interval were recorded on the log of test boring.

The results from our exploratory boring show that in Boring B-8 (our deepest boring), the subsurface soil material to the depth of 20 feet consists of hard gravelly sandy clayey silt. Therefore, in our opinion, there is a low potential for liquefaction to occur at the site.

INUNDATION POTENTIAL

The subject site is located on Graylawn Avenue in Petaluma, California. According to the Limerinos and others, 1973 report, the site is not located in an area that has potential for inundation as the result of a 100-year flood (Limerinos, 1973).

CONCLUSIONS

1. The site covered by this investigation is suitable for the proposed development provided the recommendations set forth in this report are carefully followed.

2. Based on the laboratory testing results of the near-surface soil, the native surface soil at the project site has been found to have a low expansion potential when subjected to fluctuations in moisture.

3. The top 18 inches layer of the surface soil is loose due to recent disking for weed control. Therefore, we recommended the entire site be subexcavated to the depth of 6 inches. Then the excavated area should scarified to the depth of 12 inches and recompacted to at least 90% relative maximum density. The subexcavated area should be backfilled and compacted with native on-site soil to at least 90% relative maximum density.

4. We recommend the building pads be elevated above the adjacent ground surface to promote drainage and diversion of water away from the building foundations.

5. The site is located adjacent to Petaluma Creek. Therefore, minor cracks and separations of he concrete slab-on-grade, asphalt concrete pavements and/or curb and gutter should be expected.

6. We recommended a reference to our report should be stated in the grading and foundation plans (this includes the geotechnical investigation file number and dates).

7. On the basis of the engineering reconnaissance and exploratory borings, it is our opinion that trenches excavated to depths less than 5 feet below the

existing ground surface will not need shoring. However, for trenches greater than 5 feet in depth, shoring will be required.

8. Specific recommendations are presented in the remainder of this report.

9. All earthwork and grading shall be observed and inspected by a representative from USE. These operations are not limited to testing and inspection during grading.

RECOMMENDATIONS

GRADING

1. The placement of fill and control of any grading operations at the site should be performed in accordance with the recommendations of this report. These recommendations set forth the minimum standards to satisfy other requirements of this report.

2. All existing surface and subsurface structures, if any, that will not be incorporated in the final development shall be removed from the project site prior to any grading operations. These objects should be accurately located on the grading plans to assist the field engineer in establishing proper control over their removal. All utility lines, if any, must be removed prior to any grading at the site.

3. The depressions left by the removal of subsurface structures should be cleaned of all debris, backfilled and compacted with clean, native soil. This backfill must be engineered fill and should be conducted under the supervision of a USE representative.

4. All organic surface material and debris, including grass and weeds shall be stripped prior to any other grading operations, and transported away from all areas that are to receive structures or structural fills. Soil containing organic material may be stockpiled for later use in landscaping areas only.

5. After removing all the subsurface structures, if any, and after stripping the organic material from the soil, the building pad areas should be scarified by machine to a depth of 12 inches and thoroughly cleaned of vegetation and other deleterious matter.

6. After stripping, scarifying and cleaning operations, native soil should be re-compacted to not less than 90% relative maximum density using ASTM D1557-91 procedure over the entire building pad areas.

7. All engineered fill or imported soil should be placed in uniform horizontal lifts of not more than 6 to 8 inches in uncompacted thickness, and compacted to not less than 90% relative maximum density using ASTM D1557-91 procedure. The baserock, however, should be compacted to not less than 95% relative maximum density. Before compaction begins, the fill shall be brought to a water content that will permit proper compaction by either; 1) aerating the material if it is too wet, or 2) spraying the material with water if it is too dry. Each lift shall be thoroughly mixed before compaction to assure a uniform distribution of water content.

8. When fill material includes rocks, nesting of rocks will not be allowed and all voids must be carefully filled by proper compaction. Rocks larger than 4 inches in diameter should not be used for the final 2 feet of building pads. The existing asphalt concrete, if any, should not be incorporated into the construction of the building pads.

9. USE should be notified at least two days prior to commencement of any grading operations so that our office may coordinate the work in the field with the contractor. All imported borrow must be approved by USE before being brought to the site. Import soil must have a plasticity index no greater than 12 and an R-Value greater than 25. The fill material in the parking area can include recycled asphalt concrete and/or crushed concrete, provided the recycled material contains at least 30% of fine passing the # 4 sieve.

10. All grading work shall be observed and approved by a representative from USE. The geotechnical engineer shall prepare a final report upon completion of the grading operations.

WATER WELLS

11. Any water wells and/or monitoring wells on the site which are to be abandoned, shall be capped according to the requirements of the County of Sonoma Permit and Resource Management Department Well and Septic Section. The final elevation of the top of the well casing must be a minimum of 3 feet below the adjacent grade prior to any grading operation.

FOUNDATION DESIGN CRITERIA

12. We recommend the proposed residential developments be supported on a continuous perimeter foundation and isolated interior spread footings. Recommendations are presented in the following paragraphs.

13. When continuous perimeter and isolated interior spread footings are used for the proposed apartment complex, they must be founded at a minimum depth of 24 inches below rough soil pad. For these conditions, the recommended allowable bearing capacity is 3,000 p.s.f. (continuous perimeter and isolated interior spread footings). Both isolated interior and perimeter foundations should be founded at the same elevation below pad grade.

14. The above bearing values are for dead plus live loads, and may be increased by one-third for short term seismic and wind loads. The design of the structures and the foundations shall meet local building code requirements.

15. The project structural engineer responsible for the foundation design shall determine the final design of the foundations and reinforcing required. It is suggested that our office prior to construction review the foundation design.

16. The project structural engineer responsible for the foundation design shall determine the final design of the foundations and reinforcing required. We recommend that the foundation plans be reviewed by our office prior to submitting to the appropriate local agency and/or to construction.

SOIL PROFILE TYPE AND SEISMIC COEFFICIENTS

17. The soil profile type is S_C (Table 16-J, UBC 1997). The near-source factors are N_A = 1.1 and N_V = 1.4. The distance to the nearest fault, Rogers Creek, is approximately 8 kilometers. The seismic coefficients are C_A = 0.44 and C_V = 0.78 (Tables 16-1, 16-Q, 16-R, 16-S, 16-T, and 16-U, UBC 1997 and Map D-15, Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada, ICBO February, 1998).

RETAINING WALLS

18. Any facilities that will retain a soil mass shall be designed for a lateral earth pressure (active) equivalent to 50 pounds equivalent fluid pressure, plus surcharge loads. If the retaining walls are restrained from free movement at both ends, they shall be designed for the earth pressure resulting from 60 pounds equivalent fluid pressure, to which shall be added surcharge loads.

19. In designing for allowable resistive lateral earth pressure (passive) of 300 pounds equivalent fluid pressure may be used with the resultant acting at

the third point. The top foot of native soil shall be neglected for computation of passive resistance.

20. A friction coefficient of 0.3 shall be used for retaining wall design. This value may be increased by 1/3 for short-term seismic loads.

21. The above values assume a drained condition, and a moisture content compatible with those encountered during our investigation.

22. Drainage should be provided behind the retaining wall. The drainage system should consist of weep holes or perforated pipe placed at the base of the retaining wall and surrounded by ¾ inch drain rock wrapped in a filter fabric. The drain rock wrapped in fabric should be at least 12 inches wide and extend from the base of the wall to within 1.5 feet of the ground surface. The upper 1.5 feet of backfill should consist of compacted native soil. The retaining wall drainage system should be sloped to outfall to a discharge facility.

23. As an alternative to the drain rock and fabric, Miradrain 2000 or approved equivalent, may be used behind the retaining wall. The Miradrain 2000 should extend from the base of the wall to within two feet of the ground surface. A perforated pipe should be placed at the base of the wall in direct contact with the Miradrain 2000. The pipe should be sloped to outfall to an appropriate discharge facility. The Miradrain fabric at the base of the Miradrain 2000 panel should be wrapped around the perforated pipe to prevent soil intrusion into the pipe.

24. We recommend a thorough review by our office of all designs pertaining to facilities retaining a soil mass.

CONCRETE SLAB-ON-GRADE CONSTRUCTION

25. Based on the laboratory testing results of the near-surface soil, the native surface soil at the project site has been found to have a low expansion potential when subjected to fluctuations in moisture.

26. Slabs-on-grade construction in the living areas may be utilized where continuous perimeter footings are used. The concrete slab should have a minimum thickness of 5 inches and should be underlain by at least 5 inches of Class II Baserock or ¾ inch crush rock (recycled baserock and/or crushed asphalt concrete is not acceptable) over a vapor barrier and above 2 inches of sand. The baserock should be compacted to not less than 95% relative maximum density according to ASTM-D1557-91.

27. Concrete floor slabs-on-grade in the garage shall be underlain by a minimum of 4 inches of Class II Baserock and shall be poured structurally independent of the foundations or any fixed members when possible. The baserock should be compacted to not less than 95% relative maximum density according to ASTM D1557-91.

EXCAVATION

28. Minor difficulties due to soil conditions are anticipated in excavating the on-site material. Conventional earth moving equipment will be adequate for this project.

29. Any vertical cuts deeper than 5 feet must be properly shored. The minimum cut slope for excavation to the desired elevation is one horizontal to one vertical. The cut slope should be increased to 2:1 if the excavation is conducted during the rainy season or when the soil is highly saturated with water.

DRAINAGE

30. It is considered essential that positive drainage be provided during construction and be maintained throughout the life of the proposed development.

31. The final exterior grade adjacent to the proposed buildings should be such that the surface drainage will flow away from the structures. Rain water discharge at downspouts should be directed onto pavement sections, splash blocks,. or other acceptable facilities which will prevent water from collecting in the soil adjacent to the foundations.

32. Utility lines that cross under or through perimeter footings should be completely sealed to prevent moisture intrusion into the areas under the slab and/or footings. The utility trench backfill should be of impervious material and this material should be placed at least 4 feet on either side of the exterior footings.

33. Consideration should be given to collection and diversion of roof runoff and the elimination of planted areas or other surfaces which could retain water in areas adjoining the building. In unpaved areas, it is recommended that protective slopes be stabilized adjoining perimeter building walls. These slopes should be extended to a minimum of 5 feet horizontally from building walls. They must have a minimum outfall of 5 percent.

34. If the subgrade soil in the landscaping area is moderately to highly expansive, proper drainage should be provided in the landscaping area adjacent to the building foundations. A drip irrigation system is preferable. If the sprinkler system is located adjacent to the building foundations or concrete walkways, a moisture cut-off barrier should be provided.

ON-SITE UTILITY TRENCHING

35. All on-site utility trenches must be backfilled with native on-site material or imported fill and compacted to at least 90% relative maximum density in accordance with ASTM D1557-91. Backfill should be placed in 6 to 8 inch lifts and compacted. Jetting of trench backfill is not recommended. An engineer from our firm should be notified at least 48 hours before the start of any utility trench backfilling operations.

36. The utility trenches running parallel to the building foundations should be located a minimum distance of 10 feet away from the building foundations.

37. If utility trench excavation is to encounter groundwater, our office should be notified for dewatering recommendations.

PAVEMENT DESIGN

38. Due to the uniformity of the near-surface soil at the site, one R-Value Test was performed on a representative bulk sample. The result of the R-Value test is enclosed in this report. The following alternate sections are based on our laboratory resistance R-Value test of near-surface soil samples and traffic indices 5.5 for new street. Alternate pavement section designs, which satisfy the State of California Standard Design Criteria, and above traffic indices, are presented in Tables II.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The recommendations presented herein are based on the soil conditions revealed by our test borings and evaluated for the proposed construction planned at the present time. If any unusual soil conditions are encountered during the construction, or if the proposed construction will differ from that planned at the present time, United Soil Engineering, Inc. should be notified for supplemental recommendations.

2. This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the necessary steps are taken to see that the contractor carries out the recommendations of this report in the field.

3. The findings of this report are valid, as of the present time. However, the passing of time will change the conditions of the existing property due to natural processes, works of man, from legislation or the broadening of knowledge. Therefore, this report is subjected to review and should not be relied upon after a period of three years.

4. The conclusions and recommendations presented in this report are professional opinions derived from current standards of geotechnical practice and no warranty is intended, expressed, or implied.

5. The area of the borings is very small compared to the site area. As a result, buried structures such as septic tanks, storage tanks, abandoned utilities, or etc. may not be revealed in the borings during our field investigation. Therefore, if buried structures are encountered during grading or construction, our office should be notified immediately for proper disposal recommendations.

6. This report has been prepared solely for the purpose of geotechnical investigation and does not include investigations for toxic contamination studies of soil or groundwater of any type. If there are any environmental concerns, our firm can provide additional studies.

REFERENCES

Borcherdt R.D., Gibbs J. F., Lajoie K.R.; 1977 – Maps showing maximum earthquake intensity predicted in the southern San Francisco Bay Region, California, for large earthquakes on the San Andreas and Hayward faults; U.S.G.S. MF-709.

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Hays, W.W.; 1980 – Procedures for Estimating Earthquake Ground Motions, Geological Survey Professional Paper 1114.

Jennings C.W., Burnett J.L.; 1973 – Geologic Map of California, San Francisco Sheet; California Division of Mines and Geology, Ferry Building; San Francisco, California.

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TABLES

TABLE I – SUMMARY OF MOISTURE/DENSITY
AND DIRECT SHEAR TESTS

TABLE II – PROPOSED ALTERNATE PAVEMENT SECTIONS

TABLE III – PROPOSED ALTERNATE PAVEMENT SECTIONS

TABLE IV – PROPOSED RIGID PAVEMENT SECTIONS

TABLE I

SUMMARY OF MOISTURE/DENSITY
AND DIRECT SHEAR TESTING

Sample No.	Depth (Feet)	In-Place Conditions		Unconfined Compressive Strength (k.s.f.)	Direct Shear Testing	
		Dry Density (p.c.f.)	Moisture Content (% Dry Wt.)		Angle of Internal Friction (Degrees)	Unit Cohesion (k.s.f.)
1-1	3	103.4	11.7		24	1.3
1-2	5	107.2	10.6			
1-3	10	108.7	16.3			
1-4	15	98.3	21.0			
2-1	3	108.3	17.9			
2-2	5	106.5	12.7			
2-3	10	112.4	11.8			
3-1	3	103.8	12.0			
4-1	3	104.1	15.2			
4-2	5	107.5	15.7			
5-1	3	108.7	12.3			
6-1	3	106.4	19.7			

TABLE I (CONTINUED)

SUMMARY OF MOISTURE/DENSITY AND DIRECT SHEAR TESTING

Sample No.	Depth (Feet)	In-Place Conditions		Unconfined Compressive Strength (k.s.f.)	Direct Shear Testing	
		Dry Density (p.c.f.)	Moisture Content (% Dry Wt.)		Angle of Internal Friction (Degrees)	Unit Cohesion (k.s.f.)
7-1	3	105.2	15.4			
7-2	5	101.8	16.9			
7-3	10	97.5	17.2			
7-4	15	99.4	21.6			
8-1	3	109.0	18.6		28	1.0
8-2	5	108.2	14.0			
8-3	10	100.8	17.3			
8-4	15	98.1	23.2			
8-5	20	95.3	26.3			
9-1	3	109.2	20.3			
10-1	3	107.5	15.1			
10-2	5	112.6	15.0			
11-1	3	111.3	14.8			

TABLE I (CONTINUED)

SUMMARY OF MOISTURE/DENSITY AND DIRECT SHEAR TESTING

Sample No.	Depth (Feet)	In-Place Conditions		Unconfined Compressive Strength (k.s.f.)	Direct Shear Testing	
		Dry Density (p.c.f.)	Moisture Content (% Dry Wt.)		Angle of Internal Friction (Degrees)	Unit Cohesion (k.s.f.)
12-1	3	105.2	16.3			
13-1	3	105.5	15.9			
14-1	3	106.3	14.8			

TABLE II

PROPOSED ALTERNATE PAVEMENT SECTIONS

Location: Proposed Residential Development
Graylawn Avenue
Petaluma, California

	NEW STREET		
Design "R" Value	24.0		
Traffic Index	5.5		
Gravel Equivalent	16.5		
Recommended Alternate Pavement Sections:	1A	1B	1C
Asphalt Concrete	3.0"	3.5"	4.0"
Class II Baserock (R=78 min.) compacted to at least 95% relative maximum density	9.0"	8.0"	7.0"
Native soil compacted to at least 90% relative maximum density	12.0"	12.0"	12.0"

TABLE III

PROPOSED ALTERNATE PAVEMENT SECTIONS

Location: Proposed Residential Development
Graylawn Avenue
Petaluma, California

	DRIVEWAY		
Design "R" Value	24.0		
Traffic Index	4.5		
Gravel Equivalent	13.5		
Recommended Alternate Pavement Sections:	1A	1B	1C
Asphalt Concrete	3.0"	3.5"	4.0"
Class II Baserock (R=78 min.) compacted to at least 95% relative maximum density	6.0"	5.0"	4.0"
Native soil compacted to at least 90% relative maximum density	12.0"	12.0"	12.0"

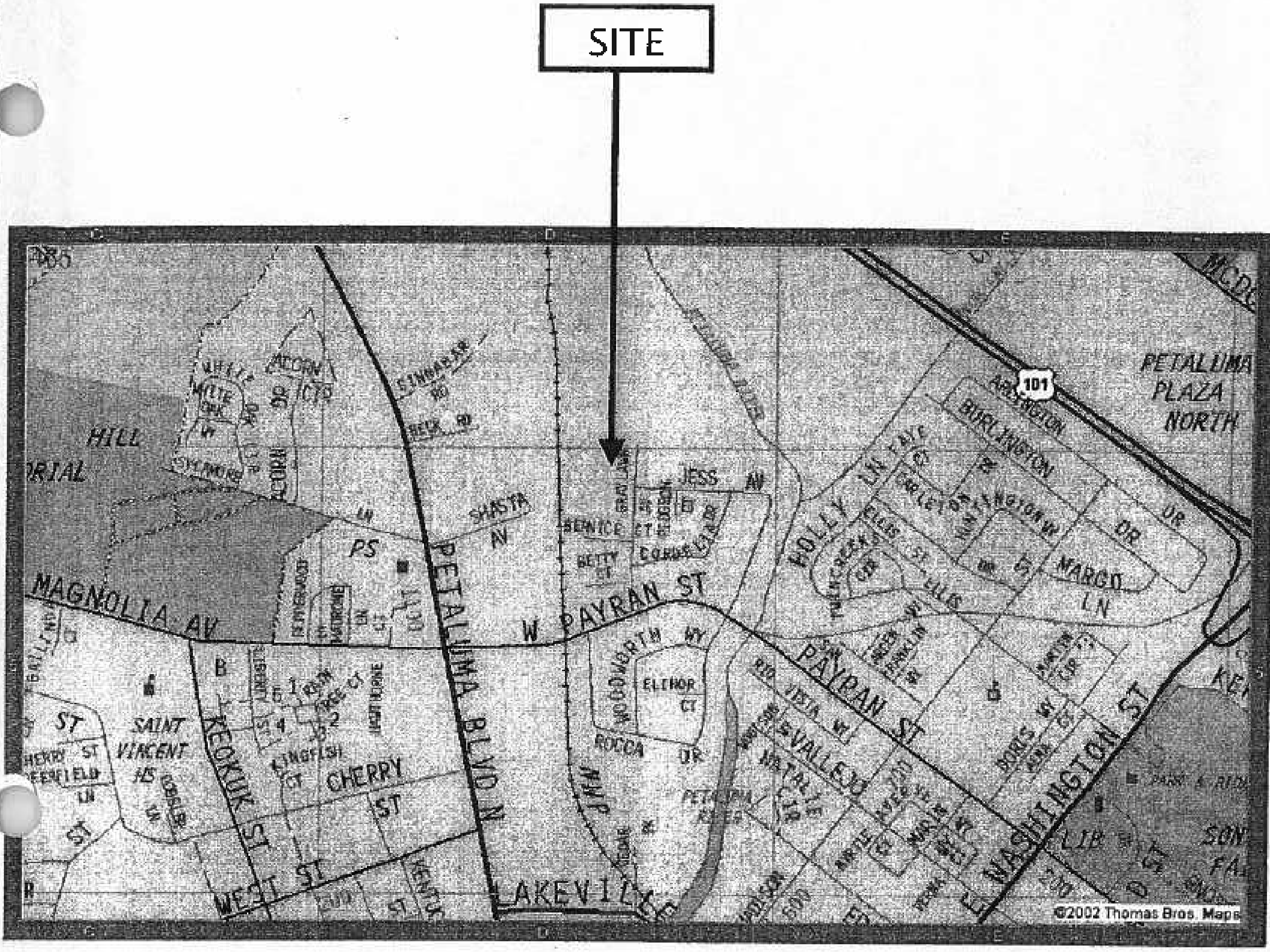
TABLE IV

PROPOSED RIGID PAVEMENT SECTIONS

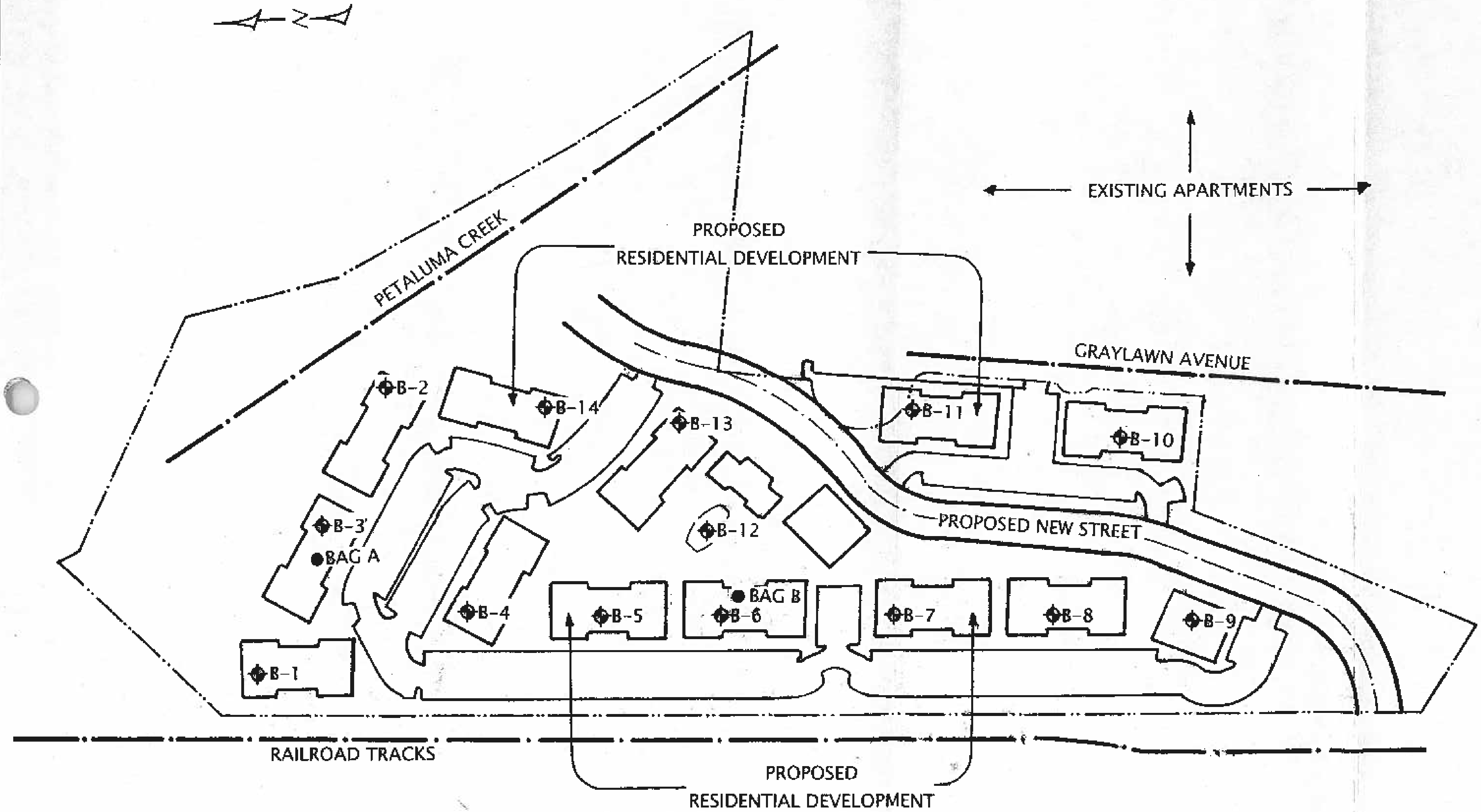
Location: Proposed Residential Development
Graylawn Avenue
Petaluma, California

	DRIVEWAY
Recommended Rigid Pavement Sections:	
P.C. Concrete	6.0"
Class II Baserock (R=78 min.) compacted to at least 95% relative maximum density	6.0"
Native soil compacted to at least 90% relative maximum density	12.0"

<u>FIGURES</u>

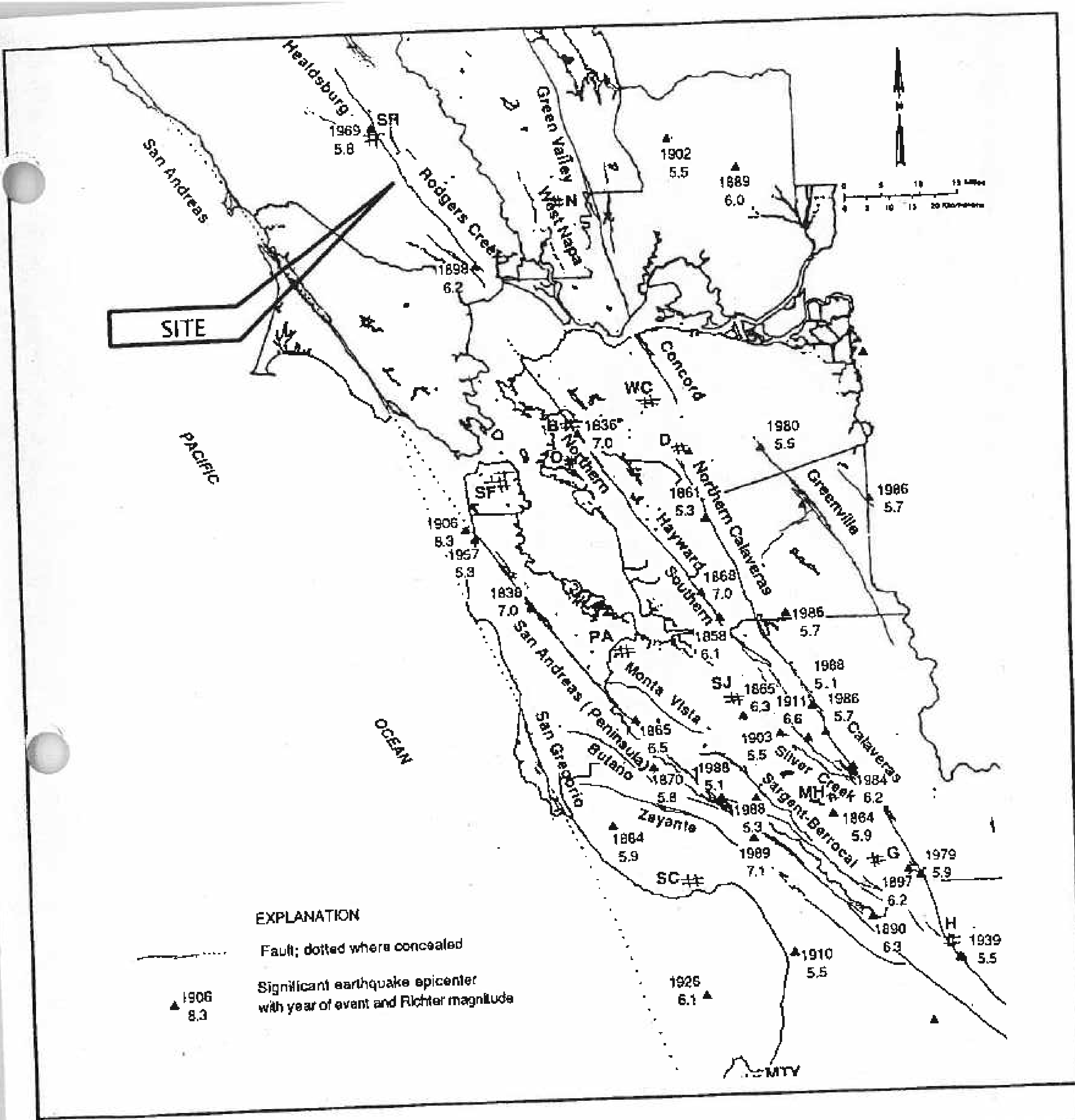


United Soil Engineering, Inc. 3476 Edward Avenue Santa Clara, CA 95054 (408) 988-2990	VICINITY MAP Proposed Residential Development Graylawn Avenue Petaluma, California	File No.: 5286-S1 Drawn by: B.T. Scale: NOT TO SCALE	FIGURE 1 October 2003



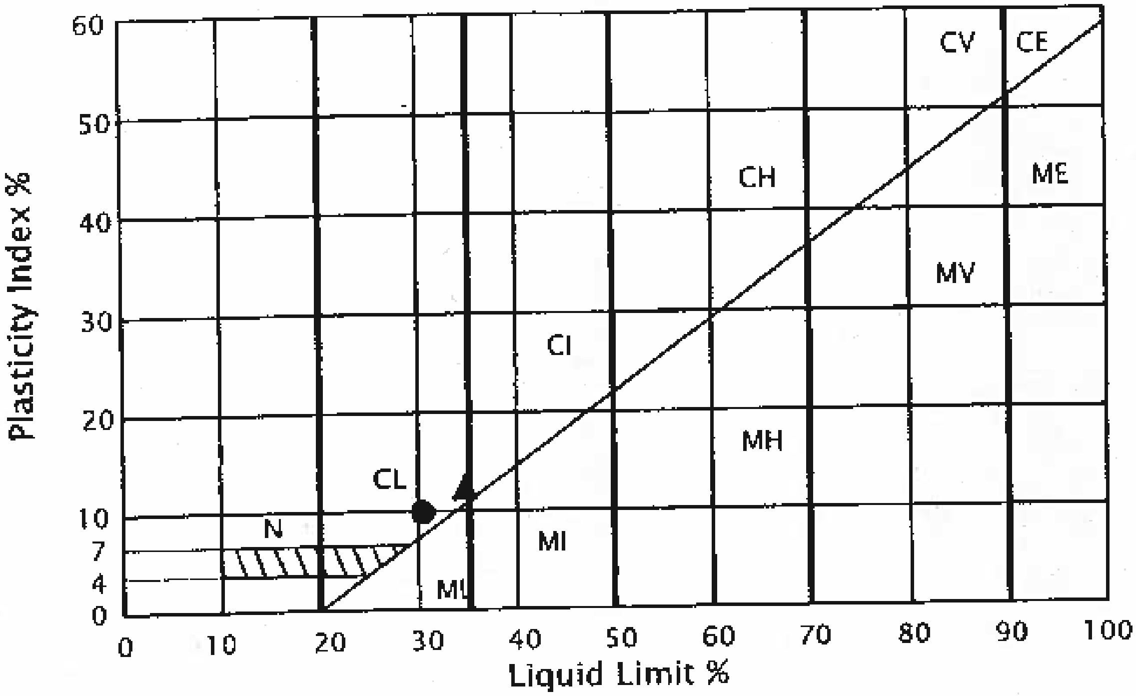
NOTE: ⊕ DENOTES APPROXIMATE EXPLORATORY BORING LOCATION
● DENOTES APPROXIMATE BAG SAMPLE LOCATION

United Soil Engineering, Inc. 3476 Edward Avenue Santa Clara, CA 95054 (408) 988-2990	SITE PLAN Proposed Residential Development Graylawn Avenue Petaluma, California	File No.: 5286-S2 Drawn by: B.T. Scale: NOT TO SCALE	FIGURE 2 October 2003



United Soil Engineering, Inc. 3476 Edward Avenue Santa Clara, CA 95054 (408) 988-2990	FAULT LOCATION MAP Proposed Residential Development Graylawn Avenue Petaluma, California	File No.: 5286-S1 Drawn by: B.T. Scale: NOT TO SCALE	FIGURE 3 October 2003

PLASTICITY CHART

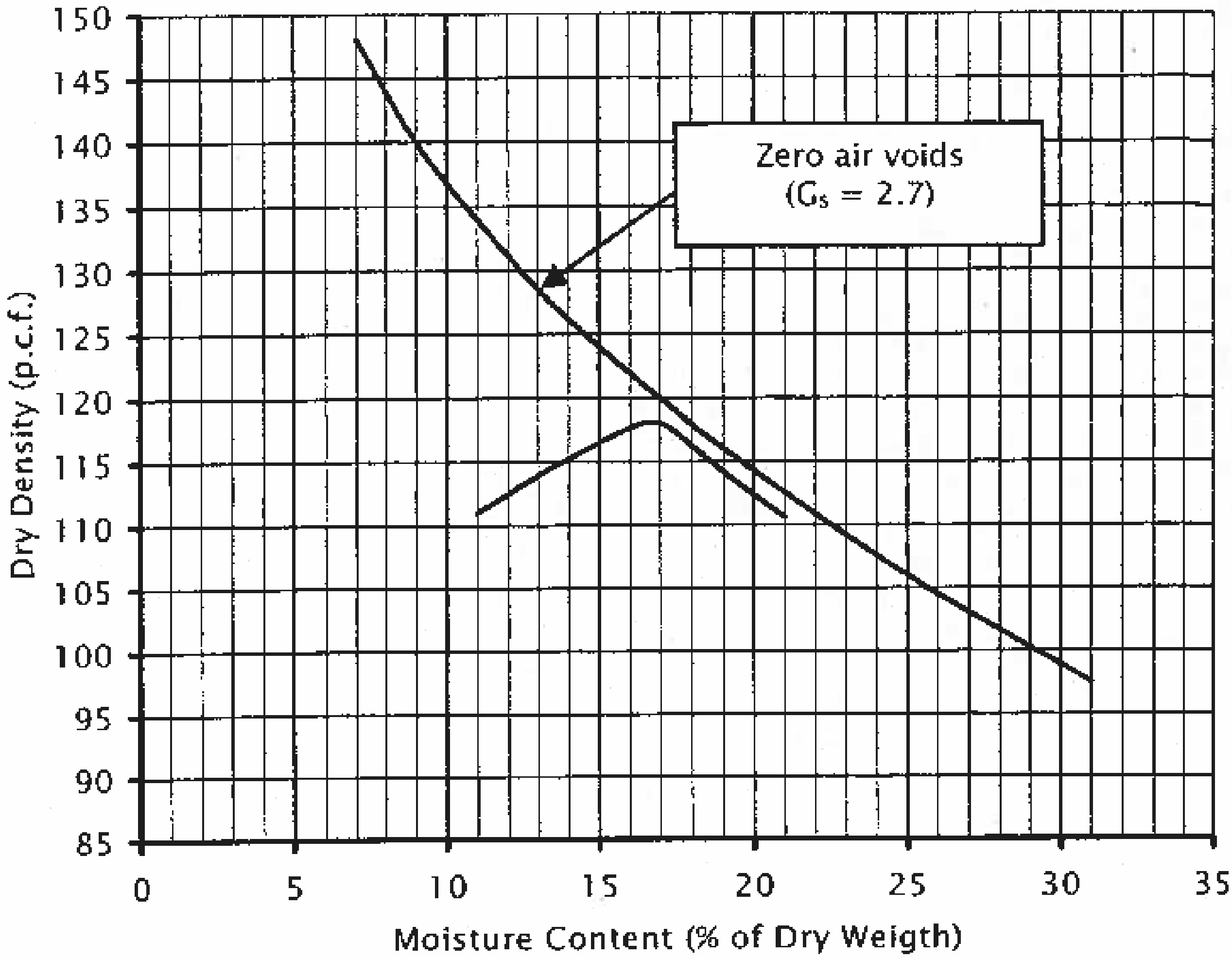


PLASTICITY DATA

Key Symbol	Hole No.	Depth ft.	Liquid Limit %	Plasticity Index %	Unified Soil Classification Symbol *
●	BAG A	0-1	30	10	CL
▲	BAG B	0-1	34	12	CL

*Soil type classification Based on British suggested revisions to Unified Soil Classification System

United Soil Engineering, Inc. 3476 Edward Avenue Santa Clara, CA 95054 (408) 988-2990	PLASTICITY INDEX Proposed Residential Development Graylawn Avenue Petaluma, California	File No.: 5286-S1 Drawn by: B.T. Scale: NOT TO SCALE	FIGURE 4 October 2003



SAMPLE: A

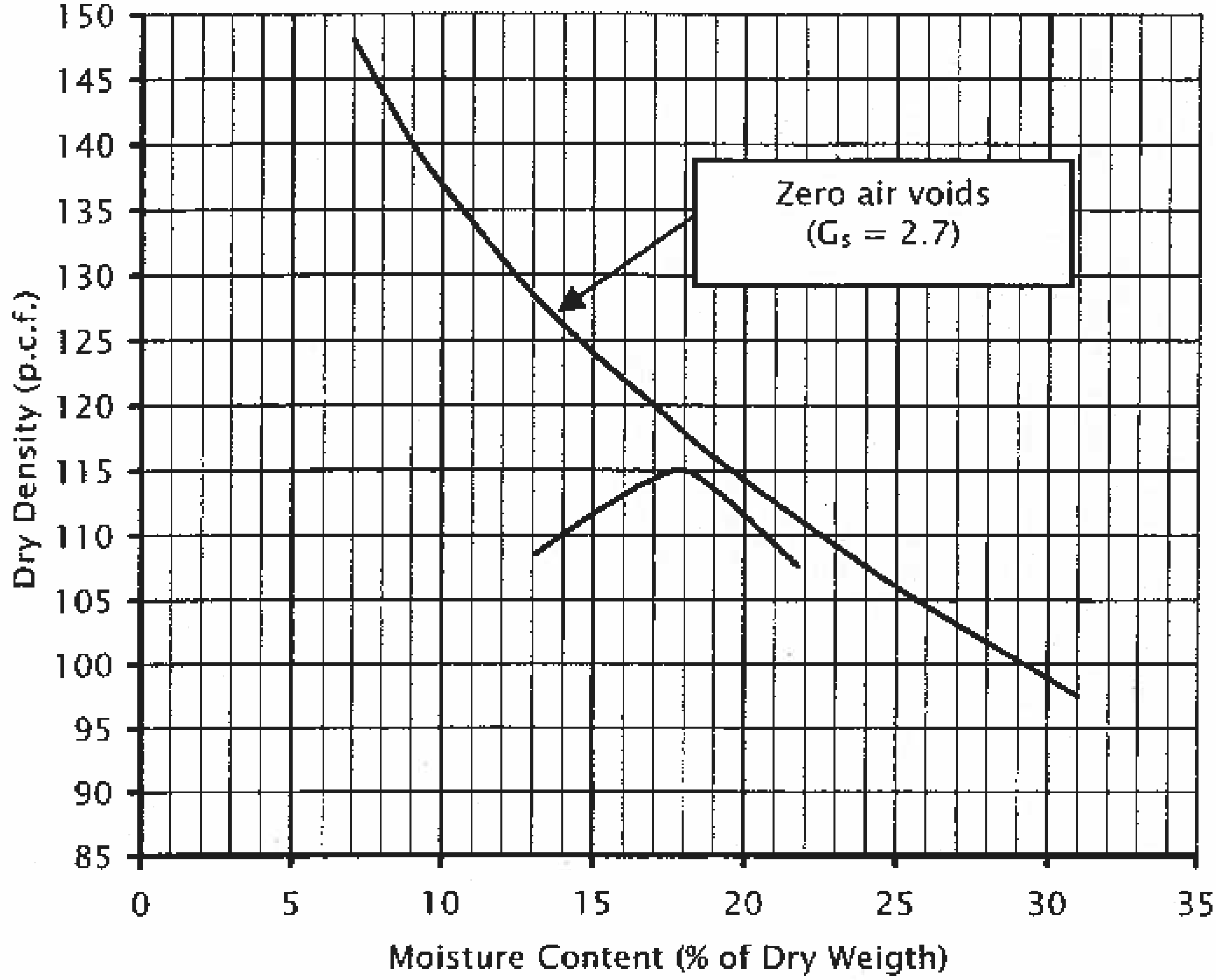
DESCRIPTION: Brown Sandy CLAY

LABORATORY TEST PROCEDURE: ASTM D1557-91

MAXIMUM DRY DENSITY: 118.0 p.c.f.

OPTIMUM MOISTURE CONTENT: 17.0 %

United Soil Engineering, Inc. 3476 Edward Avenue Santa Clara, CA 95054 (408) 988-2990	COMPACTION TEST A Proposed Residential Development Graylawn Avenue Petaluma, California	File No. 5286-S1 Drawn by: B.T. Scale: NOT TO SCALE	FIGURE 5 October 2003



SAMPLE: B

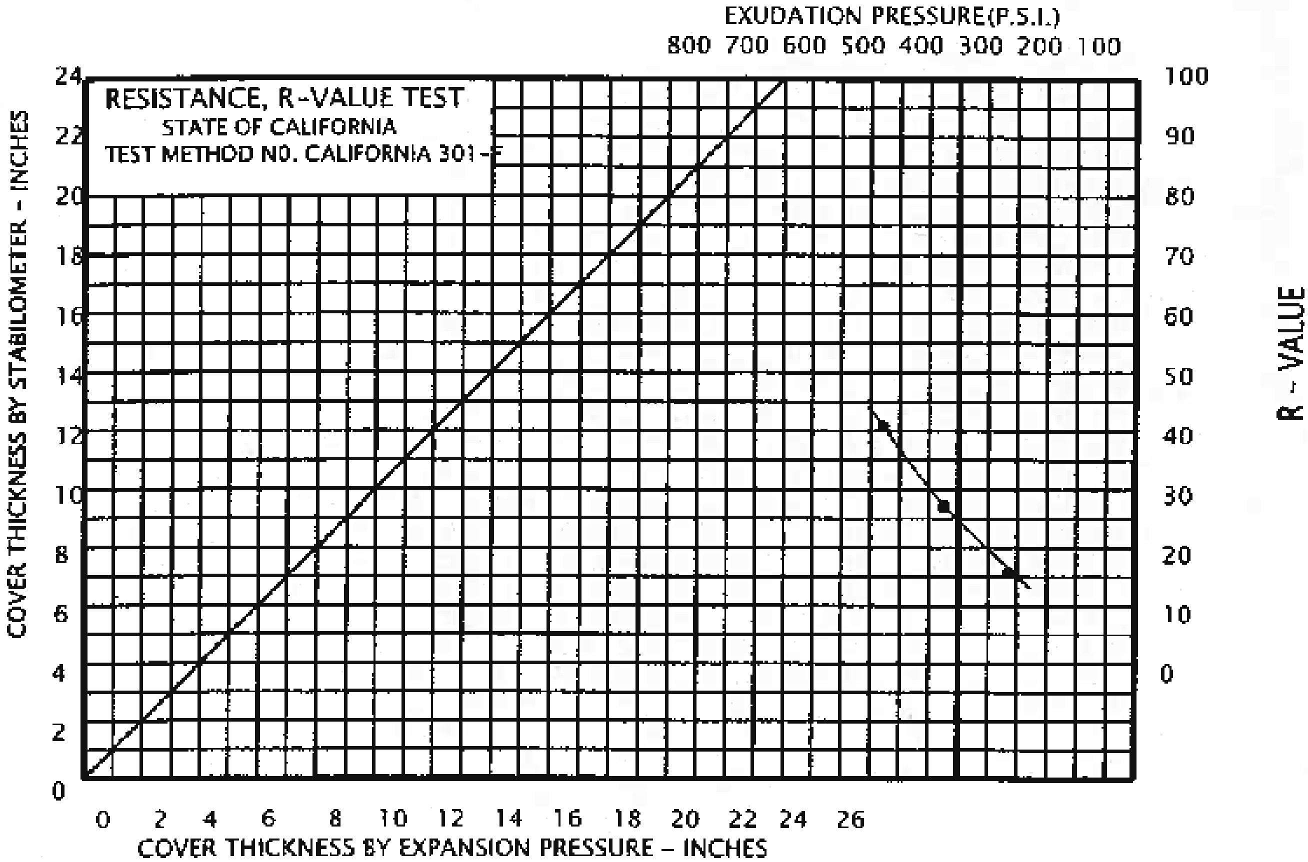
DESCRIPTION: Dark Brown Sandy CLAY

LABORATORY TEST PROCEDURE: ASTM D1557-91

MAXIMUM DRY DENSITY: 115.0 p.c.f.

OPTIMUM MOISTURE CONTENT: 18.0 %

United Soil Engineering, Inc. 3476 Edward Avenue Santa Clara, CA 95054 (408) 988-2990	COMPACTION TEST B Proposed Residential Development Graylawn Avenue Petaluma, California	File No. 5286-S1 Drawn by: B.T. Scale: NOT TO SCALE	FIGURE 5A October 2003



SAMPLE: A
DESCRIPTION: Brown Sandy CLAY

SPECIMEN	A	B	C
EXUDATION PRESSURE (P.S.I.)	216.0	329.0	431.0
EXPANSION DIAL (.0001")	33.0	60.0	85.0
EXPANSION PRESSURE (P.S.F.)	143.0	260.0	368.0
RESISTANCE VALUE, "R"	16.0	27.0	41.0
% MOISTURE AT TEST	16.3	15.3	14.4
DRY DENSITY AT TEST (P.C.F.)	110.1	112.3	115.3
R-VALUE AT 300 P.S.I. EXUDATION PRESSURE	= (24)		

United Soil Engineering, Inc. 3476 Edward Avenue Santa Clara, CA 95054 (408) 988-2990	R-VALUE TEST Proposed Residential Development Graylawn Avenue Petaluma, California	File No.: 5286-S1 Drawn by: B.T. Scale: NOT TO SCALE	FIGURE 6 October 2003

APPENDICES

MODIFIED MERCALLI SCALE

METHOD OF SOIL CLASSIFICATION

EXPLANATION OF BORING LOG SYMBOLS

EXPLORATORY BORING LOGS (B-1 THROUGH B-14)

DRILLING PERMIT

GENERAL COMPARISON BETWEEN EARTHQUAKE MAGNITUDE AND THE EARTHQUAKE EFFECTS DUE TO GROUND SHAKING

Earthquake Category	Richter Magnitude	Modified Mercalli Intensity Scale* (After Housner, 1970)	Damage to Structure
		I – Detected only by sensitive instruments.	
	2.0	II – Felt by few persons at rest, especially on upper floors; delicate suspended objects may swing.	
	3.0	III – Felt noticeably indoors, but not always recognized as an earthquake; standing cars rock slightly, vibration like passing truck.	No Damage
Minor		IV – Felt indoors by many, outdoors by a few; at night some awaken; dishes, windows, doors disturbed; cars rock noticeably.	
	4.0	V – Felt by most people; some breakage of dishes, windows, and plaster; disturbance of tall objects.	Architec-tural Damage
		VI – Felt by all; many are frightened and run outdoors; falling plaster and chimneys; damage small.	
5.3	5.0	VII – Everybody runs outdoors. Damage to building varies, depending on quality of construction; noticed by drivers of cars.	
Moderate	6.0	VIII – Panel walls thrown out of frames; fall of walls, monuments, chimneys; sand and mud ejected; drivers of cars disturbed.	
6.9		IX – Buildings shifted off foundations, cracked, thrown out of plumb; ground cracked, underground pipes broken; serious damage to reservoirs and embankments.	Structural Damage
Major	7.0	X – Most masonry and frame structures destroyed; ground cracked; rail bent slightly; landslides.	
7.7		XI – Few structures remain standing; bridges destroyed; fissures in ground; pipes broken; landslides; rails bent.	
Great	8.0	XII – Damage total; waves seen on ground surface; lines of sight and level distorted; objects thrown into the air; large rock masses displaced.	Near Total Destruction

*Intensity is a subject measure of the effect of the ground shaking, and is not engineering measure of the ground acceleration.

File No. 5286-S1

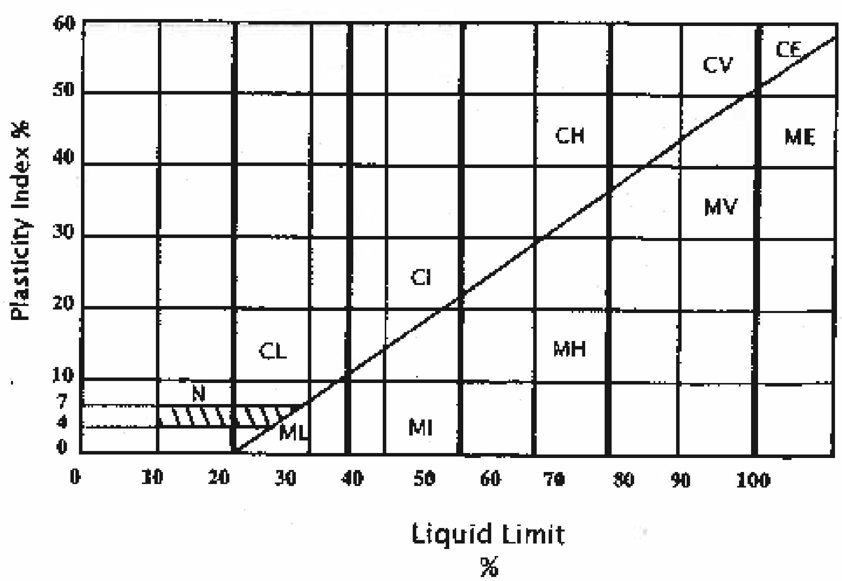
METHOD OF SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOL	TYPICAL NAMES
COARSE GRAINED SOILS	(More than 1/2 of soil > no. 200 sieve size)	GRAVELS (More than 1/2 of coarse fraction > no. 4 sieve size)	GW	Well graded gravel or gravel-sand mixtures, little or no fines
			GP	Poorly graded gravel or gravel-sand moistures, little or no fines
			GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey Gravels, gravel-sand-clay mixtures
		SANDS (More than 1/2 of coarse fraction < no. 4 sieve size	SW	Well graded sands or gravelly sands, no fines
			SP	Poorly graded sands or gravelly sands, no fines
			SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS	(More than 1/2 of soil < no. 200 sieve size)	SILTS & CLAYS LL < 50	ML	Inorganic silts and very fine sand, rock, flour, silty or clayey fine sand or clayey silt/slight plasticity
			CL	Inorganic clay of low to medium plasticity, gravelly clayes, sandy clay, silty clay, lean clays
			OL	Organic siltys and organic silty clay of low plasticity
		SILTS & CLAYS LL > 50	MH	Inorganic silts, micaceous or diatocaceous fine sandy, or silty soils, elastic silt
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOIL			PT	Peat and other highly organic soils

CLASSIFICATION CHART - UNIFIED SOIL CLASSIFICATION SYSTEM

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
GRAVELS Coarse Fine	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 Medium Fine	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 AND CLAY	Below No. 200	Below 0.074

PLASTICITY INDEX CHART



Logged By:	EXPLANATION OF TEST BORING SYMBOLS	Boring No.
Date Drilled:		

File No. 5286-S1

STATIC GROUNDWATER

GROUNDWATER FIRST NOTED

Dry Density p.c.f.	Moisture Content %	Penet. Resist. Blows/ft.	Unconf. Comp. Strength,k.s.f.	Direct Shear Test "C" k.s.f.	Direct Shear Test "Ø" Degree	Sample Number	Depth in Feet	Boring Log	DESCRIPTION
									CLAY
									SILT
									SAND
									GRAVEL
									clayey
									silty
									sandy
									gravelly
						1-1			Sample Taken with sample number and lab results given
									Sample Attempt - Unsuccessful No Sample Number
		**							Refusal noted in Remarks
									CLAYSTONE/SILTSTONE BEDROCK

Remarks:

Logged By: S.D.	EXPLORATORY BORING LOG	Boring No. B-1
Date Drilled: 10/8/03		File No. 5286-S1

Dry Density p.c.f.	Moisture Content %	Penet. Resist. Blows/ft.	Unconf. Comp. Strength, k.s.f.	Direct Shear Test "C" k.s.f.	Direct Shear Test "Ø" Degree	Sample Number	Depth in Feet	Boring Log	DESCRIPTION
							1		3 " organic materials
							2		Brown Sandy CLAY #
									Reddish Brown Clayey Gravelly Sandy SILT
103.4	11.7	***		1.3	24	1-1	3		Damp, hard
									(Fluvial Deposit)
107.2	10.6	***				1-2	5		
108.7	16.3	60				1-3	10		
98.3	21.0	**				1-4	15		
									Boring Terminated at 15 Feet

Remarks: ** 50 for 4 inches
*** 50 for 6 inches
# Dry, loose

Logged By: S.D.

Date Drilled: 10/8/03

EXPLORATORY BORING LOG

Boring No. B-2

File No. 5286-S1

Dry Density p.c.f.	Moisture Content %	Penet. Resist. Blows/ft.	Unconf. Comp. Strength, k.s.f.	Direct Shear Test "C" k.s.f.	Direct Shear Test "Ø" Degree	Sample Number	Depth in Feet	Boring Log	DESCRIPTION
							1		2 " organic materials
							2		Tan Brown Clayey Gravelly Sandy SILT
108.3	17.9	***				2-1	3		Damp, cemented hard
106.5	12.7	*				2-2	5		(Fluvial Deposit)
									Become harder
112.4	11.8	*				2-3	10		
									Boring Terminated at 14 Feet

Remarks: * 50 for 3 inches
*** 50 for 6 inches

United Soil Engineering, Inc.

Logged By: S.D.	EXPLORATORY BORING LOG	Boring No. B-3
Date Drilled: 10/8/03		File No. 5286-S1

Dry Density p.c.f.	Moisture Content %	Penet. Resist. Blows/ft.	Unconf. Comp. Strength,k.s.f.	Direct Shear Test "C" k.s.f.	Direct Shear Test "Ø" Degree	Sample Number	Depth in Feet	Boring Log	DESCRIPTION
							1		3 " organic materials
							2		Brown Clayey Gravelly Sandy SILT
103.8	12.0	***				3-1	3		Damp, hard
									(Fluvial Deposit)
									Boring Terminated at 4 Feet

Remarks: *** 50 for 6 inches

United Soil Engineering, Inc.

Logged By: S.D.	EXPLORATORY BORING LOG	Boring No. B-4
Date Drilled: 10/8/03		File No. S286-S1

Dry Density p.c.f.	Moisture Content %	Penet. Resist. Blows/ft.	Unconf. Comp. Strength, k.s.f.	Direct Shear Test "C" k.s.f.	Direct Shear Test "Ø" Degree	Sample Number	Depth in Feet	Boring Log	DESCRIPTION
							1		2 " organic materials
							2		Brown Clayey Gravelly Sandy SILT
104.1	15.2	***				4-1	3		Damp, hard
									(Fluvial Deposit)
107.5	15.7	**				4-2	5		
									Boring Terminated at 5 Feet

Remarks: ** 50 for 4 inches
*** 50 for 6 Inches

United Soil Engineering, Inc.

Logged By: S.D.	EXPLORATORY BORING LOG	Boring No. B-5
Date Drilled: 10/8/03		File No. 5286-S1

Dry Density p.c.f.	Moisture Content %	Penet. Resist. Blows/ft.	Unconf. Comp. Strength, k.s.f.	Direct Shear Test "C" k.s.f.	Direct Shear Test "Ø" Degree	Sample Number	Depth in Feet	Boring Log	DESCRIPTION
							1		2 " organic materials ●
							2		Tan Brown Clayey Gravelly Sandy SILT Damp, hard
108.7	12.3	***				S-1	3		(Fluvial Deposit)
									Boring Terminated at 3 Feet

Remarks: *** 50 for 6 inches
● Reddish Brown Sandy CLAY
Dry, loose

Logged By: S.D.

Date Drilled: 10/8/03

EXPLORATORY BORING LOG

Boring No. B-6

File No. 5286-S1

Dry Density p.c.f.	Moisture Content %	Penet. Resist. Blows/ft.	Unconf. Comp. Strength, k.s.f.	Direct Shear Test "C" k.s.f.	Direct Shear Test "Ø" Degree	Sample Number	Depth in Feet	Boring Log	DESCRIPTION
							1		2 " organic materials ●
							2		Tan Brown Clayey Gravelly Sandy SILT
106.4	19.7	***				6-1	3		Damp, hard (Fluvial Deposit)
									Boring Terminated at 3 Feet

Remarks: *** 50 for 6 inches

● Dark Brown Sandy CLAY
Dry, loose

United Soil Engineering, Inc.

Logged By: S.D.	EXPLORATORY BORING LOG	Boring No. B-7
Date Drilled: 10/8/03		File No. 5286-SI

Dry Density p.c.f.	Moisture Content %	Penet. Resist. Blows/ft.	Unconf. Comp. Strength, k.s.f.	Direct Shear Test "C" k.s.f.	Direct Shear Test "Ø" Degree	Sample Number	Depth In Feet	Boring Log	DESCRIPTION
							1		2 " organic materials
							2		Tan Brown Clayey Gravelly Sandy SILT
105.2	15.4	38				7-1	3		Damp, hard
									(Fluvial Deposit)
101.8	16.9	70				7-2	5		
									Became harder
97.5	17.2	*				7-3	10		
99.4	21.6	**				7-4	15		
									Boring Terminated at 15 Feet

Remarks: * 50 for 3 inches
** 50 for 4 inches

United Soil Engineering, Inc.

Logged By: S.D.	EXPLORATORY BORING LOG	Boring No. B-8
Date Drilled: 10/8/03		File No. 5286-S1

Dry Density p.c.f.	Moisture Content %	Penet. Resist. Blows/ft.	Unconf. Comp. Strength,k.s.f.	Direct Shear Test "C" k.s.f.	Direct Shear Test "Ø" Degree	Sample Number	Depth in Feet	DESCRIPTION
							1	2 " organic materials
							2	Dark Brown Clayey Gravelly Sandy SILT
109.0	18.6	54		1.0	28	8-1	3	Damp, hard #
								(Fluvial Deposit)
108.2	14.0	46				8-2	5	
100.8	17.3	57				8-3	10	
98.1	23.2	50				8-4	15	
95.3	26.3	*				8-5	20	
								Boring Terminated at 20 Feet

Remarks: * 50 for 3 inches
Color changed to Light Brown

Logged By: S.D.	EXPLORATORY BORING LOG	Boring No. B-9
Date Drilled: 10/8/03		File No. 5286-S1

Dry Density p.c.f.	Moisture Content %	Penet. Resist. Blows/ft.	Unconf. Comp. Strength, k.s.f.	Direct Shear Test "C" k.s.f.	Direct Shear Test "Ø" Degree	Sample Number	Depth in Feet	Boring Log	DESCRIPTION
							1		2 " organic materials ●
							2		Light Brown Clayey Gravelly Sandy SILT
109.2	20.3	**				9-1	3		Damp, hard (Fluvial Deposit)
									Boring Terminated at 3 Feet

Remarks: ** 50 for 4 inches
● Dark Brown Sandy CLAY
Dry, loose

United Soil Engineering, Inc.

Logged By: S.D.	EXPLORATORY BORING LOG	Boring No. B-10
Date Drilled: 10/8/03		File No. 5286-S1

Dry Density p.c.f.	Moisture Content %	Penet. Resist. Blows/ft.	Unconf. Comp. Strength, k.s.f.	Direct Shear Test "C" k.s.f.	Direct Shear Test "Ø" Degree	Sample Number	Depth in Feet	Boring Log	DESCRIPTION
							1		2 " organic materials
							2		Dark Brown Clayey Gravelly Sandy SILT
107.5	15.1	55				10-1	3		Damp, hard #
									(Fluvial Deposit)
112.6	15.0	91				10-2	5		Color changed to Olive
									Boring Terminated at 5 Feet

Remarks: # Color changed to Tan Brown

United Soil Engineering, Inc.

Logged By: S.D.	EXPLORATORY BORING LOG	Boring No. B-11
Date Drilled: 10/8/03		File No. 5286-S1

Dry Density p.c.f.	Moisture Content %	Penet. Resist. Blows/ft.	Unconf. Comp. Strength, k.s.f.	Direct Shear Test "C" k.s.f.	Direct Shear Test "Ø" Degree	Sample Number	Depth in Feet	Boring Log	DESCRIPTION
							1		2 " organic materials
							2		Dark Brown Clayey Gravelly Sandy SILT
111.3	14.8	90				11-1	3		Damp, hard (Fluvial Deposit) #
									Boring Terminated at 3 Feet

Remarks: # Color changed to Tan Brown

United Soil Engineering, Inc.

Logged By: S.D.	EXPLORATORY BORING LOG	Boring No. B-12
Date Drilled: 10/8/03		File No. 5286-S1

Dry Density p.c.f.	Moisture Content %	Penet. Resist. Blows/ft.	Unconf. Comp. Strength, k.s.f.	Direct Shear Test "C" k.s.f.	Direct Shear Test "Ø" Degree	Sample Number	Depth in Feet	Boring Log	DESCRIPTION
							1		2 " organic materials
							2		Tan Brown Clayey Gravelly Sandy SILT
105.2	16.3	*				12-1	3		Damp, hard (Fluvial Deposit)
									Boring Terminated at 3 Feet

Remarks: * 50 for 3 inches

United Soil Engineering, Inc.

Logged By: S.D.	EXPLORATORY BORING LOG	Boring No. B-13
Date Drilled: 10/8/03		File No. 5286-S1

Dry Density p.c.f.	Moisture Content %	Penet. Resist. Blows/ft.	Unconf. Comp. Strength, k.s.f.	Direct Shear Test "C" k.s.f.	Direct Shear Test "Ø" Degree	Sample Number	Depth in Feet	Boring Log	DESCRIPTION
							1		2 " organic materials ●
							2		Tan Brown Clayey Gravelly Sandy SILT Damp, hard (Fluvial Deposit)
105.5	15.9	*				13-1	3		
									Boring Terminated at 3 Feet

Remarks: * 50 for 3 inches
● Dark Brown Sandy CLAY
Dry, loose

United Soil Engineering, Inc.

Logged By: S.D.	EXPLORATORY BORING LOG	Boring No. B-14
Date Drilled: 10/8/03		File No. 5286-51

Dry Density p.c.f.	Moisture Content %	Penet. Resist. Blows/ft.	Unconf. Comp. Strength, k.s.f.	Direct Shear Test "C" k.s.f.	Direct Shear Test "Ø" Degree	Sample Number	Depth in Feet	Boring Log	DESCRIPTION
							1		2 " organic materials
							2		Tan Brown Clayey Gravelly Sandy SILT
106.3	14.8	*				14-1	3		Damp, hard (Fluvial Deposit)
									Boring Terminated at 3 Feet

Remarks: * 50 for 3 inches

United Soil Engineering, Inc.

File No. 5286-S1

COUNTY OF SONOMA
PERMIT & RESOURCE MANAGEMENT DEPARTMENT
WELL & SEPTIC SECTION
2550 VENTURA AVENUE
SANTA ROSA, 95403
(707) 565-1900

APPLICATION FOR PERMIT
WATER WELL

WELL ADDRESS 150 Graylawn Avenue

CITY Petaluma ZIP 94952 APPLICATION No. W-03-0516

PROPERTY OWNER J. Cyric Johnson Investment Corp. ASSESSOR'S PARCEL No. 019-010-008 9

ADDRESS 125 Willow Road, Menlo Park, CA 94025 PHONE No. (650) 324-9439

DRILLING CONTRACTOR Horizon Drilling CONTRACTOR LICENSE No. 773230

ADDRESS P.O. Box 133, Escalon 95320 PHONE No. (209) 484-5485

TYPE OF WORK: Class I Permit ☐ Class II Permit ☐ New Well ☐ Reconstruct ☐ Observation ☐ Test well, Test hole ☐ Destruct ☐ Other: Soil Boring

PROPOSED USE: Domestic, Single Family ☐ Domestic, Public ☐ Irrigation ☐ Industrial ☐ Other: Residential Geotechnical Investigation

CONSTRUCTION PROPOSED: N/A

Casing: Diameter: ______ Gauge: ______ Material: ______ Conductor: Yes ☐ No ☐ Single ☐ Double ☐ Gravel Pack: Yes ☐ No ☐

Annular Space: Size ______ Depth of Seal: ______ Concrete: ______ Grout: ______ Neat Cement: ______ Puddled Clay: ______

Method of Disinfection: ______ Method of Sealing Access Opening: Cement Grout The Borings From Bottom to Top Type of Joint: ______

Well located within an existing public water system boundary: Yes ☐ No ☒ Name: ______

I hereby agree to comply with all laws and regulations of the County of Sonoma and State of California pertaining to water well construction. I will telephone (707) 565-1694 to notify the Environmental Health Specialist when I am commencing this work. I will furnish the Permit and Resource Management Department and the owner a copy of the State Water Well Driller's Report within 60 days in order to obtain final approval on this well. I acknowledge that the application will become a permit only after site approval and payment of fee. I understand that this permit is not transferrable and expires one year from date of issuance.

Signature of Well Driller [signature] Date 9/26/03

CONSTRUCTION PROPOSED:

☐ A currently effective certificate of Worker's Compensation Insurance is on file with the Sonoma County PRMD.

☒ I certify that in the performance of the work for which this permit is issued I shall not employ any person in any manner so as to become subject to the Worker's Compensation laws of California.

Insurance Carrier State Compensation Insurance Fund Policy # 1582838-03

Signature of Applicant [signature] Date 9/25/03

FOR OFFICE USE ONLY - ENVIRONMENTAL HEALTH SERVICE

Site approved by: [signature] Date: 10-2-03 Water Scarce Area: Yes ☐ No ☒

Finaled by: ______ Date: ______ Sealed to depth of ______ Seal Observed: Yes ☐ No ☐

Indicate below the exact location of well with respect to the following items: property lines, water bodies or water courses, drainage pattern, roads, existing wells, sewer main and laterals and private sewage disposal systems or other sources of contamination or pollution. INCLUDE DIMENSIONS. The validity of this permit depends upon the accuracy of the information provided by the applicant.

Drill ~~6~~ 4 Borings to the Depth of 20 to 35 Feet Below Ground Surface

See Other Page For Site Plan

N

Appendix 8B

Geotechnical Engineering Report Update for Sid Commons

RGH Consultants, January 20, 2015

RGH CONSULTANTS
Experience is the difference

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1305 North Dutton Ave
Santa Rosa, CA 95401
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Napa Office
1041 Jefferson St, Suite 4
Napa, CA 94559
P: 707-252-8105
F: 707-544-1082

Middletown Office
P.O. Box 852
Middletown, CA 95461
P: 707-987-4602
F: 707-987-4603

January 20, 2015

The Acclaim Companies
Attention: Mark Johnson
125 Willow Road
Menlo Park, CA 94025
mark@acclaimcompanies.com

Geotechnical Engineering Report Update
Sid Commons
Graylawn Avenue
Petaluma, California

Project Number: 3184.01.04.1

INTRODUCTION

This letter serves to update previous geotechnical work performed for the proposed residential project on Graylawn Avenue in Petaluma, California. United Soil Engineering, Inc. (USE) performed a geotechnical investigation for a residential project that included 15 structures with asphalt paved parking and driveways and presented the results in a report dated October, 2003 (USE, 2003). That report provided recommendations for, among other things, building pad grading, foundations, retaining walls, slabs-on-grade, utility trenches, and pavement sections. The purpose of this update is to review the referenced report, the currently planned project and the existing site conditions in order to prepare this letter that allows the referenced report to apply to the current project with revised recommendations as necessary.

The property proposed for development is located westerly and northerly of Graylawn Avenue. An existing apartment complex is located on the east side of Graylawn Avenue. The site is bordered on the west side by railroad tracks and the Petaluma River extends along the northeastern portion of the property. The property is covered with seasonal grasses and weeds with scattered trees.

We understand it is proposed to construct 14 new apartment buildings with a clubhouse and a pool. The planned apartment buildings include structures with 24 units and structures with 12 units. We assume that the planned structures will be wood-framed construction with concrete slab-on-grade floors unless subsurface conditions dictate otherwise. Auto access will be provided by extending Graylawn Avenue to the north and extending Shasta Avenue, which is located west of the site, across the railroad tracks and to the north. Asphalt paved driveways and parking will be provided. Terracing and restoration will be performed for the area immediately adjacent to the river. The proposed site plan for the project is shown in Plate 1.

Foundation loads are expected to be typical of the moderately heavy type of construction proposed. We anticipate wall loads will range from 1 to 5 kips per lineal foot. We understand site grading will be the minimum needed to construct level building pads and paved areas with positive drainage and to provide terracing and restoration along the river. Such grading could include cuts and fills of about 1 to 8 feet.

RECONNAISSANCE AND DOCUMENT REVIEW

On January 6, 2015, our senior engineer and senior geologist performed a brief reconnaissance of the site to observe the existing surface conditions. During our reconnaissance we noted that the site surface conditions do not appear to have changed significantly from those described in the referenced report.

Our review of the USE report indicates that the site is underlain by non-expansive surface soils. The upper 18 inches of the surface soils are loose due to disking and require remedial grading. The report provides recommendations for remedial grading of these soil with specific recommendations for building pad grading, foundations, seismic design criteria, retaining walls, slabs-on-grade, surface drainage, utility trenches, and pavement sections.

In addition to the above, the USE report concludes that the property has a low potential for liquefaction. However, this conclusion, as stated in the report, is based on one boring (B-8) that is located in the southern portion (see Plate 1), which is furthest from the river where we would anticipate liquefiable soils would be encountered. A review of published liquefaction potential mapping (Knudsen, et al., 2000, and Witter, et al., 2006) indicates that there is a high potential for liquefaction in the northern portion of the property. The approximate area of potentially high liquefaction potential is shown on Plate 1. As shown on the plate, boring B-8 is located outside the zone of potentially high liquefaction potential. Therefore, conclusions concerning liquefaction potential based strictly on boring B-8 are not appropriate and potentially inaccurate.

CONCLUSIONS AND RECOMMENDATIONS

Based on our review and reconnaissance it is our opinion that, in general, the recommendations in the USE report, with the revised recommendations presented herein, are valid for design and construction of the proposed residential project described herein. These recommendations may need to be further modified based on the results of supplemental studies recommended herein.

Liquefaction Potential - As discussed previously, the USE report concluded that the potential for liquefaction at the site is low based on one boring (B-8). However, published liquefaction potential mapping indicates that the portion of the site shown on Plate 1 has a high potential for liquefaction. The boring used by USE for their analysis is located outside of the zone shown on Plate 1. Therefore, the conclusion regarding liquefaction potential in the USE report is not supported by the data. The potential for liquefaction at the site needs to be furthered studied with either additional borings or cone penetration testing or both. The additional exploration initially should extend to depths ranging from 30 to 50 feet, and the liquefaction analysis should be performed using the current method for determining peak ground acceleration (PGA). Depths of the supplemental exploration may be modified based on conditions encountered during the study. Based on the results of the liquefaction analysis, recommendations should be presented to mitigate the impacts of liquefaction, if the potential exists. Mitigation measures may include ground improvement such as deep soil mixing, stone columns, and rammed aggregate piers, or deep foundations.

Seismic Design – Seismic design criteria presented in the USE report was based on the 1997 Uniform Building Code. The current project is being designed under the 2013 California Building Code (CBC). Seismic design parameters presented below are based on Section 1613 titled "Earthquake Loads" of the 2013 CBC. Based on Table 20.3-1 of American Society of Civil Engineers (ASCE) Standard 7-10 (ASCE, 2010), we have determined a Site Class of D should be used for the site. Using site latitude and longitude of 38.2491°N and 122.6420°W, respectively, and the U.S. Seismic Design Maps from the United States Geological Survey (USGS) website (http://geohazards.usgs.gov/designmaps/us/application.php), we recommend that the following seismic design criteria be used for structures at the site.

2013 CBC Seismic Criteria	
Spectral Response Parameter	**Acceleration (g)**
S_S (0.2 second period)	1.576
S_1 (1 second period)	0.619
S_{MS} (0.2 second period)	1.576
S_{M1} (1 second period)	0.928
S_{DS} (0.2 second period)	1.051
S_{D1} (1 second period)	0.619

Retaining Walls - Retaining walls constructed at the site must be designed to resist lateral earth pressures plus additional lateral pressures that may be caused by surcharge loads applied at the ground surface behind the walls. Retaining walls free to rotate (yielding greater than 0.1 percent of the wall height at the top of the backfill) should be designed for active lateral earth pressures. If walls are restrained by rigid elements to prevent rotation, they should be designed for "at rest" lateral earth pressures.

Retaining walls should be designed to resist the following earth equivalent fluid pressures (triangular distribution):

EARTH EQUIVALENT FLUID PRESSURES		
Loading Condition	**Pressure (pcf)**	**Additional Seismic Pressure (pcf)***
Active - Level Backfill	42	12
Active - Sloping Backfill 3:1 or Flatter	53	25
At Rest – Level Backfill	63	27

* If required

These pressures do not consider additional loads resulting from adjacent foundations or other loads. If these additional surcharge loadings are anticipated, we can assist in evaluating their effects. Where retaining wall backfill is subject to vehicular traffic, the walls should be designed to resist an additional surcharge pressure equivalent to two feet of additional backfill.

Retaining walls will yield slightly during backfilling. Therefore, walls should be backfilled prior to building on, or adjacent to, the walls. Backfill against retaining walls should be compacted to at least 90 and not more than 95 percent relative compaction. Over-compaction or the use of large compaction equipment should be avoided because increased compactive effort can result in lateral pressures higher than those recommended above.

Retaining walls should be supported on spread footings, designed in accordance with the recommendations presented in referenced report. Retaining wall foundations should be designed by the project civil or structural engineer to resist the lateral forces set forth in this section.

Retaining walls should be backdrained as shown on Plate 2. The backdrains should consist of 4-inch diameter, rigid perforated pipe embedded in Class 2 permeable material. The pipe should be PVC Schedule 40 or ABS with SDR 35 or better, and the pipe should be sloped to drain to outlets by gravity. The top of the pipe should be at least 8 inches below lowest adjacent grade. The Class 2 permeable material should extend to within 1½ feet of the surface. The upper 1½ feet should be backfilled with compacted soil to exclude surface water. Expansive soils should not be used for wall backfill. Where expansive soils are present in the excavation made to install the retaining wall, the excavation should be sloped back 1:1 from the back of the footing or grade beam. The ground surface behind retaining walls should be sloped to drain. Where migration of moisture through retaining walls would be detrimental, retaining walls should be waterproofed.

Slab-on-Grade - Slab-on-grade subgrade should be rolled to produce a dense, uniform surface. The slabs should be underlain with a capillary moisture break consisting of at least 4 inches of clean, free-draining crushed rock or gravel (excluding pea gravel) at least ¼-inch and no larger than ¾-inch in size. Class 2 aggregate base can be used for slab rock under exterior slabs.

Slabs should be designed by the project civil or structural engineer to support the anticipated loads, reduce cracking and provide protection against the infiltration of moisture vapor. A vapor barrier should be placed under all slabs-on-grade that are likely to receive an impermeable floor finish or be used for any purpose where the passage of water vapor through the floor is undesirable. RGH does not practice in the field of moisture vapor transmission evaluation or mitigation. Therefore, we recommend that a qualified person be consulted to evaluate the general and specific moisture vapor transmission paths and any impact on the proposed construction. This person should provide recommendations for mitigation of the potential adverse impact of moisture vapor transmission on various components of the structure as deemed appropriate.

Utility Trenches - The shoring and safety of trench excavations is solely the responsibility of the contractor. Attention is drawn to the State of California Safety Orders dealing with "Excavations and Trenches."

Unless otherwise specified by the City of Petaluma, on-site, inorganic soil may be used as general utility trench backfill. Where utility trenches support pavements, slabs and foundations, trench backfill should consist of aggregate baserock. The baserock should comply with the minimum requirements in Caltrans Standard Specifications, Section 26 for Class 2 Aggregate Base. Trench backfill should be moisture-conditioned as necessary, and placed in horizontal layers not exceeding 8 inches in thickness, before compaction. Each layer should be compacted to at least 90 percent relative compaction as determined by ASTM Test Method D-1557. The top 6 inches of trench backfill below vehicle pavement subgrades should be moisture-conditioned as necessary and compacted to at least 95 percent relative compaction. Jetting or ponding of trench backfill to aid in achieving the recommended degree of compaction should not be attempted.

Pavement – The referenced report states that an R-value of 24 was measured on a bulk sample of the proposed subgrade soil. Because of potential variation in the on-site soils, we selected an R-value of 20 for use in pavement design calculations. Based on the assumed R-Value and our experience with similar projects and soils, we recommend that the pavement section listed in the table below be used. The assumed Traffic Indices (TI) are not based on actual truck traffic counts or predictions of counts. Actual truck traffic counts may require revision of these traffic indices.

PAVEMENT SECTIONS WITH IMPORTED SELECT FILL SUBGRADE		
TI	ASPHALT CONCRETE (feet)	CLASS 2 AGGREGATE BASE (feet)
7.0	0.30	1.15
6.0	0.25	1.05
5.0	0.20	0.90

Pavement thicknesses were computed using Caltrans CalFP v1.1 design software and are based on a pavement life of 20 years. These recommendations are intended to provide support for traffic represented by the indicated Traffic Indices. They are not intended to provide pavement sections for heavy concentrated construction storage or wheel loads such as forklifts, parked truck-trailers and concrete trucks or for post-construction concentrated wheel loads such as self-loading dumpster trucks.

In areas where heavy construction storage and wheel loads are anticipated, the pavements should be designed to support these loads. Support could be provided by increasing pavement sections or by providing reinforced concrete slabs. Alternatively, paving can be deferred until heavy construction storage and wheel loads are no longer present. Loading areas for self-loading dumpster trucks should be provided with reinforced concrete slabs at least 6 inches thick, and reinforced with No. 4 bars at 12-inch centers each way. Alternatively, the asphalt concrete section should be increased to at least 8 inches in these areas.

Prior to placement of aggregate base, the upper 6 inches of the pavement subgrade soils should be scarified, uniformly moisture-conditioned to near optimum, and compacted to at least 95 percent relative compaction to form a firm, non-yielding surface. Aggregate base materials should be spread in thin layers, uniformly moisture-conditioned, and compacted to at least 95 percent relative compaction to form a firm, non-yielding surface. The materials and methods used should conform to the requirements of the City of Petaluma and the current edition of the Caltrans Standard Specifications, except that compaction requirements should be based on ASTM Test Method D-1557. Aggregate used for the base course should comply with the minimum requirements specified in Caltrans Standard Specifications, Section 26 for Class 2 Aggregate Base.

Geotechnical Drainage - Surface water should be diverted away from slopes, foundations and edges of pavements. Surface drainage gradients should slope away from building foundations in accordance with the requirements of the CBC or local governing agency. Where a gradient flatter than 2 percent for paved areas and 4 percent for unpaved areas is required to satisfy design constraints, area drains should be installed with spacing no greater than about 20 feet. Roofs should be provided with gutters and the downspouts should be connected to closed (glued Schedule 40 PVC or ABS with SDR of 35 or better) conduits discharging well away from foundations, onto paved areas or erosion resistant natural drainages or into the site's surface drainage system. Roof downspouts and surface drains must be maintained entirely separate from the slab underdrains recommended hereinafter.

Water seepage or the spread of extensive root systems into the soil subgrade of footings, slabs or pavements could cause differential movements and consequent distress in these structural elements. Landscaping should be planned with consideration for these potential problems.

Where interior slab subgrades are less than 6 inches above adjacent exterior grade and where migration of moisture through the slab would be detrimental, slab underdrains should be installed to dispose of surface and/or groundwater that may seep and collect in the slab rock. Slab underdrains should consist of 6-inch wide trenches that extend at least 6 inches below the bottom of the slab rock and slope to drain by gravity. The slab underdrain trenches should be spaced no further than 15 feet, both ways. Additional drain trenches should be installed, as necessary, to drain all isolated under slab areas. Four-inch diameter perforated pipe (SDR 35 or better) sloped to drain to outlets by gravity should be placed in the bottom of the trenches. Slab underdrain trenches should be backfilled to subgrade level with clean, free draining slab rock. An illustration of this system is shown on Plate 3. If slab underdrains are not used, it should be anticipated that water will enter the slab rock, permeate through the concrete slab and ruin floor coverings.

<u>Supplemental Services</u> – Supplemental borings or cone penetration testing should be performed to evaluate the potential for liquefaction in more detail. These explorations initially should extend to depths of 30 to 50 feet depending on the materials encountered. Liquefaction analysis should be performed on the data gathered, and the results with mitigation recommendations, if needed, should be presented in a supplemental document.

It has been our experience that contractors bidding on the project often contact us to discuss the geotechnical aspects. Informal contacts between RGH and an individual contractor could result in incomplete or misinterpreted information being provided to the contractor. Therefore, we recommend a pre-bid meeting be held to answer any questions about this report update prior to submittal of bids. If this is not possible, questions or clarifications regarding this report update should be directed to the project owner or their designated representative. After consultation with RGH, the project owner or their representative should provide clarifications or additional information to all contractors bidding the job.

Coordination between the design team and the geotechnical engineer is recommended to assure that the design is compatible with the soil, geologic and groundwater conditions encountered during our study. RGH Consultants (RGH) recommends that we be retained to review the project plans and specifications to determine if they are consistent with our recommendations. In the event we are not retained to perform this recommended review, we will assume no responsibility for misinterpretation of our recommendations.

Prior to construction, a meeting should be held at the site that includes, but is not limited to, the owner or owner's representative, the general contractor, the grading contractor, the foundation contractor, the underground contractor, any specialty contractors, the project civil engineer, other members of the project design team and RGH. This meeting should serve as a time to discuss and answer questions regarding the recommendations presented herein and to establish the coordination procedure between the contractors and RGH.

In addition, we should be retained to monitor all soils related work during construction, including:

- Site stripping, over-excavation, grading, and compaction of near surface soils;
- Placement of all engineered fill and trench backfill with verification field and laboratory testing;
- Observation of all foundation excavations; and
- Observation of foundation and subdrain installations.

If, during construction, we observe subsurface conditions different from those encountered during the explorations, we should be allowed to amend our recommendations accordingly. If different conditions are observed by others, or appear to be present beneath excavations, RGH should be advised at once so that these conditions may be evaluated and our recommendations reviewed and updated, if warranted. The validity of recommendations made in this report update is contingent upon our being notified and retained to review the changed conditions.

If more than 18 months have elapsed between the submission of this report update and the start of work at the site, or if conditions have changed because of natural causes or construction operations at, or adjacent to, the site, the recommendations made in this report update may no longer be valid or appropriate. In such case, we recommend that we be retained to review this report update and verify the applicability of the conclusions and recommendations or modify the same considering the time lapsed or changed conditions. The validity of recommendations made in this report update is contingent upon such review.

These supplemental services are performed on an as-requested basis and are in addition to this geotechnical study. We cannot accept responsibility for items that we are not notified to observe or for changed conditions we are not allowed to review.

LIMITATIONS

This report has been prepared by RGH for the exclusive use of The Acclaim Companies and their consultants as an aid in the design and construction of the proposed Sid Commons project described in this report.

The validity of the recommendations contained in this report update depends upon an adequate testing and monitoring program during the construction phase. Unless the construction monitoring and testing program is provided by our firm, we will not be held responsible for compliance with design recommendations presented in this report update and other addendum submitted as part of this report update.

Our services consist of professional opinions and conclusions developed in accordance with generally accepted geotechnical engineering principles and practices. We provide no warranty, either expressed or implied. Our conclusions and recommendations are based on the information provided to us regarding the proposed construction, the results of our field exploration, laboratory testing program, and professional judgment. Verification of our conclusions and recommendations is subject to our review of the project plans and specifications, and our observation of construction.

The borings performed by USE represent subsurface conditions at the locations and on the date indicated. It is not warranted that they are representative of such conditions elsewhere or at other times. Site conditions and cultural features described in the text of this report are those existing at the time of our field exploration on October 8, 2003, and may not necessarily be the same or comparable at other times.

The scope of our services did not include an environmental assessment or a study of the presence or absence of toxic mold and/or hazardous, toxic or corrosive materials in the soil, surface water, groundwater or air (on, below or around this site), nor did it include an evaluation or study for the presence or absence of wetlands. These studies should be conducted under separate cover, scope and fee and should be provided by a qualified expert in those fields.

We trust this provides the information you require at this time. If you have questions please call.

Very truly yours,
RGH Consultants

REGISTERED PROFESSIONAL ENGINEER
ERIC G. CHASE
No. 2628
GEOTECHNICAL
STATE OF CALIFORNIA

Eric G. Chase
Senior Associate Engineer

EGC:JJP:ec:lw
Three wet-signed and electronically submitted

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Attachment: References
Plate 1 – Site Plan with Previous Exploration and Liquefaction Mapping
Plate 2 – Retaining Wall Backdrain Illustration
Plate 3 – Typical Subdrain Details Illustration

REFERENCES

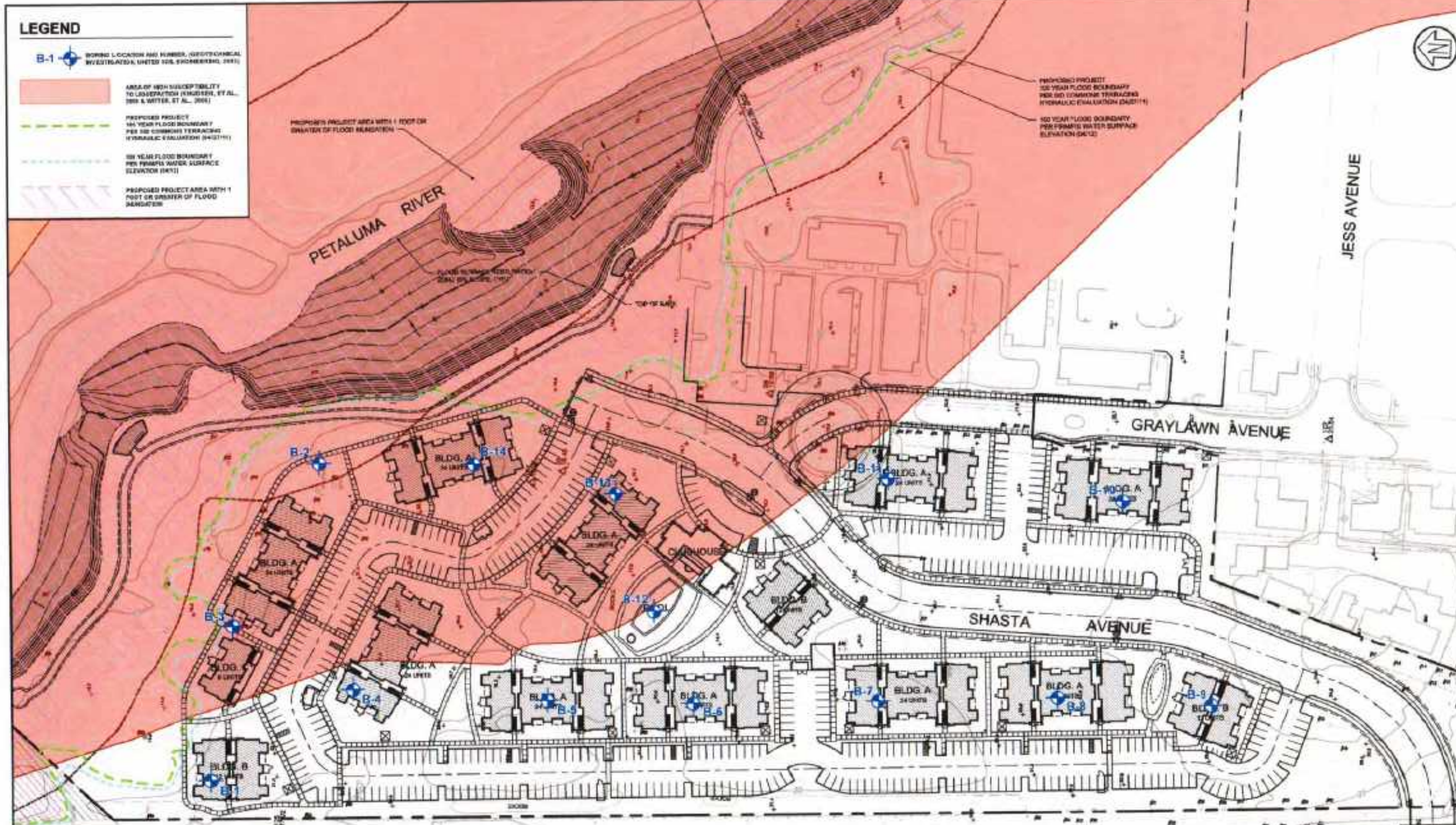
American Society of Civil Engineers, 2010, Minimum Design Loads for Buildings and Other Structures, ASCE Standard ASCE/SEI 7-10.

California Building Code, 2013, California Building Standard Commission.

Knudsen, K.L., Sowers, J.M., Witter, R.C., Wentworth, C.M., and Helley, E.J., 2000, Preliminary Maps of Quaternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region, California, U.S. Geological Survey, Open File Report 00-444.

Witter, Robert C., Knudsen, Keith L., Sowers, Janet M:, Wentworth, Carl M., Koehler, Richard D., and Randolph, Carolyn E., 2006, Maps of Quaternary Deposits and Liquefaction Susceptibility in the Central San Francisco Bay Region, California, United States Geological Survey, Open File Report 06-1037, 2 Sheets, Scale 1:200,000.

United Soil Engineering, Inc., 2003, Geotechnical Investigation and Pavement Design, Proposed Residential Development, Graylawn Avenue, Petaluma, California, October, 2003.



RAILROAD R/W

Reference: Preliminary Site Plan, J. Cyril Johnson Investment Corp., CSW/Stuber-Stroeh Engineering Group, 2013

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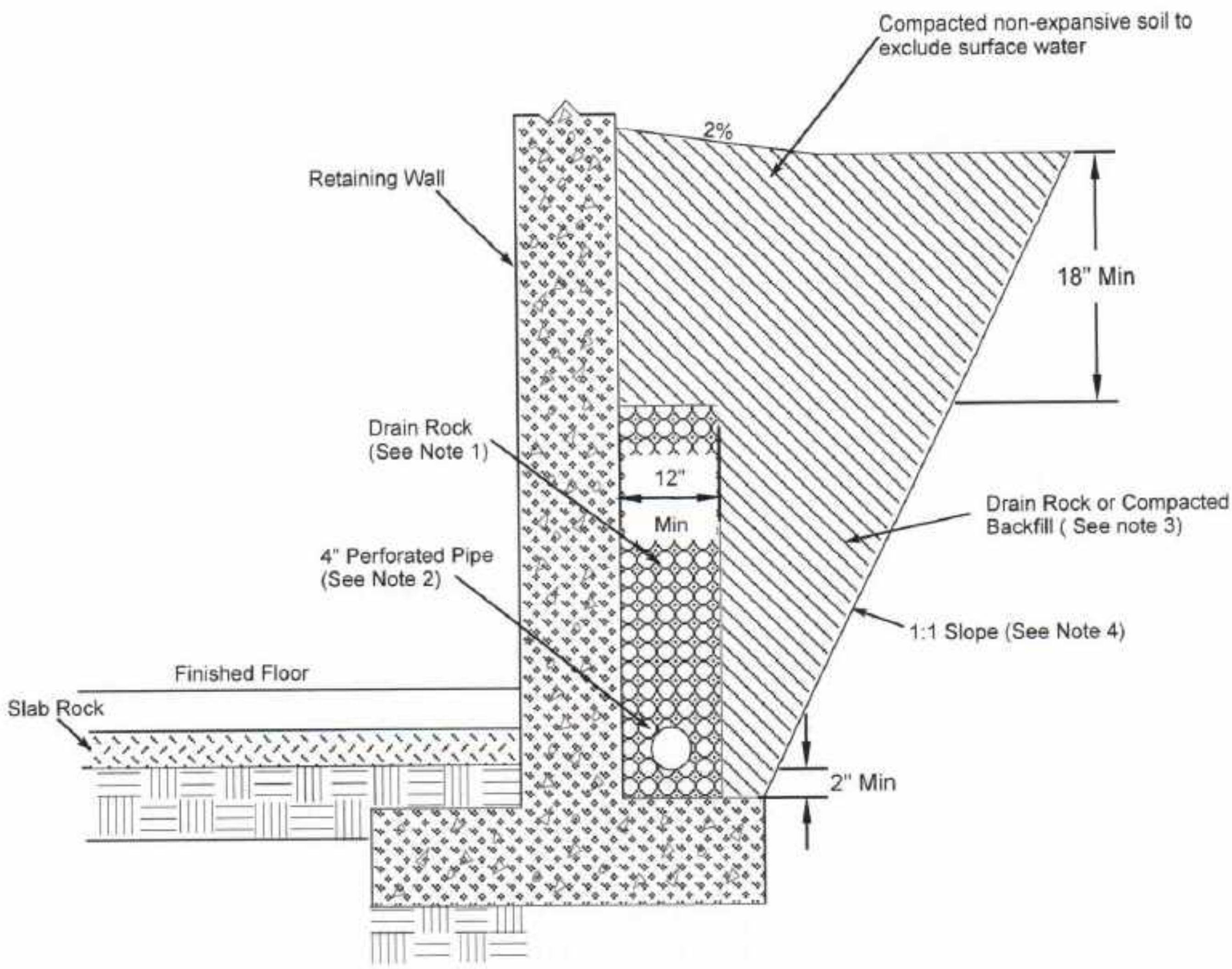
Job No. 3184.01.04.1 | Date: JAN 2015

SITE PLAN WITH PREVIOUS EXPLORATION AND LIQUEFACTION MAPPING

Sid Commons
Graylawn Avenue
Petaluma, California

PLATE 1



Notes:

1. Drain rock should meet the requirements for Class 2 Permeable Material, Section 68, State of California "Caltrans" Standard Specification, latest edition. Drain rock should be placed to approximately three-quarters the height of the retaining wall.

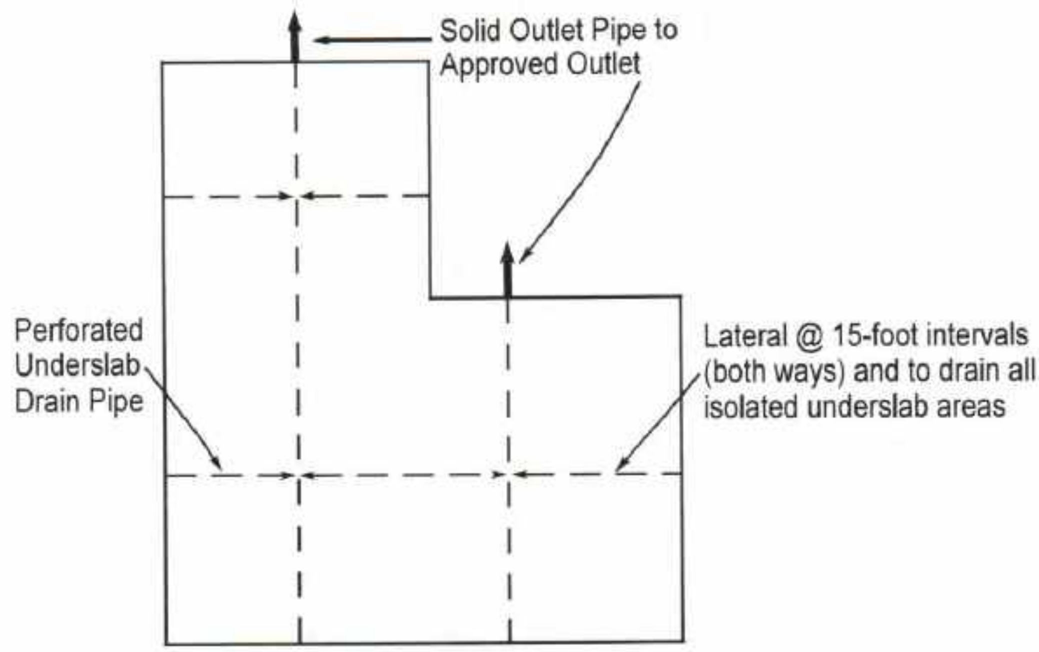
2. Pipe should conform to the requirements of Section 68 of State of California "Caltrans" Standards, perforations placed down, sloped at 1% for gravity flow to outlet or sump with automatic pump. The pipe invert should be located at least 8 inches below the lowest adjacent finished surface.

3. During construction the contractor should use appropriate methods such as temporary bracing and/or light compaction equipment to avoid overstressing the walls. Non-expansive soils to be used as backfill.

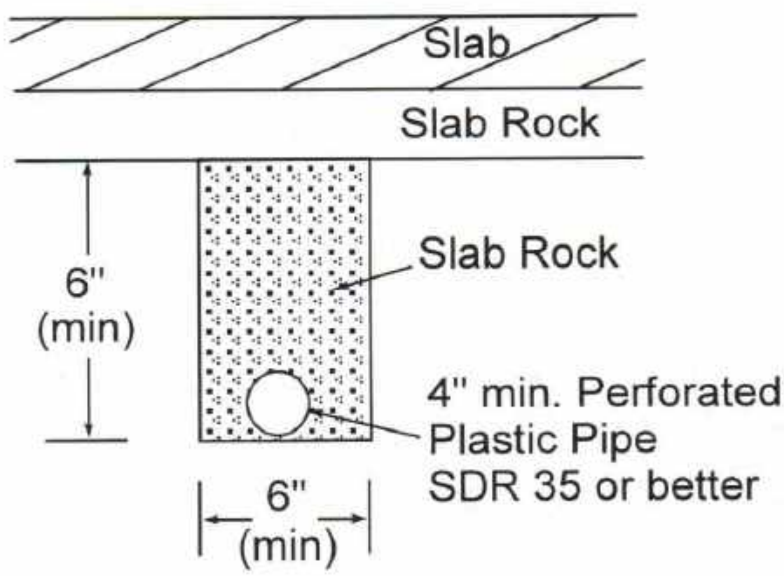
4. Slope excavation back at a 1:1 gradient from the back of footing where expansive materials are exposed.

Not to Scale

RGH CONSULTANTS Job No: 3184.01.04.1 Date: JAN 2015	**RETAINING WALL BACKDRAIN ILLUSTRATION** Sid Commons Graylawn Avenue Petaluma, California	PLATE **2**



TYPICAL UNDERSLAB DRAIN PLAN



SLAB UNDERDRAIN

RGH CONSULTANTS

Job No: 3184.01.04.1 | Date: JAN 2015

TYPICAL SUBDRAIN DETAILS
Sid Commons
Graylawn Avenue
Petaluma, California

PLATE 3

Appendix 8C

Supplemental Geotechnical Evaluation

RGH Consultants, March 21, 2016

RGH CONSULTANTS
Experience is the difference

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March 21, 2016

The Acclaim Companies
Attention: Mark Johnson
125 Willow Road
Menlo Park, CA 94025
mark@acclaimcompanies.com

Supplemental Geotechnical Evaluation
Sid Commons
Graylawn Avenue
Petaluma, California

Project Number: 3184.01.04.1

INTRODUCTION

This letter presents the results of our supplemental geotechnical evaluation for the proposed residential project on Graylawn Avenue in Petaluma, California. United Soil Engineering, Inc. (USE) performed a geotechnical investigation for a residential project that included 15 structures with asphalt paved parking and driveways and presented the results in a report dated October, 2003 (USE, 2003). The currently planned project includes14 apartment buildings with a clubhouse and a pool. Auto access will be provided by extending Graylawn Avenue to the north and extending Shasta Avenue, which is located west of the site, across the railroad tracks and to the north. Asphalt paved driveways and parking will be provided. Terracing and restoration will be performed for the area immediately adjacent to the river. RGH updated the USE report to cover the currently planned project and provided supplemental recommendations, where necessary, in a letter dated January 20, 2015 (RGH, 2015).

We understand that the City of Petaluma (City) is coordinating with Lamphier-Gregory to prepare an Environmental Impact Report (EIR) for the Sid Commons project. The City has reviewed the USE report and our update letter and provided comments regarding these documents in a letter dated November 16, 2015. In that letter, the City requested the following three items be addressed in more detail:

- The liquefaction potential at the site;
- The potential presence and risks associated with expansive soils; and
- The impacts of river bank stability from the proposed terracing plan along the Petaluma River.

In order to evaluate these items, we performed supplemental exploration, laboratory testing and analysis. The work performed and the results of these evaluations are presented herein. This letter presents the conclusions of these analyses, but does not present specific design recommendations for the project.

SUPPLEMENTAL EXPLORATION AND LABORATORY TESTING

On January 14, 2016, we explored the subsurface conditions by drilling 14 borings to depths ranging from about 5 to 26½ feet. The borings were drilled with a track-mounted drill rig, equipped with 6-inch diameter solid stem augers and 8-inch diameter hollow stem augers, at the approximate locations shown on the Exploration Plan, Plate 1. In addition, we performed two Cone Penetration Tests (CPT's) adjacent to borings B-10 and B-11 using a track-mounted rig. The boring and CPT locations were determined approximately by pacing their distance from features shown on the Exploration Plan and should be considered accurate only to the degree implied by the method used. Our field engineer located and logged the borings and obtained samples of the materials encountered for visual examination, classification and laboratory testing. Our field engineer also located the CPT's.

On January 15, 2015, we also explored the subsurface conditions by excavating six test pits, with a track-mounted mini-excavator, at the approximate locations shown on Plate 1. The test pit locations were determined approximately by pacing their distance from features shown on the Exploration Plan and should be considered accurate only to the degree implied by the method used. Our certified engineering geologist located and logged the test pits and obtained samples of the materials encountered for visual examination, classification and laboratory testing.

Relatively undisturbed samples were obtained from the borings at selected intervals by driving a 2.43-inch inside diameter, split spoon sampler, containing 6-inch long brass liners, using a 140-pound hammer dropping approximately 30 inches. The sampler was driven 12 to 18 inches. The blows required to drive each 6-inch increment were recorded and the blows required to drive the last 12 inches, or portion thereof, were converted to equivalent Standard Penetration Test (SPT) blow counts for correlation with empirical data. Disturbed samples were also obtained at selected depths by driving a 1.375-inch inside diameter (2-inch outside diameter) SPT sampler, without liners or rings, using a 140-pound hammer dropping approximately 30 inches. The sampler was driven 12 to 18 inches, the blows to drive each 6-inch increment were recorded, and the blows required to drive the final 12 inches, or portion thereof, are provided on the boring logs. Disturbed "grab" samples were obtained at selected depths from the test pits and placed in plastic bags.

The logs of the borings showing the materials encountered, groundwater conditions, converted blow counts and sample depths are presented on Plates 2 through 15. The plots of the two CPT's are presented on Plates 16 and 17. The logs of the test pits are presented on Plates 18 and 19. The soils from the borings and test pits are described in accordance with the Unified Soil Classification System, outlined on Plate 20. Bedrock is described in accordance with Engineering Geology Rock Terms, shown on Plate 21 or classified as a soil in accordance with Plate 20.

The boring and test pit logs show our interpretation of subsurface soil, bedrock and groundwater conditions on the date and at the locations indicated. Subsurface conditions may vary at other locations and times. Our interpretation is based on visual inspection of soil and bedrock samples, laboratory test results, and interpretation of drilling, excavating and sampling resistance. The location of the soil and bedrock boundaries should be considered approximate. The transition between soil and bedrock types may be gradual.

The samples obtained from the borings and test pits were transported to our office and re-examined to verify soil classifications, evaluate characteristics, and assign tests pertinent to our analysis. Selected samples were laboratory tested to determine classification (Atterberg Limits, percent of silt and clay) and expansion potential (Expansion Index - EI). Results of the classification and EI tests are presented on Plate 22 and 23.

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Liquefaction

Liquefaction is a rapid loss of shear strength experienced in saturated, predominantly granular soils below the groundwater level during strong earthquake ground shaking due to an increase in pore water pressure. The occurrence of this phenomenon is dependent on many complex factors including the intensity and duration of ground shaking, particle size distribution and density of the soil.

As presented in our referenced report update letter (RGH, 2015), published liquefaction potential maps (Witter, et al., 2006: and Knudsen, et al., 2000) indicated that a large portion of the property proposed for development and terracing along the Petaluma River was located within an area of high liquefaction potential. These were the two most current liquefaction susceptibility maps we were able to locate for the site. The zone of high liquefaction potential based on the published maps is presented on Plate 24. This mapping was in contrast to the analysis performed by USE (2003), which indicated a low potential for liquefaction based on one boring performed outside of the zone shown in the published maps.

Based on the above information, we performed the supplemental exploration described above to assess the potential for liquefaction and the extent and consequences of liquefaction, if it exists, at the site. As shown on the logs for borings and test pits performed within the high potential liquefaction zone on Plate 24, our supplemental exploration encountered clay soils over Wilson Grove formation bedrock. Clay soils are not considered to be liquefiable. As a bedrock unit, Wilson Grove would have no potential for liquefaction. Given that the encountered unit does not match with the published liquefaction mapping, we reviewed published geologic mapping to see whether a more current geologic map might indicate the presence of Wilson Grove formation bedrock. Mapping performed by Bezore et al. (2002) indicates that the portion of the site within the high potential liquefaction zone is underlain by Wilson Grove formation bedrock. Therefore, our subsurface exploration confirmed the mapping by Bezore et al. (2002).

Based on the above results, there is no potential for liquefaction within the planned development area and the river terrace area. A revised liquefaction susceptibility map is presented on Plate 25. Because there is no potential for liquefaction, no mitigation measures are required.

Expansive Soils

Expansive surface soils shrink and swell as they lose and gain moisture throughout the yearly weather cycle. Near the surface, the resulting movements can heave and crack lightly loaded shallow foundations (spread footings) and slabs and pavements. The zone of significant moisture variation (active layer) is dependent on the expansion potential of the soil and the extent of the dry season. In the Petaluma area, the active layer is generally considered to range in thickness from about 2 to 3 feet.

The previous work performed by USE (2003) did not indicate the presence of expansive soils. However, the City indicated that maps reviewed during initial preparation of the EIR showed the potential presence of expansive soils. Mapping by the Natural Resources Conservation Service

(2016) indicates that soils within the upper 60 inches at the site could be expansive. Therefore, site specific laboratory testing is required to assess the presence of expansive soils.

As discussed previously, we performed 14 borings at the project site. Twelve of these borings were drilled throughout the planned building areas of the project. These borings encountered four different near surface soils that could be exposed at the surface after grading is complete. These soils exhibit plasticity that ranges from low to high (LL = 34-63; PI = 13-35) and expansion potential that ranges from low to high (EI = 21-125). The extent of expansive soils observed at the site are shown on Plate 26, which shows that expansive soils may be present within 8 of the 14 planned buildings. As discussed above, expansive soils can impact the performance of structures. The impacts of expansive soils can be mitigated by grading and/or foundation measures. These mitigations are described below.

Mitigation #1- The detrimental effects of expansive soil movements can be reduced by pre-swelling the expansive soils and covering them with a moisture fixing and confining blanket of properly compacted non-expansive engineered fill (select fill). Select fill can consist of approved non-expansive on site soils, imported non-expansive materials or lime stabilized on-site clay soils. In building areas, the blanket thickness of select fill required depends on the expansion potential of the soils and the anticipated performance of the foundations and slabs. In order to effectively reduce foundation and slab heave given the expansion potential of the site's soils, a blanket thickness of 30 inches will be needed in building areas at the Sid Commons site. In exterior slab and paved areas, the select fill blanket need only be 12 inches thick.

On-site and imported select fill materials should have a low expansion potential (EI less than 50), and conform in general to the following requirements:

SIEVE SIZE	PERCENT PASSING (by dry weight)
6 inch	100
4 inch	90 – 100
No. 200	10 – 60

Liquid Limit – 50 Percent Maximum
Plasticity Index – 15 Percent Maximum

Mitigation #2 – The planned structures can be supported on either post-tensioned slabs or mat slabs. These slabs should be designed using the expansion characteristics of the soils. Grading to prepare the building pads should consist of reworking the upper 2 to 3 feet of surface soils by excavating these soils, moisture conditioning them to at least 4 percent above optimum moisture content, and compacting them to at least 90 percent relative compaction.

River Terracing

The potential geotechnical hazards for the river terracing include liquefaction and stability of the finished terrace slopes. As discussed in the "Liquefaction" section of this report, there is no potential for liquefaction at the site, which includes the river terracing area. Therefore, liquefaction and resulting lateral spreading are not a hazard for the planned terracing.

As discussed previously, our review of published geologic maps indicates that the terrace area along the river is generally underlain by Wilson Grove formation bedrock. Our certified engineering geologist confirmed the presence of Wilson Grove bedrock with test pits and by observing exposed features. The presence of bedrock likely explains why the river turns eastward at the northern end of the site.

Where Wilson Grove bedrock is present, the proposed terracing as shown on Plate 1 should be considered to have stable slope stability. Wilson Grove bedrock was not encountered in test pit RGH-TP5 nor was it observed in exposed features in this area. We estimate that there may be a 100 to 200-foot long section of the river terrace in the area of RGH-TP5 that will not expose Wilson Grove bedrock. Therefore, in order to evaluate the slope stability in this area, we performed a slope stability analysis using the computer program SLOPE/W (GEO-SLOPE International, Ltd., 2005). Two cross sections of the finished slope configuration provided by CSW/Stuber-Stroeh were used in the analysis and are presented on Plate 27. The slope stability analysis performed is explained below.

Slope stability analysis under static (non-seismic) loading conditions is evaluated based on a Factor of Safety of 1.5. Slopes that have a Factor of Safety greater than 1.5 are considered stable. In order to perform our analysis, we need engineering properties for the materials exposed in the finished slope. These properties include effective internal friction angle and effective cohesion. These values can be obtained from triaxial testing, direct shear testing and correlations based on other engineering properties. Because we were unable to obtain samples usable for triaxial or direct shear testing, we used correlations developed by Ladd, et al. (1977). This correlation uses plasticity index (PI) to estimate effective internal friction angle. Laboratory testing on the material encountered in test pit RGH-TP5 yielded a PI of 35. Using this PI and the correlation of Ladd, et al. (1977), we estimated the effective internal friction angle to be 28 degrees. Based on our experience with similar soils, we estimated the effective cohesion to be 100 pounds per square foot. Using these engineering properties, we calculated the Factor of Safety against failure for each section to be greater than 1.5. Therefore, the portion of the terrace where Wilson Grove bedrock is not present should also be considered to have stable slope stability.

Based on the above information, there are no geotechnical hazards related to liquefaction or slope stability for the river terrace. As such, no mitigation measures are required. It should be noted that our evaluation was based strictly on the slope stability of the finished terrace slopes. The finished terrace slopes will be susceptible to erosion from surface runoff and river flows. The finished slopes will need to be protected in order to reduce these impacts.

The recommendations presented herein are subject to the limitations set forth in our referenced update letter. Modifications to the grading and foundation recommendations presented in the USE report will be presented under separate cover.

We trust this provides the information you require at this time. Please call if you have questions.

Very truly yours,
RGH Consultants

Jared J. Pratt
Senior Engineering Geologist

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Attachments: References
Plate 1 – Exploration Plan
Plates 2 through 15 – Log of Borings RGH-B1 through RGH-B14
Plates 16 and 17 – Cone Penetration Tests RGH-CPT10 and RGH-CPT11
Plates 18 and 19 – Log of Test Pits RGH-TP1 through RGH-TP6
Plate 20 – Soil Classification and Key to Test Data
Plate 21 – Engineering Geology Rock Terms
Plates 22 and 23 – Classification Test Data
Plate 24 – Pre-Supplemental Evaluation Liquefaction Susceptibility Map
Plate 25 – Post-Supplemental Evaluation Liquefaction Susceptibility Map
Plate 26 – Expansive Soil Map
Plate 27 – Terrace Slope Stability Cross Sections

REFERENCES

Bezore, S., Randolph-Loar, C.E., and Witter, R., C., 2002 Geologic Map of the Petaluma 7.5 Quadrangle, Sonoma and Marin Counties, California: A Digital Database

GEO-SLOPE International, Ltd., 2005, GeoStudio 2005 with Slope/W, A computer program for slope stability calculations, Calgary, Alberta, Canada.

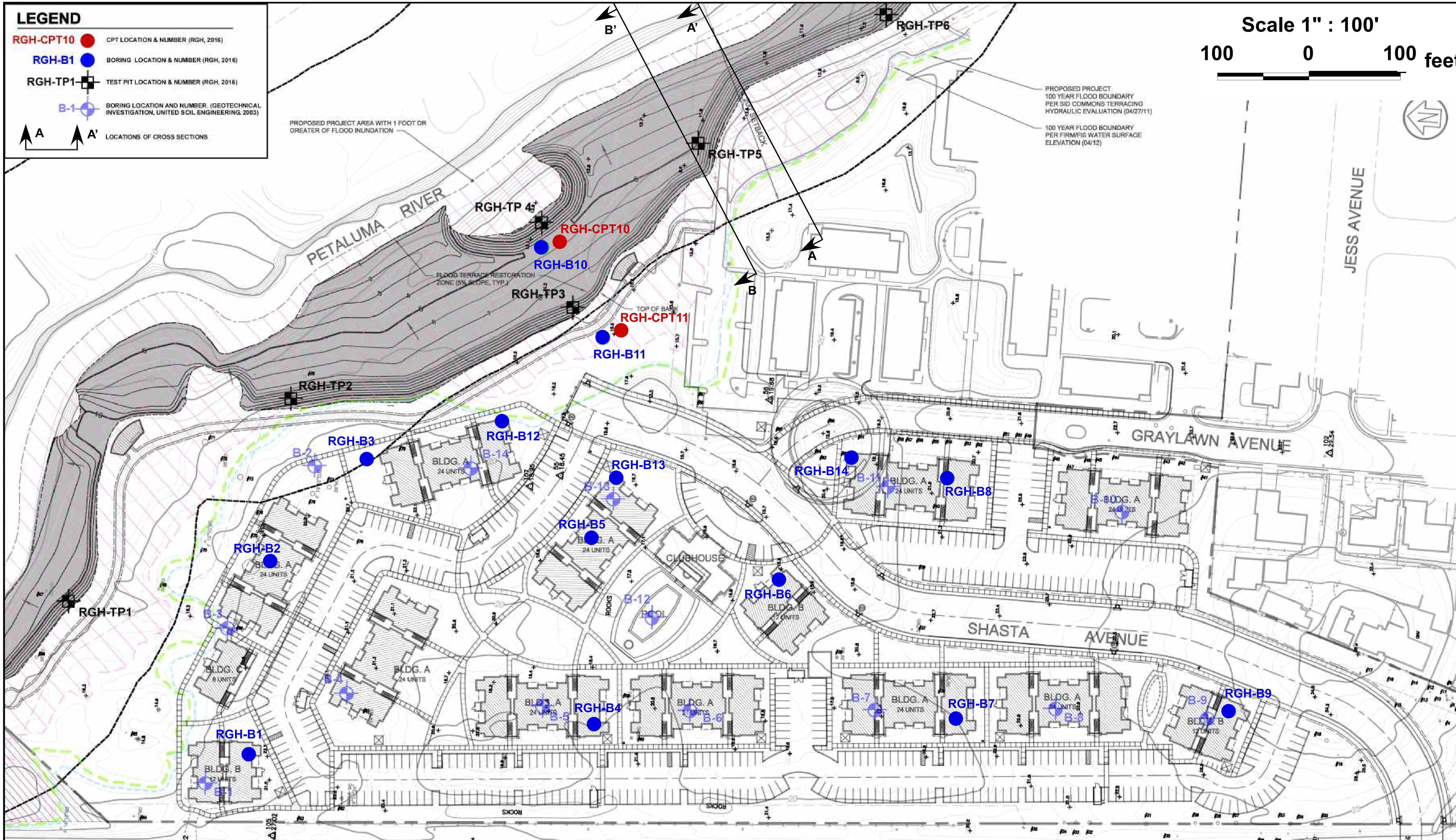
Knudsen, K.L., Sowers, J.M., Witter, R.C., Wentworth, C.M., and Helley, E.J., 2000, Preliminary Maps of Quaternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region, California, U.S. Geological Survey, Open File Report 00-444.

Ladd et al., 1977, Stress Deformation and Strength Characteristics: Proceedings of the Ninth International Conference on Soil Mechanics and Foundation on Soft Clays, Canadian Geotechnical Journal, Tokyo, v. 2, p 421-494.

RGH Consultants, 2015, Geotechnical Engineering Report Update, Sid Commons, Graylawn Avenue, Petaluma, California, January 20, 2015.

Witter, Robert C., Knudsen, Keith L., Sowers, Janet M., Wentworth, Carl M., Koehler, Richard D., and Randolph, Carolyn E., 2006, Maps of Quaternary Deposits and Liquefaction Susceptibility in the Central San Francisco Bay Region, California, United States Geological Survey, Open File Report 06-1037, 2 Sheets, Scale 1:200,000.

United Soil Engineering, Inc., 2003, Geotechnical Investigation and Pavement Design, Proposed Residential Development, Graylawn Avenue, Petaluma, California, October, 2003.



Reference: Preliminary Site Plan, J. Cyril Johnson Investment Corp., CSW/Stuber-Stroeh Engineering Group, 2013

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Job No: 3184.01.04.1 | Date: March 2016

EXPLORATION PLAN
Sid Commons
Graylawn Avenue
Petaluma, California

PLATE
1

Date(s) Drilled	**1/14/2016**	Logged By	**AMM**	Checked By	**EGC**
Drilling Method	**Solid Stem Auger**	Drill Bit Size/Type	**4 inch**	Total Depth of Borehole	**5 feet**
Drill Rig Type	**Track Mounted CME 55**	Drilling Contractor	**Taber**	Approximate Surface Elevation	**Existing Ground Surface**
Groundwater Level and Date Measured	**NFWE**	Sampling Method(s)	**Auger Cuttings**	Hammer Data	

Elevation (feet)	Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Graphic Log	MATERIAL DESCRIPTION	Dry Density (pcf)	Water Content (%)	% <#200 Sieve	PI, %	LL, %	Expansion Index (EI)	UC, psf	REMARKS AND OTHER TESTS
	0				BROWN SILTY SAND (SM). Dense, moist. [Wilson Grove Formation]								
	5				Bottom of boring at 5 feet.								
	10												
	15												
	20												

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Job Number: 3184.01.04.1 | Date: March 2016

LOG OF BORING RGH-B1
Sid Commons
Graylawn Avenue
Petaluma, California

Plate 2

Date(s) Drilled	1/14/2016	Logged By	AMM	Checked By	EGC
Drilling Method	Solid Stem Auger	Drill Bit Size/Type	4 inch	Total Depth of Borehole	5 feet
Drill Rig Type	Track Mounted CME 55	Drilling Contractor	Taber	Approximate Surface Elevation	Existing Ground Surface
Groundwater Level and Date Measured	NFWE	Sampling Method(s)	Auger Cuttings	Hammer Data	

Elevation (feet)	Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Graphic Log	MATERIAL DESCRIPTION	Dry Density (pcf)	Water Content (%)	% <#200 Sieve	PI, %	LL, %	Expansion Index (EI)	UC, psf	REMARKS AND OTHER TESTS
	0				GRAY BROWN SANDY CLAY (CL). Very soft, wet.								
					BROWN SILTY SAND (SM). Dense, moist. [Wilson Grove Formation]								
	5				Bottom of boring at 5 feet.								
	10												
	15												
	20												

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Job Number: 3184.01.04.1 | Date: March 2016

LOG OF BORING RGH-B2
Sid Commons
Graylawn Avenue
Petaluma, California

Plate 3

Date(s) Drilled **1/14/2016**	Logged By **BPC**	Checked By **EGC**
Drilling Method **Solid Stem Auger**	Drill Bit Size/Type **4 inch**	Total Depth of Borehole **5 feet**
Drill Rig Type **Track Mounted CME 55**	Drilling Contractor **Taber**	Approximate Surface Elevation **Existing Ground Surface**
Groundwater Level and Date Measured **NFWE**	Sampling Method(s) **Auger Cuttings**	Hammer Data

Elevation (feet)	Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Graphic Log	MATERIAL DESCRIPTION	Dry Density (pcf)	Water Content (%)	% <#200 Sieve	PI, %	LL, %	Expansion Index (EI)	UC, psf	REMARKS AND OTHER TESTS
	0				BROWN SILTY SAND (SM). Dense, moist. [Wilson Grove Formation]								
	5				Bottom of boring at 5 feet.								
	10												
	15												
	20												

RGH CONSULTANTS

Job Number: 3184.01.04.1 Date: March 2016

LOG OF BORING RGH-B3
Sid Commons
Graylawn Avenue
Petaluma, California

Plate 4

Date(s) Drilled	1/14/2016	Logged By	AMM	Checked By	EGC
Drilling Method	Solid Stem Auger	Drill Bit Size/Type	4 inch	Total Depth of Borehole	5 feet
Drill Rig Type	Track Mounted CME 55	Drilling Contractor	Taber	Approximate Surface Elevation	Existing Ground Surface
Groundwater Level and Date Measured	1/2 foot	Sampling Method(s)	Auger Cuttings	Hammer Data	

Elevation (feet)	Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Graphic Log	MATERIAL DESCRIPTION	Dry Density (pcf)	Water Content (%)	% <#200 Sieve	PI, %	LL, %	Expansion Index (EI)	UC, psf	REMARKS AND OTHER TESTS
	0				GRAY BROWN SANDY CLAY (CL). Very soft, wet.								
					BROWN CLAY WITH SAND (CH). Medium stiff, moist.								
	5				Bottom of boring at 5 feet. Free water encountered at 1/2 feet.								
	10												
	15												
	20												

RGH CONSULTANTS

Job Number: 3184.01.04.1 | Date: March 2016

LOG OF BORING RGH-B4
Sid Commons
Graylawn Avenue
Petaluma, California

Date(s) Drilled **1/14/2016**	Logged By **AMM**	Checked By **EGC**
Drilling Method **Solid Stem Auger**	Drill Bit Size/Type **4 inch**	Total Depth of Borehole **5 feet**
Drill Rig Type **Track Mounted CME 55**	Drilling Contractor **Taber**	Approximate Surface Elevation **Existing Ground Surface**
Groundwater Level and Date Measured **0 feet (At surface)**	Sampling Method(s) **Auger Cuttings**	Hammer Data

Elevation (feet)	Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Graphic Log	MATERIAL DESCRIPTION	Dry Density (pcf)	Water Content (%)	% <#200 Sieve	PI, %	LL, %	Expansion Index (EI)	UC, psf	REMARKS AND OTHER TESTS
	0				BROWN SILTY SAND (SM). Dense, wet. [Wilson Grove Formation]								
	5				Bottom of boring at 5 feet. Free water was perched at the surface.								
	10												
	15												
	20												

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Job Number: 3184.01.04.1 | Date: March 2016

LOG OF BORING RGH-B5
Sid Commons
Graylawn Avenue
Petaluma, California

Plate 6

Date(s) Drilled **1/14/2016**	Logged By **AMM**	Checked By **EGC**
Drilling Method **Solid Stem Auger**	Drill Bit Size/Type **4 inch**	Total Depth of Borehole **5 feet**
Drill Rig Type **Track Mounted CME 55**	Drilling Contractor **Taber**	Approximate Surface Elevation **Existing Ground Surface**
Groundwater Level and Date Measured **NFWE**	Sampling Method(s) **Auger Cuttings**	Hammer Data

Elevation (feet)	Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Graphic Log	MATERIAL DESCRIPTION	Dry Density (pcf)	Water Content (%)	% <#200 Sieve	PI, %	LL, %	Expansion Index (EI)	UC, psf	REMARKS AND OTHER TESTS
	0				GRAY BROWN SANDY CLAY (CL). Soft, wet.								
					BROWN CLAY WITH SAND (CH). Medium stiff, moist.								
	5				Bottom of boring at 5 feet.								
	10												
	15												
	20												

RGH CONSULTANTS

Job Number: 3184.01.04.1 | Date: March 2016

LOG OF BORING RGH-B6
Sid Commons
Graylawn Avenue
Petaluma, California

Plate 7

Date(s) Drilled **1/14/2016**	Logged By **AMM**	Checked By **EGC**
Drilling Method **Solid Stem Auger**	Drill Bit Size/Type **4 inch**	Total Depth of Borehole **5 feet**
Drill Rig Type **Track Mounted CME 55**	Drilling Contractor **Taber**	Approximate Surface Elevation **Existing Ground Surface**
Groundwater Level and Date Measured **NFWE**	Sampling Method(s) **Auger Cuttings**	Hammer Data

Elevation (feet)	Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Graphic Log	MATERIAL DESCRIPTION	Dry Density (pcf)	Water Content (%)	% <#200 Sieve	PI, %	LL, %	Expansion Index (EI)	UC, psf	REMARKS AND OTHER TESTS
	0				GRAY BROWN SANDY CLAY (CL). Soft, wet.								
					BROWN CLAYEY SAND (SC). Medium dense, moist.								
					BROWN SANDY CLAY (CL). Medium stiff, moist.								
	5				Bottom of boring at 5 feet.								
	10												
	15												
	20												

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Job Number: 3184.01.04.1 | Date: March 2016

LOG OF BORING RGH-B7
Sid Commons
Graylawn Avenue
Petaluma, California

Plate 8

Date(s) Drilled	1/14/2016	Logged By	AMM	Checked By	EGC
Drilling Method	Solid Stem Auger	Drill Bit Size/Type	4 inch	Total Depth of Borehole	5 feet
Drill Rig Type	Track Mounted CME 55	Drilling Contractor	Taber	Approximate Surface Elevation	Existing Ground Surface
Groundwater Level and Date Measured	NFWE	Sampling Method(s)	Auger Cuttings	Hammer Data	

Elevation (feet)	Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Graphic Log	MATERIAL DESCRIPTION	Dry Density (pcf)	Water Content (%)	% <#200 Sieve	PI, %	LL, %	Expansion Index (EI)	UC, psf	REMARKS AND OTHER TESTS
	0				GRAY BROWN SANDY CLAY (CL). Soft, wet.								
					BROWN CLAYEY SAND (SC). Medium dense, moist.								
	5				Bottom of boring at 5 feet.								
	10												
	15												
	20												

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Job Number: 3184.01.04.1 Date: March 2016

LOG OF BORING RGH-B8
Sid Commons
Graylawn Avenue
Petaluma, California

Plate 9

Date(s) Drilled **1/14/2016**	Logged By **AMM**	Checked By **EGC**
Drilling Method **Solid Stem Auger**	Drill Bit Size/Type **4 inch**	Total Depth of Borehole **5 feet**
Drill Rig Type **Track Mounted CME 55**	Drilling Contractor **Taber**	Approximate Surface Elevation **Existing Ground Surface**
Groundwater Level and Date Measured **NFWE**	Sampling Method(s) **Auger Cuttings**	Hammer Data

Elevation (feet)	Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Graphic Log	MATERIAL DESCRIPTION	Dry Density (pcf)	Water Content (%)	% <#200 Sieve	PI, %	LL, %	Expansion Index (EI)	UC, psf	REMARKS AND OTHER TESTS
	0				GRAY BROWN SANDY CLAY (CL). Soft, wet.								
					BROWN CLAYEY SAND (SC). Medium dense, moist.								
	5				Bottom of boring at 5 feet.								
	10												
	15												
	20												

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Job Number: 3184.01.04.1 | Date: March 2016

LOG OF BORING RGH-B9
Sid Commons
Graylawn Avenue
Petaluma, California

Plate 10

Date(s) Drilled **1/14/2016**	Logged By **BPC**	Checked By **EGC**
Drilling Method **Hollow Stem Auger**	Drill Bit Size/Type **8 inch**	Total Depth of Borehole **26-1/2 feet**
Drill Rig Type **Track Mounted CME 55**	Drilling Contractor **Taber**	Approximate Surface Elevation **Existing Ground Surface**
Groundwater Level and Date Measured **15 feet**	Sampling Method(s) **Modified California, SPT**	Hammer Data **140lb, 30 inch drop**

Elevation (feet)	Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Graphic Log	MATERIAL DESCRIPTION	Dry Density (pcf)	Water Content (%)	% <#200 Sieve	PI, %	LL, %	Expansion Index (EI)	UC, psf	REMARKS AND OTHER TESTS
	0				DARK GREY/BROWN CLAY (CL-CH). Stiff, moist, trace fine sand, trace fine roots.								
			10										
	5												
			8		Becomes medium stiff.								
					GREY/MOTTLED BROWN CLAY (CH-MH). Stiff, moist, trace fine sand.								
	10												
			9										
					GREY/BLUE CLAYEY SAND W/GRAVEL (SC). Medium dense, moist, little clay, sub-rounded gravel to 1-1/2 inch diameter, poorly sorted. [Wilson Grove Formation]								
	15		26										
					GREY CLAYEY SAND (SC). Dense, moist, little clay, fine to coarse sand, trace sub-angular gravel to 1/2-inch diameter. [Wilson Grove Formation]								
	20												

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LOG OF BORING RGH-B10
Sid Commons
Graylawn Avenue
Petaluma, California

Plate 11

Elevation (feet)	Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Graphic Log	MATERIAL DESCRIPTION	Dry Density (pcf)	Water Content (%)	% <#200 Sieve	PI, %	LL, %	Expansion Index (EI)	UC, psf	REMARKS AND OTHER TESTS
	20		65		GREY CLAYEY SAND (SC). Dense, moist, little clay, fine to coarse sand, trace sub-angular gravel to 1/2-inch diameter. [Wilson Grove Formation]								
					BLACK SAND (SW). Very dense, moist, trace fines, fine to coarse sand, poorly sorted. [Wilson Grove Formation]								
	25		87										
					Bottom of boring at 26-1/2 feet. Free water encountered at 17 feet during drilling and stabilized at 15 feet upon completion of drilling.								
	30												
	35												
	40												

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LOG OF BORING RGH-B10
Sid Commons
Graylawn Avenue
Petaluma, California

Plate 11

Date(s) Drilled 1/14/2016	Logged By BPC	Checked By EGC
Drilling Method Hollow Stem Auger	Drill Bit Size/Type 8 inch	Total Depth of Borehole 11-1/2 feet
Drill Rig Type Track Mounted CME 55	Drilling Contractor Taber	Approximate Surface Elevation Existing Ground Surface
Groundwater Level and Date Measured NFWE	Sampling Method(s) Modified California, SPT	Hammer Data 140lb, 30 inch drop

Elevation (feet)	Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Graphic Log	MATERIAL DESCRIPTION	Dry Density (pcf)	Water Content (%)	% <#200 Sieve	PI, %	LL, %	Expansion Index (EI)	UC, psf	REMARKS AND OTHER TESTS
	0				DARK GREY/BROWN SANDY CLAY (CH). Stiff, moist, little fine to coarse sand, trace fine roots.								
			12										
	5		9		BROWN CLAY W/SAND (CL-ML). Stiff, moist, fine to medium grained sand.								
					BROWN SAND W/CLAY AND GRAVEL (SP-SC). Dense to very dense, wet, fine to coarse sand, occassional angular gravels to 1/2-inch diameter. [Wilson Grove Formation]								
	10		60/3"										
					Bottom of boring at 11-1/2 feet.								
	15												
	20												

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Job Number: 3184.01.04.1 | Date: March 2016

LOG OF BORING RGH-B11
Sid Commons
Graylawn Avenue
Petaluma, California

Plate 12

Date(s) Drilled	1/14/2016	Logged By	BPC	Checked By	EGC
Drilling Method	Solid Stem Auger	Drill Bit Size/Type	4 inch	Total Depth of Borehole	5 feet
Drill Rig Type	Track Mounted CME 55	Drilling Contractor	Taber	Approximate Surface Elevation	Existing Ground Surface
Groundwater Level and Date Measured	NFWE	Sampling Method(s)	Auger Cuttings	Hammer Data	

Elevation (feet)	Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Graphic Log	MATERIAL DESCRIPTION	Dry Density (pcf)	Water Content (%)	% <#200 Sieve	PI, %	LL, %	Expansion Index (EI)	UC, psf	REMARKS AND OTHER TESTS
	0				BROWN SILTY SAND (SM). Dense, moist. [Wilson Grove Formation]								
	5				Bottom of boring at 5 feet.								
	10												
	15												
	20												

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Job Number: 3184.01.04.1 | Date: March 2016

LOG OF BORING RGH-B12
Sid Commons
Graylawn Avenue
Petaluma, California

Plate 13

Date(s) Drilled **1/14/2016**	Logged By **AMM**	Checked By **EGC**
Drilling Method **Solid Stem Auger**	Drill Bit Size/Type **4 inch**	Total Depth of Borehole **5 feet**
Drill Rig Type **Track Mounted CME 55**	Drilling Contractor **Taber**	Approximate Surface Elevation **Existing Ground Surface**
Groundwater Level and Date Measured **NFWE**	Sampling Method(s) **Auger Cuttings**	Hammer Data

Elevation (feet)	Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Graphic Log	MATERIAL DESCRIPTION	Dry Density (pcf)	Water Content (%)	% <#200 Sieve	PI, %	LL, %	Expansion Index (EI)	UC, psf	REMARKS AND OTHER TESTS
	0				BROWN SILTY SAND (SM). Dense, moist. [Wilson Grove Formation]								
	5				Bottom of boring at 5 feet.								
	10												
	15												
	20												

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Job Number: 3184.01.04.1 Date: March 2016

LOG OF BORING RGH-B13
Sid Commons
Graylawn Avenue
Petaluma, California

Plate 14

Date(s) Drilled	1/14/2016	Logged By	AMM	Checked By	EGC
Drilling Method	Solid Stem Auger	Drill Bit Size/Type	4 inch	Total Depth of Borehole	5 feet
Drill Rig Type	Track Mounted CME 55	Drilling Contractor	Taber	Approximate Surface Elevation	Existing Ground Surface
Groundwater Level and Date Measured	NFWE	Sampling Method(s)	Auger Cuttings	Hammer Data	

Elevation (feet)	Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Graphic Log	MATERIAL DESCRIPTION	Dry Density (pcf)	Water Content (%)	% <#200 Sieve	PI, %	LL, %	Expansion Index (EI)	UC, psf	REMARKS AND OTHER TESTS
	0				BROWN SILTY SAND (SM). Dense, moist. [Wilson Grove Formation]								
	5				Bottom of boring at 5 feet.								
	10												
	15												
	20												

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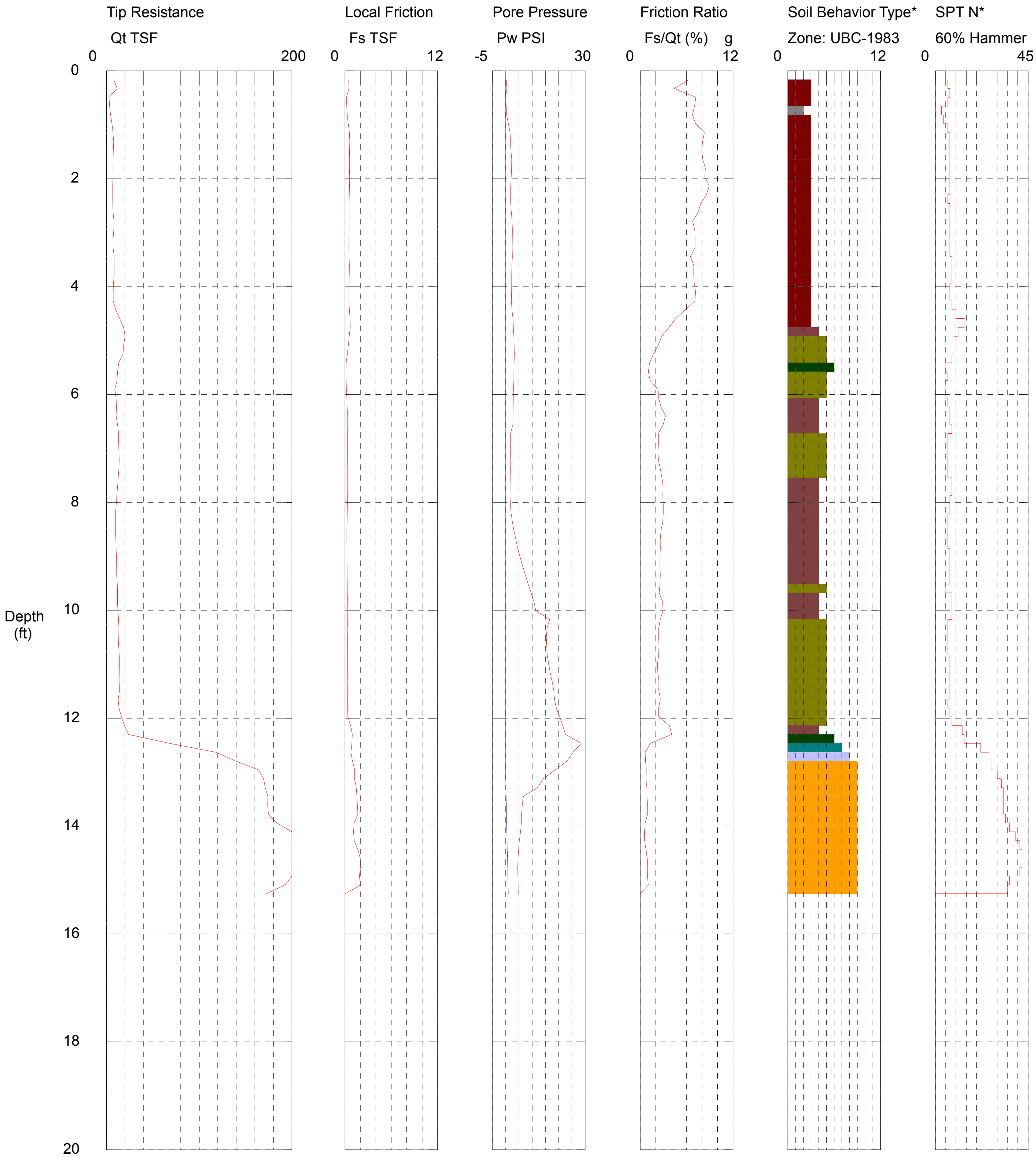
Job Number: 3184.01.04.1 | Date: March 2016

LOG OF BORING RGH-B14
Sid Commons
Graylawn Avenue
Petaluma, California

Plate 15



Maximum Depth = 15.26 feet

Depth Increment = 0.164 feet

1 sensitive fine grained	4 silty clay to clay	7 silty sand to sandy silt	10 gravelly sand to sand
2 organic material	5 clayey silt to silty clay	8 sand to silty sand	11 very stiff fine grained (*)
3 clay	6 sandy silt to clayey silt	9 sand	12 sand to clayey sand (*)

Filter On

*Soil behavior type and SPT based on data from UBC-1983

Reference: Taber Drilling, Sid Commons, 3184.01.04.1, January 14, 2016, CPT 10

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CONE PENETRATION TEST RGH-CPT10

Sid Commons
Graylawn Avenue
Petaluma, California

PLATE

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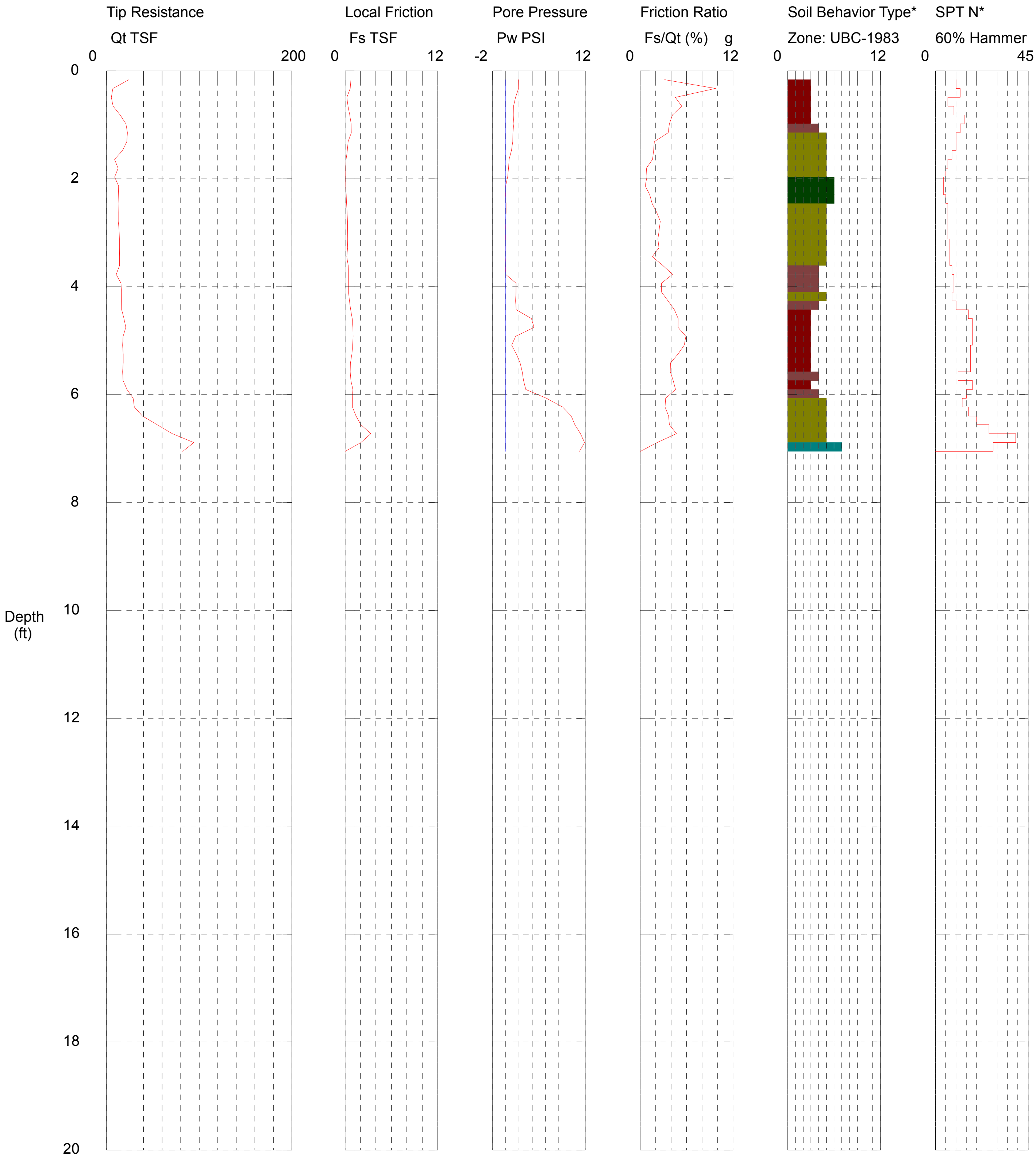
Job No: 3184.01.04.1

Date: March 2016



Maximum Depth = 7.05 feet

Depth Increment = 0.164 feet

1 sensitive fine grained	4 silty clay to clay	7 silty sand to sandy silt	10 gravelly sand to sand
2 organic material	5 clayey silt to silty clay	8 sand to silty sand	11 very stiff fine grained (*)
3 clay	6 sandy silt to clayey silt	9 sand	12 sand to clayey sand (*)

Filter On

*Soil behavior type and SPT based on data from UBC-1983

Reference: Taber Drilling, Sid Commons, 3184.01.04.1, January 14, 2016, CPT 11

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Job No: 3184.01.04.1

Date: March 2016

CONE PENETRATION TEST RGH-CPT11

Sid Commons

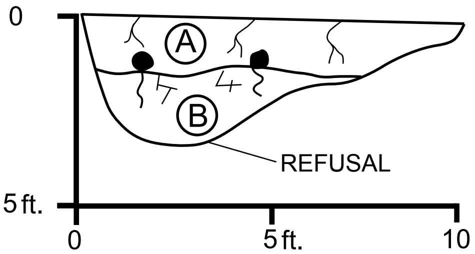
Graylawn Avenue

Petaluma, California

PLATE

17

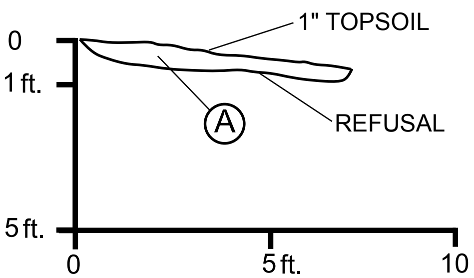
RGH-TP1
S50°E



Ⓐ **DARK GRAY CLAY W/SAND (CL), soft, wet, fine sand, porous, many rootlets, seepage at contact**

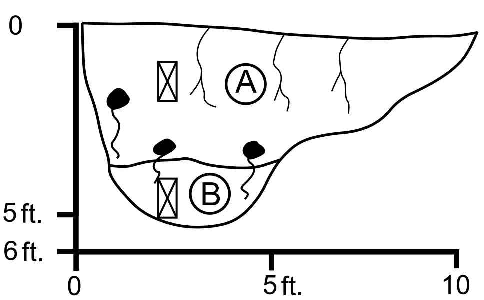
Ⓑ **YELLOW, RED BROWN & DARK GRAY SANDSTONE, widely to massively fractured, moderately hard, moderately strong, slightly weathered (Wilson Grove Formation)**

RGH-TP2
N70°E



Ⓐ **YELLOW, RED BROWN & DARK GREY SANDY TUFF, massive, moderately hard, moderately strong, slightly weathered, many angular vesicular basalt clasts (Miocene Volcanics)**

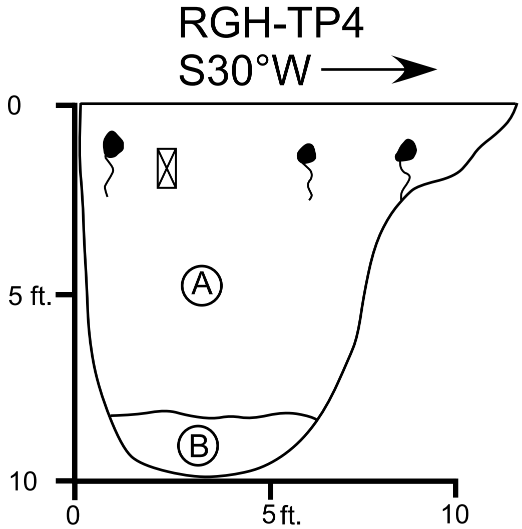
RGH-TP3
N30°W



Ⓐ **DARK GRAY CLAY W/SAND (CL), soft, wet, fine sand, porous, many rootlets, seepage at contact**

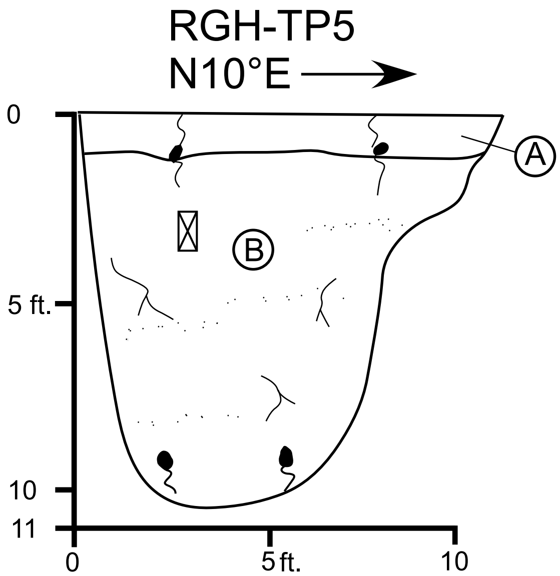
Ⓑ **LIGHT YELLOW BROWN SANDSTONE, fine grained, massive, firm, weak, slightly weathered (Wilson Grove Formation)**

RGH CONSULTANTS	**LOG OF TEST PITS RGH-TP1, RGH-TP2, AND RGH-TP3** Sid Commons Graylawn Avenue Petaluma, California	PLATE **18**
Job No: 3184.01.04.1 — Date: March 2016		



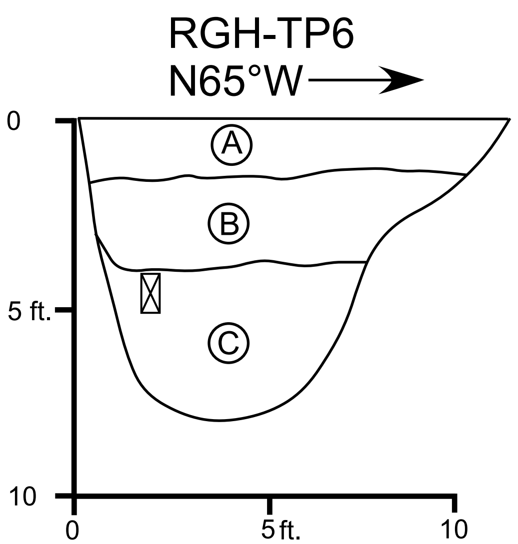
(A) **DARK GRAY CLAY (CH), medium stiff to stiff, moist to wet, porous w/rootlets to 1 foot**

(B) **LIGHT YELLOW BROWN SANDSTONE, fine grained, massive, firm, weak, slightly weathered (Wilson Grove Formation)**



(A) **DARK BROWN CLAY W/SAND (CL), soft, wet, fine sand, many rootlets**

(B) **GRAY BROWN SANDY CLAY (CH), Stiff, moist to wet, fine sand, local 1-inch thick lenses of clean fine sand, occassional rootlets throughout unit**



(A) **BROWN CLAY W/SAND (CL), soft, wet, fine sand, porous**

(B) **DARK GREY CLAY (CH), stiff, moist**

(C) **YELLOW & RED BROWN CLAY W/SAND (CH), very stiff, moist, blocky texture, fine sand, incremental cementations w/depth, poorly indurated (Wilson Grove Formation)**

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Job No: 3184.01.04.1 | Date: March 2016

LOG OF TEST PITS RGH-TP4, RGH-TP5, AND RGH-TP6
Sid Commons
Graylawn Avenue
Petaluma, California

PLATE
19

Elevation (feet)	Depth (feet)	Sample Type	Sampling Resistance, blows/ft	Graphic Log	MATERIAL DESCRIPTION	Dry Density (pcf)	Water Content (%)	% <#200 Sieve	PI, %	LL, %	Expansion Index (EI)	UC, psf	REMARKS AND OTHER TESTS
1	2	3	4	5	6	7	8	9	10	11	12	13	14

COLUMN DESCRIPTIONS

1 Elevation (feet): Elevation (MSL, feet).
2 Depth (feet): Depth in feet below the ground surface.
3 Sample Type: Type of soil sample collected at the depth interval shown.
4 Sampling Resistance, blows/ft: Number of blows to advance driven sampler one foot (or distance shown) beyond seating interval using the hammer identified on the boring log.
5 Graphic Log: Graphic depiction of the subsurface material encountered.
6 MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
7 Dry Density (pcf): Dry density, in pcf.
8 Water Content (%): Water content, percent.
9 % <#200 Sieve: % <#200 Sieve
10 PI, %: Plasticity Index, expressed as a water content.
11 LL, %: Liquid Limit, expressed as a water content.
12 Expansion Index (EI): Expansion Index (EI)
13 UC, psf: Unconfined compressive strength, in pounds per square foot.
14 REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.

FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess corrosivity
COMP: Compaction test
CONS: One-dimensional consolidation test
LL: Liquid Limit, percent
PI: Plasticity Index, percent
SA: Sieve analysis (percent passing No. 200 Sieve)
UC: Unconfined compressive strength test, Qu, in psf
WA: Wash sieve (percent passing No. 200 Sieve)

MATERIAL GRAPHIC SYMBOLS

Fat CLAY, CLAY w/SAND, SANDY CLAY (CH)
Fat CLAY/SILT (CH-MH)
Lean CLAY, CLAY w/SAND, SANDY CLAY (CL)
Lean-Fat CLAY, CLAY w/SAND, SANDY CLAY (CL-CH)
SILTY CLAY (CL-ML)
Clayey SAND (SC)
Silty SAND (SM)
Poorly graded SAND with Clay (SP-SC)
Well graded SAND (SW)

TYPICAL SAMPLER GRAPHIC SYMBOLS

Auger sampler
Bulk Sample
2.5-inch-OD Modified California w/ brass liners
CME Sampler
Grab Sample
3-inch-OD California w/ brass rings
Pitcher Sample
2-inch-OD unlined split spoon (SPT)
Shelby Tube (Thin-walled, fixed head)

OTHER GRAPHIC SYMBOLS

Water level (at time of drilling, ATD)
Water level (after waiting)
Minor change in material properties within a stratum
Inferred/gradational contact between strata
? Queried contact between strata

GENERAL NOTES

1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

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Job No: 3184.01.04.1 | Date: March 2016

SOIL CLASSIFICATION AND KEY TO TEST DATA
Sid Commons
Graylawn Avenue
Petaluma, California

PLATE
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LAYERING	
MASSIVE	Greater than 6 feet
THICKLY BEDDED	2 to 6 feet
MEDIUM BEDDED	8 to 24 inches
THINLY BEDDED	2½ to 8 inches
VERY THINLY BEDDED	¾ to 2½ inches
CLOSELY LAMINATED	¼ to ¾ inches
VERY CLOSELY LAMINATED	Less than ¼ inch

JOINT, FRACTURE, OR SHEAR SPACING	
VERY WIDELY SPACED	Greater than 6 feet
WIDELY SPACED	2 to 6 feet
MODERATELY SPACED	8 to 24 inches
CLOSELY SPACED	2½ to 8 inches
VERY CLOSELY SPACED	¾ to 2½ inches
EXTREMELY CLOSELY SPACED	Less than ¼ inch

HARDNESS

Soft - pliable; can be dug by hand
Firm - can be gouged deeply or carved with a pocket knife
Moderately Hard - can be readily scratched by a knife blade; scratch leaves heavy trace of dust and is readily visible after the powder has been blown away
Hard - can be scratched with difficulty; scratch produces little powder and is often faintly visible
Very Hard - cannot be scratched with pocket knife, leaves a metallic streak

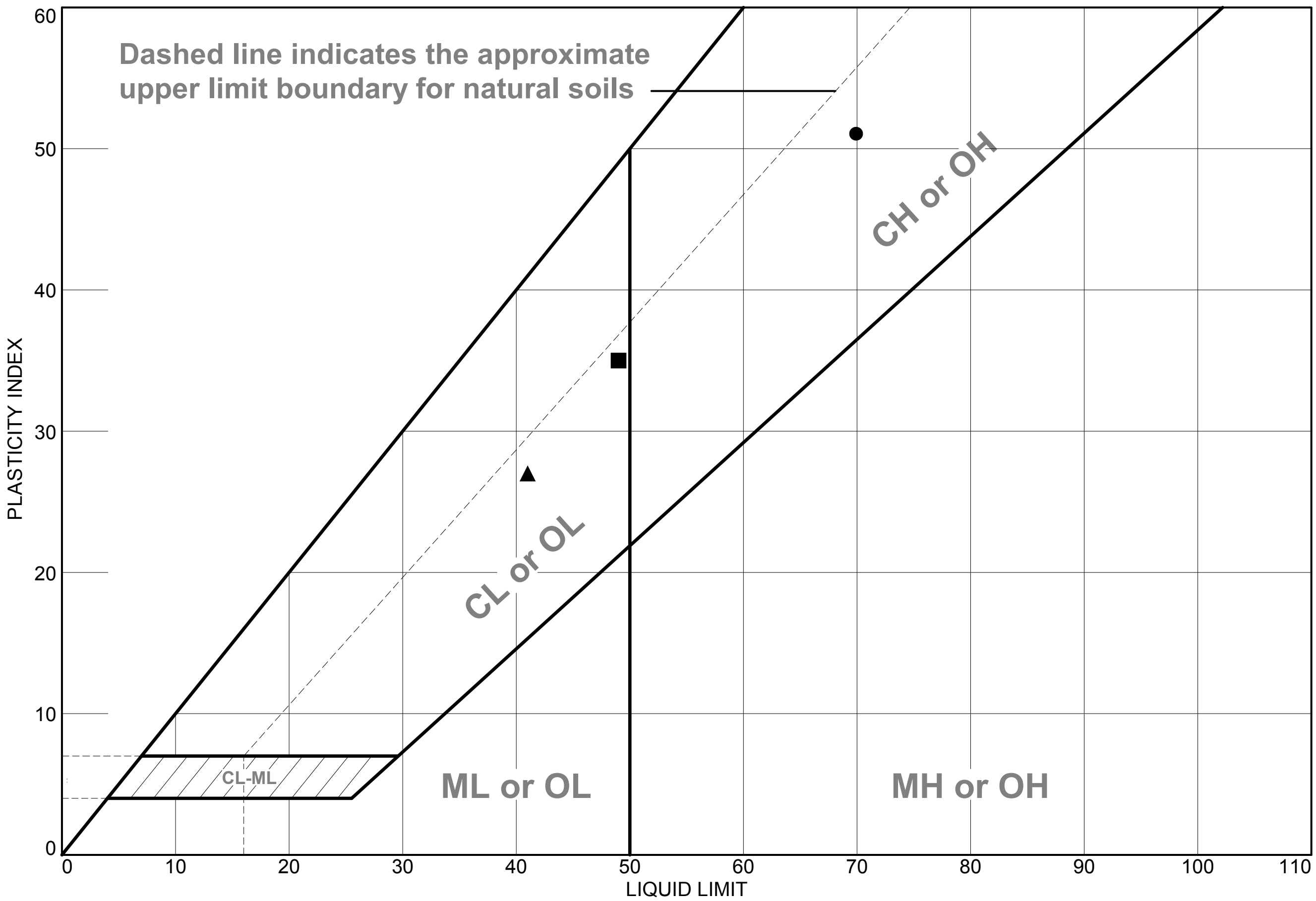
STRENGTH

Plastic - capable of being molded by hand
Friable - crumbles by rubbing with fingers
Weak - an unfractured specimen of such material will crumble under light hammer blows
Moderately Strong - specimen will withstand a few heavy hammer blows before breaking
Strong - specimen will withstand a few heavy ringing hammer blows and usually yields large fragments
Very Strong - rock will resist heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments

DEGREE OF WEATHERING

Highly Weathered - abundant fractures coated with oxides, carbonates, sulphates, mud, etc., thorough discoloration, rock disintegration, mineral decomposition
Moderately Weathered - some fracture coating, moderate or localized discoloration, little to no effect on cementation, slight mineral decomposition
Slightly Weathered - a few stained fractures, slight discoloration, little or no effect on cementation, no mineral composition
Fresh - unaffected by weathering agents; no appreciable change with depth

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Dk Brn Clay (CH)	70	19	51		92.6	CH
■	Dk Brn Clay W/ Sand (CL)	49	14	35		85.0	CL
▲	Brn Clay W/ Sand (CL)	41	14	27		73.1	CL

Project No. 3184.01.04.1 **Client:** RGH Consultants

Project: Sid Commons

●**Source of Sample:** TP-4 **Depth:** 1.0'-2.0'
■**Source of Sample:** TP-5 **Depth:** 2.5'-3.5'
▲**Source of Sample:** TP-6 **Depth:** 4.0'-5.0'

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Job No: 3184.01.04.1 | Date: March 2016

CLASSIFICATION TEST DATA
Sid Commons
Graylawn Avenue
Petaluma, California

PLATE
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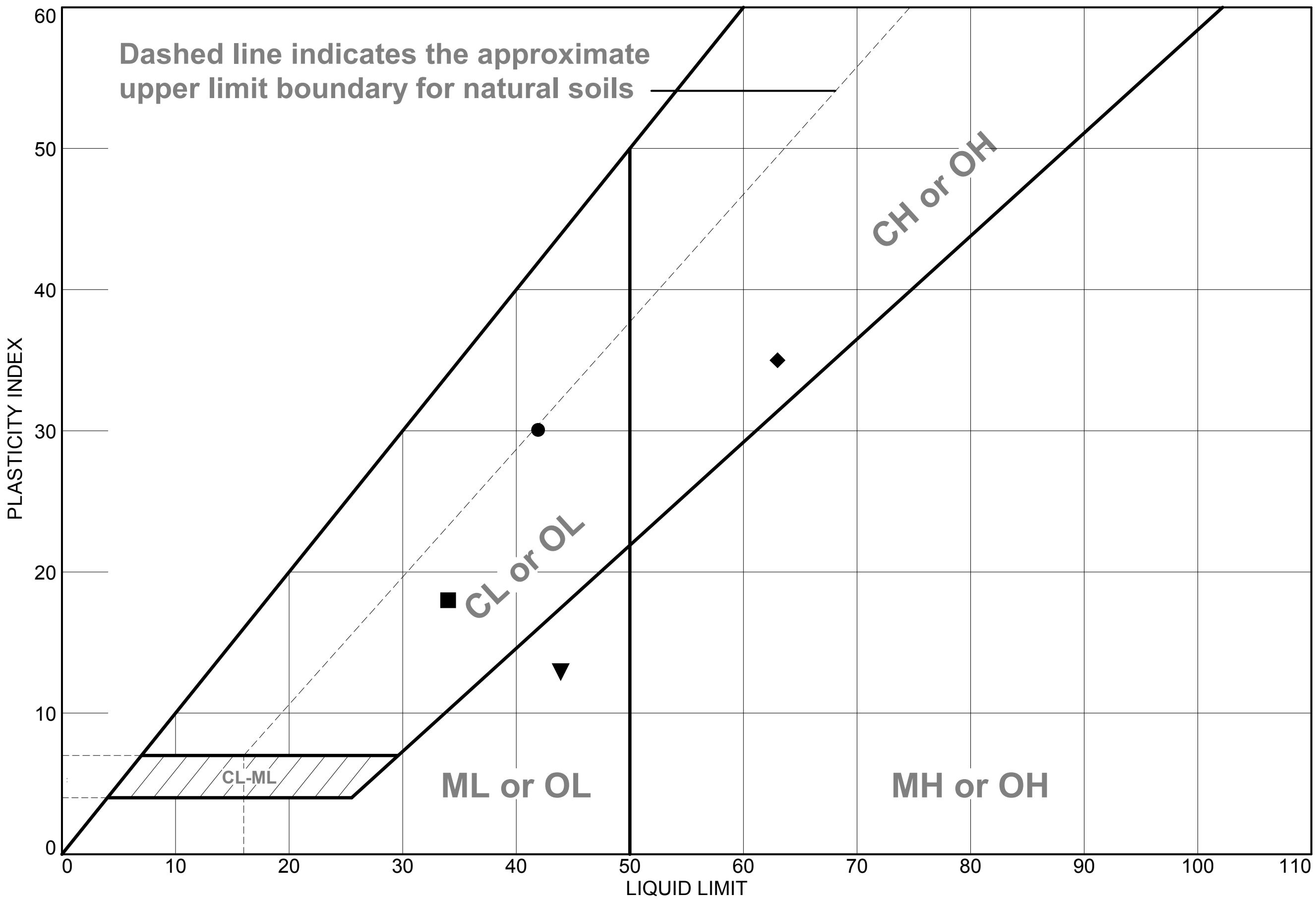
LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Grey/ Brn Sandy Clay (CL)	42	12	30		51.3	CL
■	Brn Clayey Sand (SC)	34	16	18		41.2	SC
◆	Brn Clay W/ Sand (CH)	63	28	35		73.1	CH
▼	Brn Silty Sand (SM)	44	31	13		42.2	SM

Project No. 3184.01.04.1 **Client:** RGH Consultants

Project: Sid Commons

●**Source of Sample:** Bag A
■**Source of Sample:** Bag B
◆**Source of Sample:** Bag D
▼**Source of Sample:** Bag E

Remarks:
●Expansion Index=90
■Expansion Index=82
◆Expansion Index=125
▼Expansion Index=21

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Job No: 3184.01.04.1 | Date: March 2016

CLASSIFICATION TEST DATA
Sid Commons
Graylawn Avenue
Petaluma, California

PLATE
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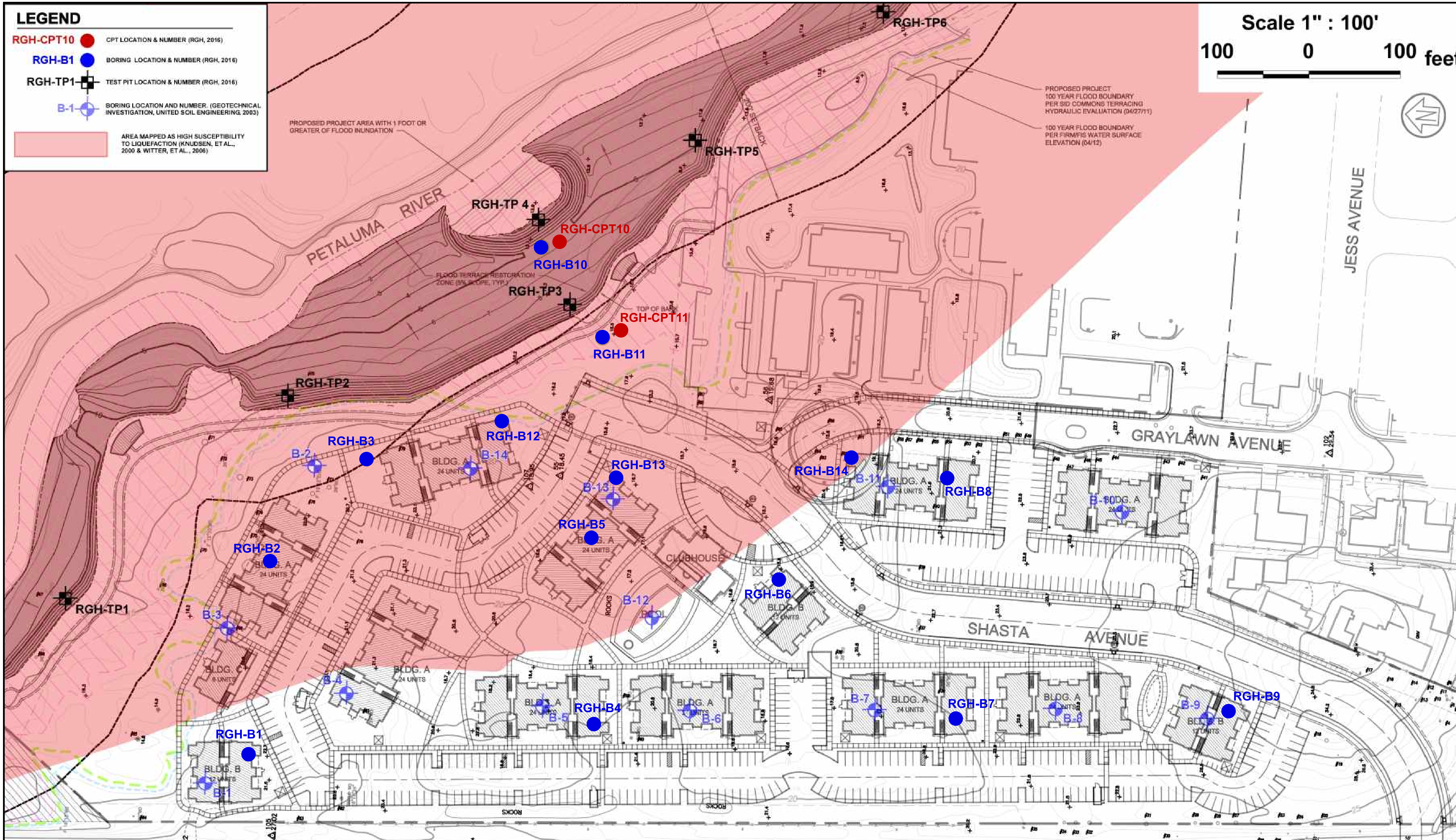

Reference: Preliminary Site Plan, J. Cyril Johnson Investment Corp., CSW/Stuber-Stroeh Engineering Group, 2013

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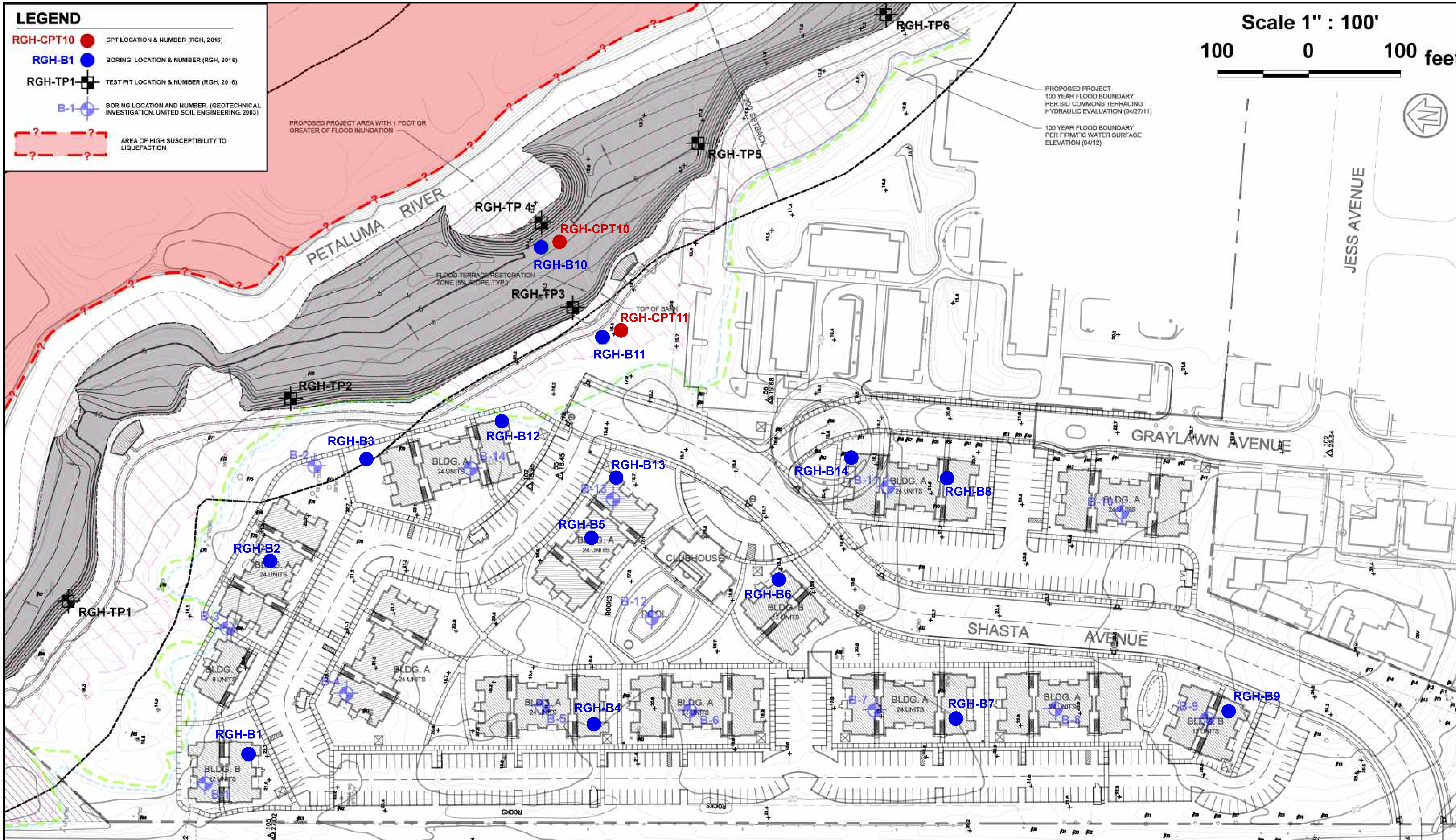
Job No: 3184.01.04.1 | Date: March 2016

PRE-SUPPLEMENTAL EVALUATION LIQUEFACTION SUSCEPTIBILITY MAP

Sid Commons
Graylawn Avenue
Petaluma, California

PLATE 24



Reference: Preliminary Site Plan, J. Cyril Johnson Investment Corp., CSW/Stuber-Stroeh Engineering Group, 2013

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Job No: 3184.01.04.1 | Date: March 2016

POST-SUPPLEMENTAL EVALUATION LIQUEFACTION SUSCEPTIBILITY MAP

Sid Commons
Graylawn Avenue
Petaluma, California

PLATE
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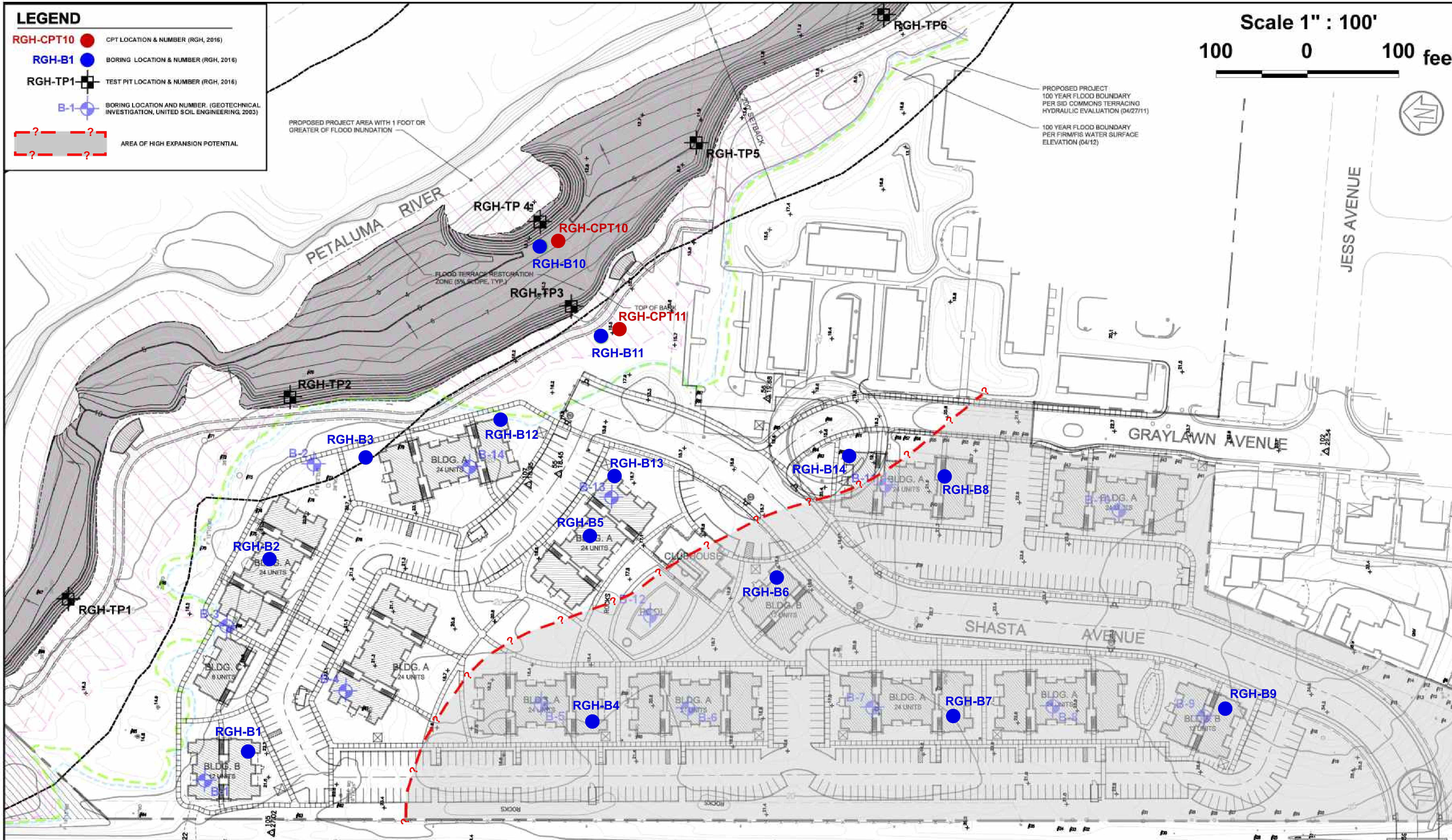

Reference: Preliminary Site Plan, J. Cyril Johnson Investment Corp., CSW/Stuber-Stroeh Engineering Group, 2013

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Job No: 3184.01.04.1 | Date: March 2016

EXPANSIVE SOIL MAP
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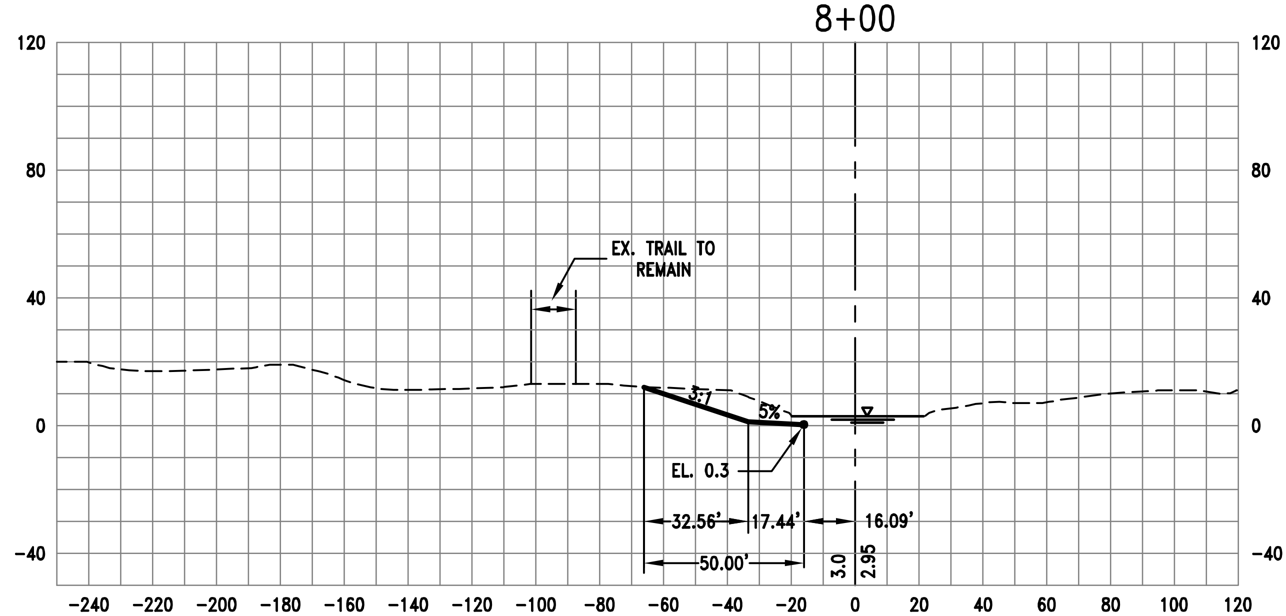
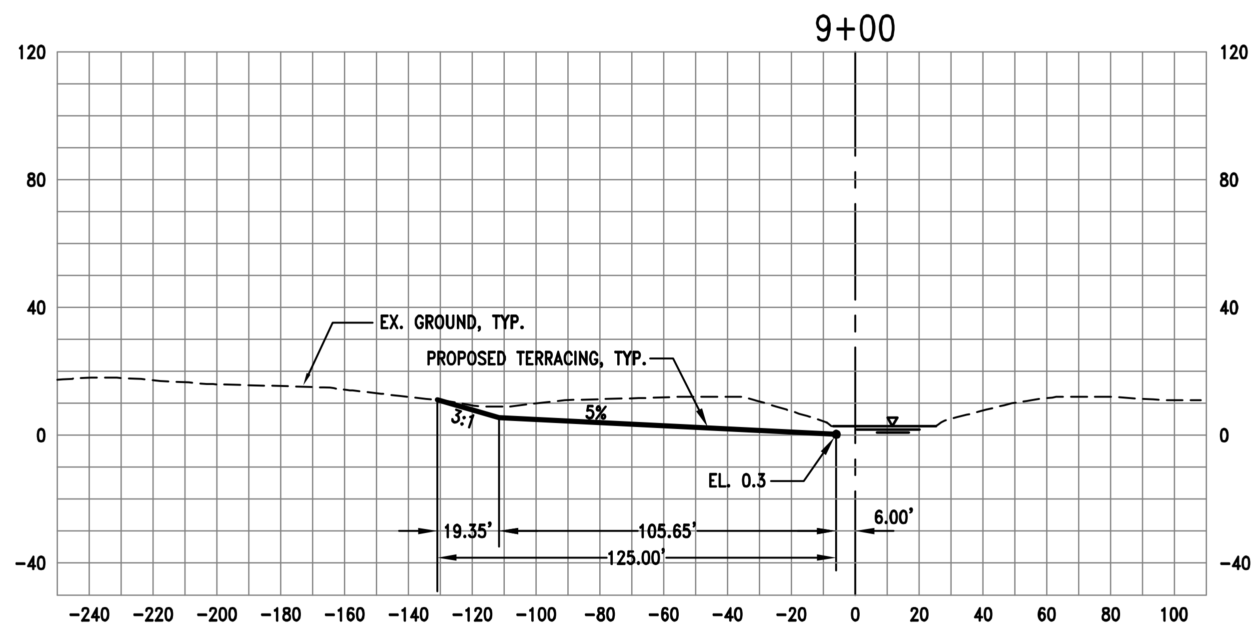
Graylawn Avenue
Petaluma, California

PLATE 26

Cross Section A-A’



Cross Section B-B’



Reference: CSW/Stuber-Stroeh Engineering Group, Inc., Sid Commons, 8/1/8, Page X-1

RGH CONSULTANTS	TERRACE SLOPE STABILITY CROSS SECTIONS Sid Commons Graylawn Avenue Petaluma, California	PLATE 27
Job No: 3184.01.04.1 / Date: March 2016		

Appendix 10A

Phase I Environmental Site Assessment

United Soil Engineering, Inc., September, 2004

PREPARED FOR

J. CYRIL JOHNSON INVESTMENT CORP.

MENLO PARK, CALIFORNIA

FOR

PROPOSED RESIDENTIAL DEVELOPMENT
150 GRAYLAWN AVENUE
PETALUMA, CALIFORNIA

PHASE I
ENVIRONMENTAL SITE ASSESSMENT

JANUARY, 2004

PREPARED BY

UNITED SOIL ENGINEERING, INC.
3476 EDWARD AVENUE
SANTA CLARA, CALIFORNIA

UNITED SOIL ENGINEERING, INC.
Geotechnical and Environmental Consultants

File No. 5286-SE1
January 9, 2004

J. Cyril Johnson Investment Corp.
125 Willow Road
Menlo Park, CA 94025

Attention: Mr. Mark Johnson

Subject: Proposed Residential Development
150 Graylawn Avenue
Petaluma, California
PHASE I ENVIRONMENTAL SITE ASSESSMENT

Dear Mr. Johnson:

Pursuant to your request, United Soil Engineering, Inc. has completed a Phase 1 Environmental Site Assessment for the proposed residential development. The subject site is located at 150 Graylawn Avenue in Petaluma, California. The purpose of this Environmental Site Assessment was to identify recognized environmental conditions in connection with the subject property utilizing the processes described in the ASTM Standards on Environmental Site Assessments for Commercial Real Estate (E-1527-97 and E-1528-96).

The report presents a description of work performed by United Soil Engineering, Inc., the results of the site reconnaissance, records review, interviews, evaluation of findings, and conclusions. A brief summary of the results of our study is presented in Section 1.0, and our conclusions are presented in Section 7.0.

If you have any questions or require additional information, please feel free to contact our office at your convenience.

Very truly yours,
UNITED SOIL ENGINEERING, INC.

Sean Deivert

Sean A. Deivert
Project Manager

Vien Vo, P.E.

REGISTERED PROFESSIONAL ENGINEER
VIEN M. VO
RCE
32296
Exp. 12/31/2004
CIVIL
STATE OF CALIFORNIA

5286.esa1 /Copies: 2 to J. Cyril Johnson Investment Corp.

3476 Edward Avenue • Santa Clara, California 95054 • (408) 988-2990 • Fax (408) 980-1336

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PHASE I ENVIRONMENTAL SITE ASSESSMENT

FIGURES

APPENDICES

1.0 EXECUTIVE SUMMARY

United Soil Engineering, Inc. (USE) has completed a Phase 1 Environmental Site Assessment (ESA) for the proposed residential development located at 150 Graylawn Avenue in Petaluma, California (Figure 1). This ESA was prepared in accordance with the American Society for Testing and Materials (ASTM) Standards for Environmental Site Assessments for Commercial Real Estate (ASTM E-1527-97 and E-1528-96).

The following is a summary of our findings in connection with the subject site.

- The subject site consists of an irregular shaped parcel of land. The topography of the site varies from relatively flat near the center and southeast to gently slopping terrain near the southwest and the north. The subject site is located approximately 26 feet above mean sea level.

- There were no recognizable environmental conditions identified at the subject site, which could impact the environment of the subject site identified during the site reconnaissance.

- Since 1957, the subject site was used as dairy farm.

- There were no recognizable environmental conditions, which could impact the environment of the subject site identified in the historical research performed for the subject site and vicinity.

- Analysis of the Environmental Data Resources (EDR) report prepared for the subject site indicated that there are four sites with the potential to impact the environment of the subject site, including leaking underground storage tank (LUST) sites, solvent leak/spill sites, CERCLIS/NFRAP sites, and CORRACTS sites (Appendix A). Additional information regarding these sites, as well as for facilities identified during our vicinity reconnaissance, was requested from the County of Sonoma Environmental Health Department (CSEHD).

- This Phase 1 ESA has revealed no evidence of known recognizable environmental conditions in connection with the subject site.

2.0 INTRODUCTION

2.1 Purpose and Scope

The purpose of this Phase 1 ESA is to identify and describe the presence of any recognizable environmental conditions associated with the subject site. The term "recognizable environmental conditions" means the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

The scope of work in completing this Phase 1 ESA included the following tasks:

- site reconnaissance of the subject site to observe and assess site characteristics and identify any recognizable environmental conditions;
- observation of adjacent properties and site vicinity to identify and assess any recognizable environmental conditions;
- review of regulatory agency files to identify and assess any listings of regulatory permits, registrations, enforcement actions, contaminated sites, etc. at or in the vicinity of the subject site;

- review of history/land use of the subject site and vicinity to identify any potential uses that may have contributed to the presence of recognizable environmental conditions at the subject site; and
- interviews with current owners/occupants of the property and with local government officials.

Additional issues outside the scope of this Phase 1 ESA and therefore not addressed in this Phase 1 ESA report include the following:

- Asbestos-Containing Materials
- Radon
- Lead-Based Paint
- Lead in Drinking Water
- Wetlands Study

2.2 Limitations and Exceptions of Assessment

The conclusions and recommendations presented in this report are based solely on the scope of work outlined, sources of information referenced in this report, and professional opinions derived from current standards of ESA practice, and no warranty is intended, expressed, or implied. No soil or groundwater samples were taken or analyzed during the course of this investigation. The findings of this report are valid as of the present time. The passing of time will change the conditions of the existing property due to natural processes, works of man, from legislation, or the broadening of knowledge. Therefore, this report is subject to review and should not be relied upon after a period of 180 days. Any additional information that becomes available concerning this study should be submitted to USE so that our conclusions may be reviewed and modified. This report was prepared for the sole use of J. Cyril Johnson Investment Corp. and/or his agents.

3.0 DESCRIPTION OF SITE AND VICINITY

3.1 Site Location

The subject site is located at 150 Graylawn Avenue in Petaluma, California. Graylawn Avenue bound the subject site to the east, existing residential developments to the south, exiting railroad tracks to the west, and Petaluma Creek to the north and northeast. At the time of our investigation, the site was an irregular shaped parcel of land. The Sonoma County assessor's designation for the subject site is APN # 019-010-006 & 009 (Appendix B). The exact site location is 38.249800 degrees latitude north, and 122.641900 degrees longitude west according to the EDR Report prepared for this Phase 1 ESA on the subject site (Appendix A).

3.2 Description of Site and Improvements

The subject site consists of an irregular shaped parcel of land. The elevation of the subject site is approximately 26 feet above mean sea level based on the USGS topographic map.

USE conducted a reconnaissance of the subject site on October 08, 2003. At the time of this investigation, the site is covered with grass, weeds and scattered trees. Details of the subject site are presented on Figure 2 and in the photographs attached as Appendix C.

3.3 Current Property Uses

3.3.1 Current Uses of the Subject Site

The subject site is currently undeveloped. A list of the recognized environmental conditions identified at the subject site during our site reconnaissance is presented in Section 6.0.

3.3 Current Property Uses

3.3.1 Current Uses of the Subject Site

The subject site is currently undeveloped. A list of the recognized environmental conditions identified at the subject site during our site reconnaissance is presented in Section 6.0.

3.3.2 Current Uses of Adjoining Properties

Properties adjacent to the subject site were observed by a representative from USE on October 27, 2003.

- The subject site is bounded to the north by:
    - ◊ Undeveloped land and Petaluma River
- The subject site is bounded to the east by:
    - ◊ Petaluma River
- The subject site is bounded to the south by:
    - ◊ Existing residential developments
- The subject site is bounded to the west by:
    - ◊ Existing railroad tracks

3.3.3 Regional Property Uses

USE conducted a reconnaissance of the region surrounding the subject site on October 27, 2003. The region surrounding the subject site is primarily developed with a mixture of residential, light industrial, and commercial uses.

3.4 Physical Setting of the Subject Site

3.4.1 Geologic Conditions

The subject site lies in Petaluma Valley within the Coast Range Geomorphic Province. Petaluma Valley is located between Sonoma Mountain to the northeast and the Coast Ranges to the southwest. Folds, thrust faults, steep reverse faults, and strike-slip faults have developed as a consequence of Cenozoic deformations and are widespread throughout the province.

Sonoma Mountain consists primarily of Pliocene age volcanic rocks including ryholite, andesite,basalt and pyroclastic rocks. The coast ranges in the vicinity of the subject site consist primarily of Upper Pliocene marine sedimentary rocks overlying an Upper Jurassic to Lower Cretaceous eugosynclinal assemblage known as the Franciscan Formation. The Franciscan Formation is primarily a rapidly deposited complexly intercalated and deformed mixture of clastic sedimentary, and altered mafic volcanic rocks, with some chert, limestone, and subordinate amounts of metamorphic rocks (CDMG; 1966). The Quaternary history of the region is recorded by sedimentary marine strata alternating with non-marine strata. The changes of the depositional environment are related to the fluctuation of sea level corresponding to the glacial and interglacial periods. The subject site lies on Pleistocene age alluvial fan deposits overlying Pleistocene age non-marine and Upper Pliocene marine sedimentary rocks (Koenig; 1967).

3.4.2 Regional Hydrogeologic Conditions

The subject site lies in Petaluma Valley within the Coast Range Geomorphic Province. The Petaluma River crosses the subject site to the east. This river is actually is a tidal slough, which is a San Pablo Bay estuary, surrounded by a vast saltwater marsh to the north.

3.4.3 Local Hydrogeologic Conditions

Groundwater information in the vicinity of the subject site was obtained from the EDR report indicated that the groundwater flow direction is predominantly southeasterly and southwesterly.

4.0 Historical Use Information

4.1 Review of Historical Aerial Photographs

Historical aerial photographs, prepared by various organizations, were reviewed to help evaluate past land uses of the subject site and surrounding area. Photographs from 1957 through 1993 were examined under magnification for signs of industrial activity, soil stockpiles, leach ponds, oil drums, unusual surface features, or any other recognizable environmental condition that might have adversely impacted the subject site. The following presents a brief description of the conditions identified in the aerial photographs of the subject site and in the vicinity of the subject site.

1957

This aerial photograph was taken in 1957 (Figure 3). At the time of this photograph, the subject site was occupied by several farming buildings. The vicinity appeared to be residential and agricultural developments. The areas adjacent and to the south, southeast, and southwest are developed with residential buildings, some commercial and industrial buildings. The area to the east was undeveloped. Two railroad tracks were constructed to the west of the site. There were no recognizable environmental conditions, which could impact the environment of the subject site identified in this aerial photograph.

1965

This aerial photograph was taken in 1965 (Figure 4). At the time of this aerial photograph, the subject site remains the same. The vicinity is partially developed with residential, commercial, and light industrial buildings. The area adjacent and

where is the rest of the page

This aerial photograph was taken in 1989 (Figure 5). At the time of this aerial photograph, the subject site remains the same. The area surrounding the subject site remains the same. There were no recognizable environmental conditions, which could impact the environment of the subject site identified in this aerial photograph, except perhaps the operations at the commercial facilities present in the vicinity of the subject site.

1993

This aerial photograph was taken in 1982 (Figure 6). At the time of this aerial photograph, the farming buildings are gone. The areas south of the subject site were fully developed. The area east of the subject site remains undeveloped. There were no recognizable environmental conditions, which could impact the environment of the subject site identified in this aerial photograph, except perhaps the operations at the commercial facilities present in the vicinity of the subject site.

4.2 Results of Historical Property Uses Review

4.2.1 Historical Uses of Subject Site

The following information was determined from the historical aerial photographs reviewed and information obtained from our site reconnaissance. As of 1957, the subject site was occupied by several farming buildings. Sometime between 1989 and 1993 the farming buildings were demolished. Since then, the subject site has been remaining the same.

4.2.2 Historical Uses of Adjoining Properties

The following information was determined from the historical aerial photographs reviewed and information obtained from our site vicinity reconnaissance. As of 1957, the vicinity was a mixture of residential and agricultural developments. Sometime between 1957 and 1965 the vicinity was partially developed with residential, commercial, and light industrial developments. Since then, the

4.2.2 Historical Uses of Adjoining Properties

The following information was determined from the historical aerial photographs reviewed and information obtained from our site vicinity reconnaissance. As of 1957, the vicinity was a mixture of residential and agricultural developments. Sometime between 1957 and 1965 the vicinity was partially developed with residential, commercial, and light industrial developments. Since then, the remaining portion of the vicinity had been fully developed with residential, commercial, and light industrial developments.

4.2.3 Historical Recognizable Environmental Conditions

There were no recognizable environmental conditions, which could impact the environment of the subject site identified in the historical research performed for the subject site and vicinity, except perhaps the operations at the industrial facilities present in the vicinity of the subject site.

5.0 REVIEW OF STANDARD ENVIRONMENTAL RECORD SOURCES

5.1 EDR Report

EDR conducted a regulatory agency database search per our request in order to identify potential sources of hazardous materials in the site's vicinity that might affect the soil and/or groundwater quality at the subject site. A description of all the databases searched by EDR, as well as a Site Distribution Summary which lists the databases searched within a one-eighth, one-quarter, one-half and one mile radius from the property, and the number of sites identified by each search is provided in the EDR report presented at the end of this report in Appendix A. Maps showing the locations of sites identified within one mile, and one quarter mile from the site are also presented in the EDR report.

5.1.1 EDR Report Analysis

The EDR database search yielded a total of 89 records corresponding to 72 sites: 7 records corresponding to 7 sites were identified from databases searched within one-eighth mile from the subject site, 10 records corresponding to 5 sites were identified from databases searched within one-eighth to one-quarter mile, 25 records corresponding to 15 sites were identified from databases searched within one-quarter to one-half mile, and 47 records corresponding to 45 sites were identified from databases searched within one-half to one mile from the property.

5.1.2 EDR Report Summary

The sites listed in the EDR report identified as having the potential to impact the environment of the subject site are as follows (identified by EDR ID number):

B9 - Plaza Chevrolet - 1221 Petaluma Boulevard

A13 - Cal West Rentals - 1300 Petaluma Boulevard

C17 - Arolo Company - 1490 Petaluma Boulevard

D18 – R.O. Shelling – 900 Petaluma Boulevard

D21 - Shell - Favorite Carwash - 900 Petaluma Boulevard

E24 - Western Charter Tours - 67 Magnolia Avenue

F26 - Chevron #99728 - 860 Petaluma Boulevard

G28 - 3M - 1331 Commerce Street

H32 - Heritage Buick 822 Petaluma Boulevard

33 - Petaluma Valley Hospital - 400 McDowell Boulevard

Other sites presented in the EDR report were considered to not have the potential to impact the environment of the subject site, and therefore no additional information was requested for these sites. This was primarily based upon their topographical relationship with respect to the subject site, and the type of record presented in the EDR report for the site.

5.2 Sonoma County Environmental Health Department File Review

The EDR report identified several sites that might have an environmental impact on the subject site. However, these sites are located either cross-gradient or down-gradient from the subject site. In our opinion these sites have little or no impact to the environment of the subject site. As a result, the Sonoma County Environmental Health Department (SCEHD) was not contacted to determine if files exist for the LUST, CERCLIS/NFRAP, CORRACTS, and TSD sites identified in the EDR report as having the potential to impact the environment of the subject site.

5.4 Additional Record Sources

There were no additional record sources consulted for this Phase 1 ESA.

5.5 Record Sources Review Summary

Based upon the information obtained from the EDR report, the subject site has not been significantly impacted by any previous and/or current operations at the subject site.

6.0 RECOGNIZED ENVIRONMENTAL CONDITIONS

The following information was obtained from our site reconnaissance on October 27, 2003 and questions answered by our representative from the ESA Transaction Screen Questionnaire given in the ASTM Standard Practice for Environmental Site Assessments: Transaction Screen Process (ASTM E 1528-93), and the Environmental Questionnaire for Commercial or Industrial Properties. Copies of the completed questionnaires are included in Appendix D.

6.1 Hazardous Substances

6.1.1 Hazardous Substances in Connection with Identified Uses

As previously indicated in Section 5.0, there were no indications of any hazardous substance releases associated with the subject property.

6.1.2 Storage Tanks and Other Hazardous Substance Containers

There was no evidence or indication of any hazardous substance containers in connection with the subject site identified during the course of this ESA.

6.1.3 Indications of Hazardous Substance Release

As previously indicated in Section 5.0, there were no indications of any hazardous substance releases associated with the subject property.

6.2 Indications of PCBs

There was no evidence or indication of polychlorinated bi-phenols (PCBs) in connection with the subject site identified during the course of this investigation.

6.3 Indications of Solid Waste Disposal

There was no evidence or indication of solid waste disposal in connection with the subject site identified during the course of this investigation.

6.4 Environmental Liens

The property owner stated that he was unaware of any environmental liens in connection with the subject site in response to the ASTM ESA Transaction Screen Questionnaire (Appendix D).

6.5 ASTM ESA Transaction Screen Questionnaire

The ASTM ESA Transaction Screen Questionnaire was completed by our firm as part of this Phase 1 ESA report (Appendix D). Answers for question numbers 1 through

20 were obtained from a review of regulatory files, and through a thorough site inspection.

6.6 Any Other Conditions of Concerns

There were no other conditions of concern identified during the course of this Phase 1 ESA.

7.0 CONCLUSIONS

We have performed a Phase 1 ESA in conformance with the scope and limitations of ASTM Practice E 1527 for the undeveloped parcel of land located at 150 Graylawn Avenue in Petaluma, California. Any exceptions to, or deletions from, this practice are described in Sections 2.2 and 2.3 of this report. This Phase 1 ESA has revealed that the subject site has not been adversely impacted by the environmental releases off site as well as on site. However, we recommend the surface soil at the site be tested for pesticides prior to development because of the former agriculture activities at the subject site.

8.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

We certify that the work presented in this Phase 1 Environmental Site Assessment was performed under our supervision. To the best of our knowledge, the information contained herein is true and accurate, and the work was performed in accordance to professional standard.

REGISTERED PROFESSIONAL ENGINEER
VIEN M. VO
RCE
32296
Exp. 12/31/2004
CIVIL
STATE OF CALIFORNIA

Sean A. Deivert
Project Manager

Vien Vo, P.E.

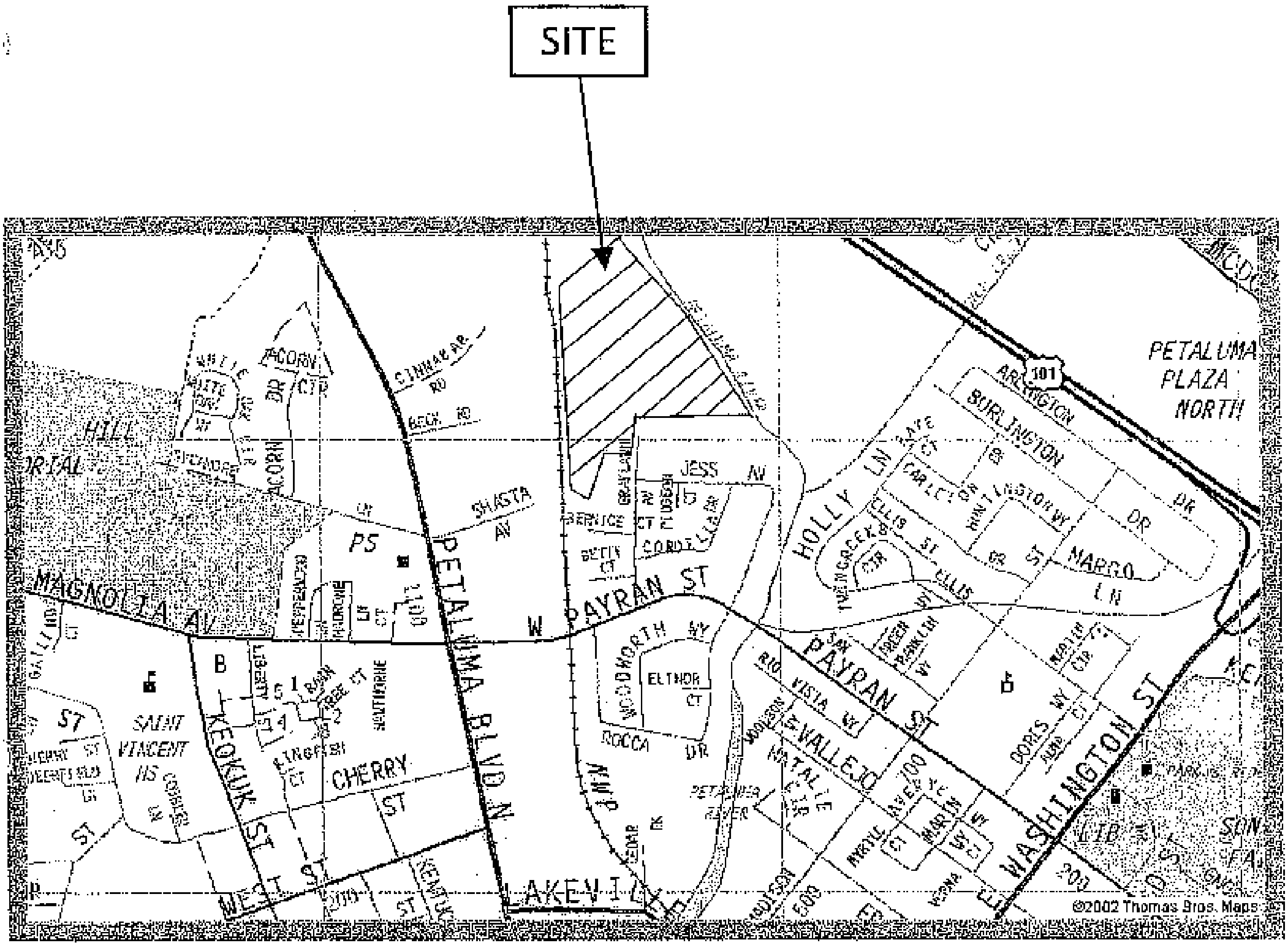
9.0 REFERENCES

ASTM E-1527-97 - ASTM Standards on Practice for Environmental Site Assessments for Commercial Real Estate, Phase 1 Environmental Site Assessment Process; American Society for Testing and Materials; West Conshohocken, Pennsylvania.

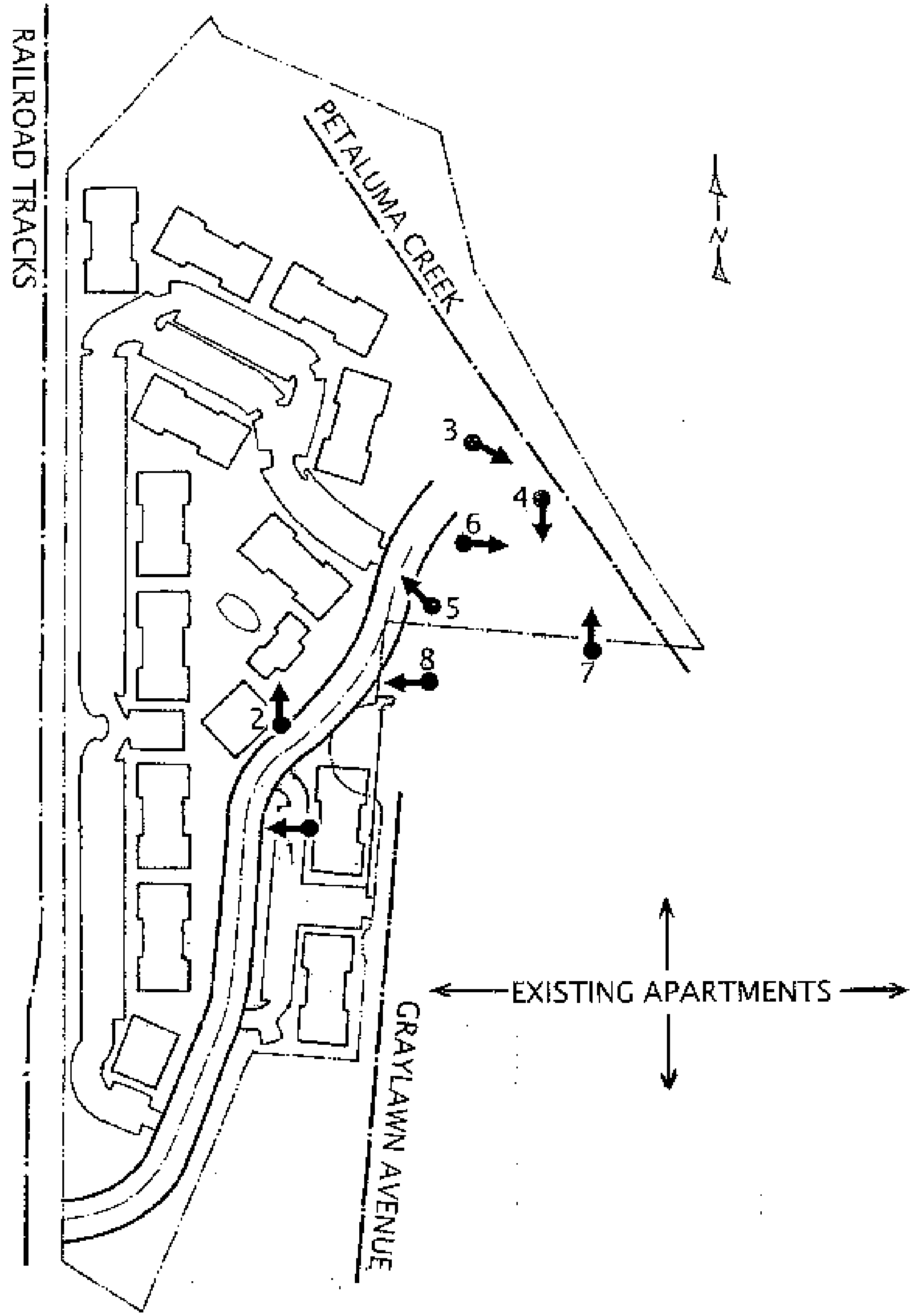
ASTM E-1528-96 - ASTM Standards on Practice for Environmental Site Assessments for Commercial Real Estate, Transaction Screen Process; American Society for Testing and Materials; West Conshohocken, Pennsylvania.

CDMG; 1966 - Geology of Northern California; California Division of Mines and Geology, Bulletin 190; San Francisco, California.

FIGURES

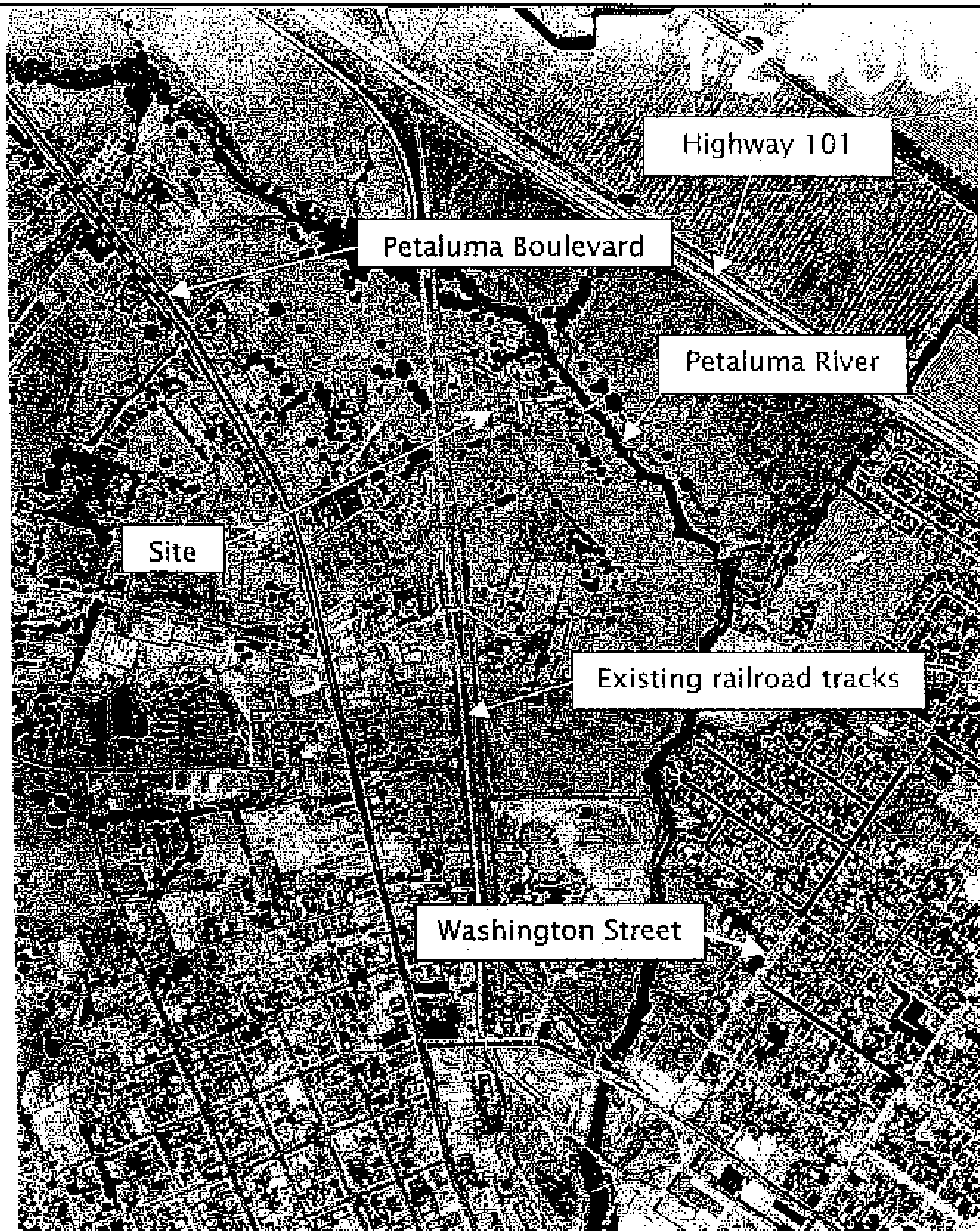


United Soil Engineering, Inc.	SITE LOCATION MAP	File No.: 5286-SE1	FIGURE
3476 Edward Avenue Santa Clara, CA 95054 (408) 988-2990	Proposed Residential Development 150 Graylawn Avenue Petaluma, California	Drawn by: V.V.	1
		Scale: NOT TO SCALE	January 2004



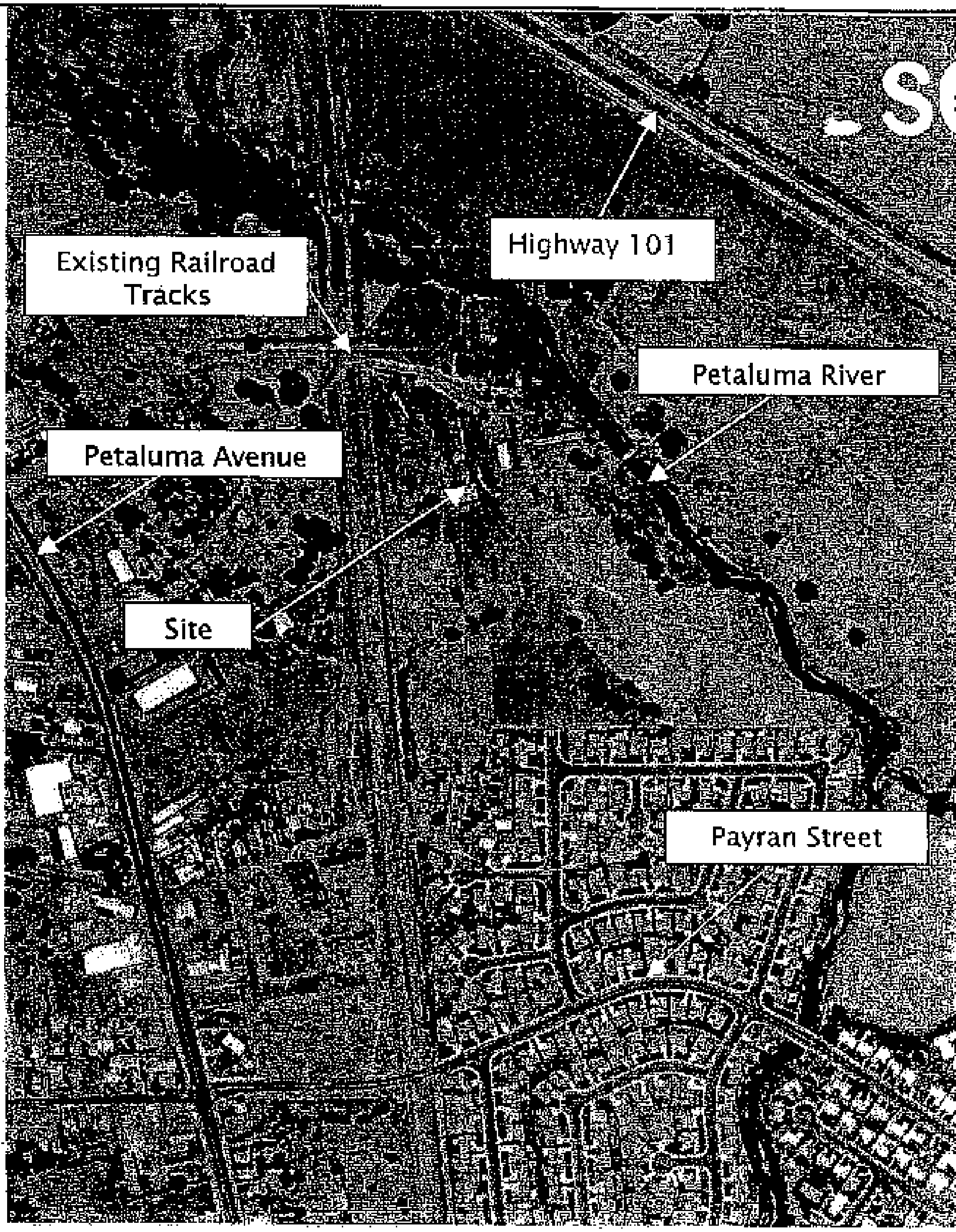
Note: Denotes approximate photograph location and direction (see Appendix D).

United Soil Engineering, Inc. 3476 Edward Avenue Santa Clara, CA 95054 (408) 988-2990	SITE PLAN Proposed Residential Development 150 Graylawn Avenue Petaluma, California	File No.: 5286-SE1 Drawn by: V.V. Scale: NOT TO SCALE	FIGURE 2 January 2004



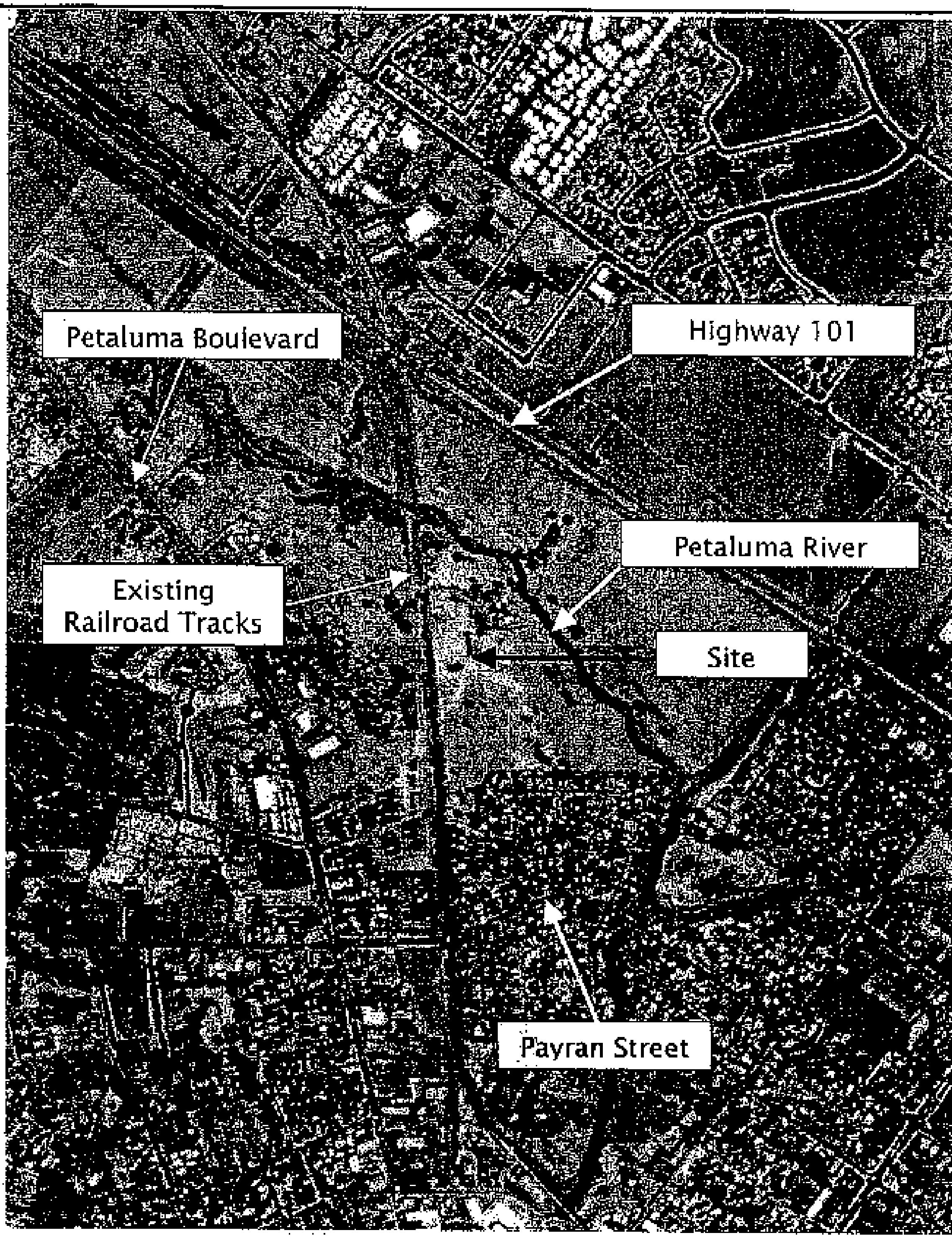
Inquiry : 1103767.5 Year : 1957 Flyer : Cartwright Scale : 1"=666'

United Soil Engineering, Inc. 3476 Edward Avenue Santa Clara, CA 95054 (408) 988-2990	AERIAL PHOTOGRAPH Proposed Residential Development 150 Graylawn Avenue Petaluma, California	File No.: 5286-SE1 Drawn by: V.V. Scale: 1" = 666'	FIGURE 3 January 2004



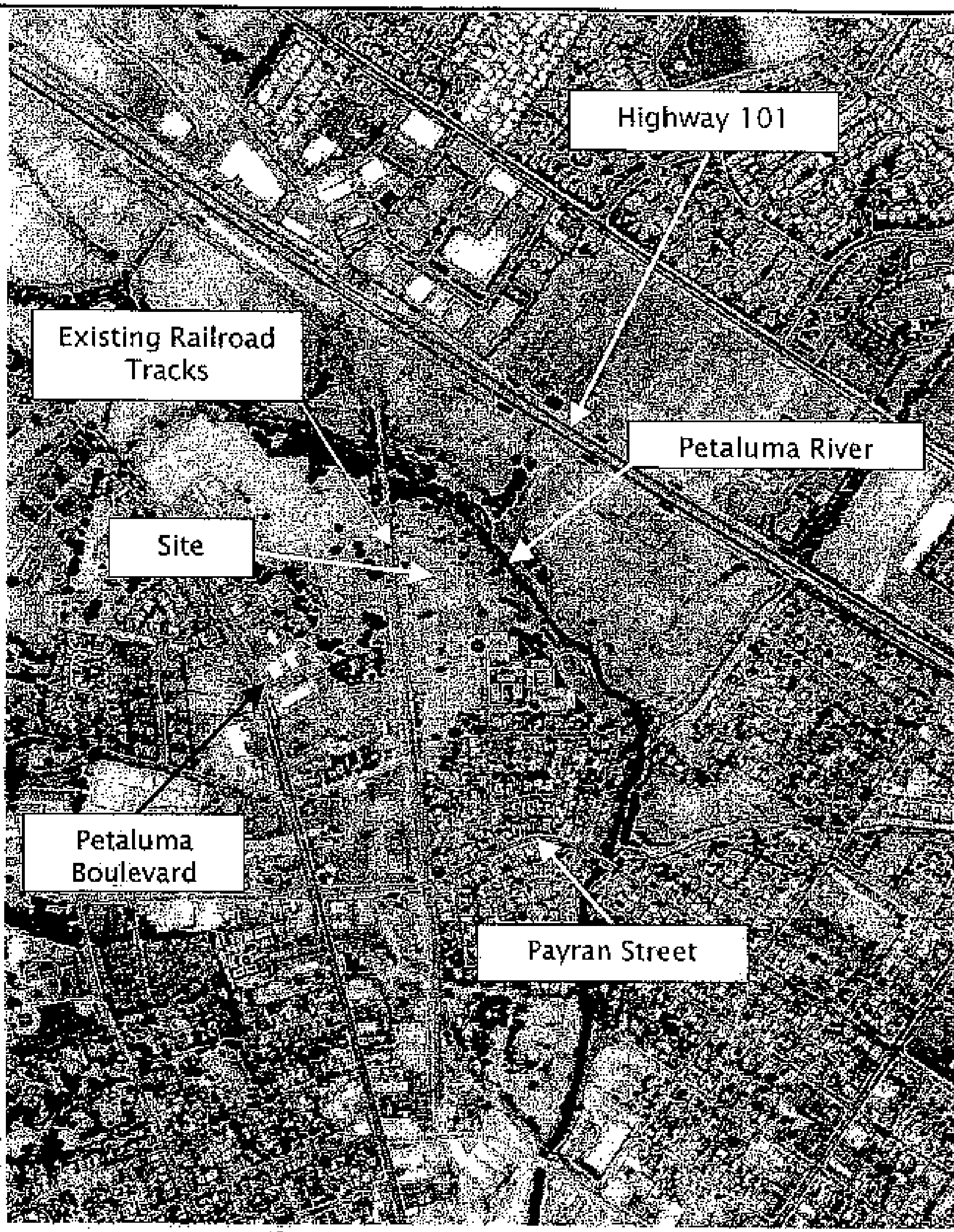
Inquiry : 1103767.5 Year : 1965 Flyer : Cartwright Scale : 1"=333'

United Soil Engineering, Inc. 3476 Edward Avenue Santa Clara, CA 95054 (408) 988-2990	AERIAL PHOTOGRAPH Proposed Residential Development 150 Graylawn Avenue Petaluma, California	File No.: 5286-SE1	FIGURE
		Drawn by: V.V.	4
		Scale: 1" = 333'	January 2004



Inquiry : 1034635.5   Year : 1989   Flyer : USGS   Scale : 1"=666'

United Soil Engineering, Inc.	AERIAL PHOTOGRAPH	File No.: 5286-SE1	FIGURE
3476 Edward Avenue Santa Clara, CA 95054 (408) 988-2990	Proposed Residential Development 150 Graylawn Avenue Sunnyvale, California	Drawn by: V.V.	5
		Scale: 1" = 666'	January 2004



Inquiry : 1103767.5 Year : 1993 Flyer : USGS Scale : 1"=666'

United Soil Engineering, Inc.	AERIAL PHOTOGRAPH Proposed Residential Development	File No.: 5286-SE1	FIGURE
3476 Edward Avenue Santa Clara, CA 95054 (408) 988-2990	150 Graylawn Avenue	Drawn by: V.V.	6
	Petaluma, California	Scale: 1" = 666'	January 2004

APPENDIX A

THE EDR
(SOURCE FOR ENVIRONMENTAL RISK MANAGEMENT DATA)

File No. 5286-SE1

The EDR Radius Map
with GeoCheck®

Proposed Residential Development
150 Graylawn Avenue
Petaluma, CA 94952

Inquiry Number: 1103767.3s

December 23, 2003

EDR® Environmental Data Resources, Inc.

The Source For Environmental Risk Management Data

3530 Post Road
Southport, Connecticut 06890

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

File No. 5286-SE1

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

File No. 5286-SE1

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc. (EDR). The report meets the government records search requirements of ASTM Standard Practice for Environmental Site Assessments, E 1527-00. Search distances are per ASTM standard or custom distances requested by the user.

TARGET PROPERTY INFORMATION

ADDRESS

150 GRAYLAWN AVENUE
PETALUMA, CA 94952

COORDINATES

Latitude (North):	38.249800 - 38˚ 14' 59.3"
Longitude (West):	122.641900 - 122˚ 38' 30.8"
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	531334.1
UTM Y (Meters):	4233386.0
Elevation:	26 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	38122-B6 PETALUMA, CA
Source:	USGS 7.5 min quad index

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 ASTM E 1527-00 search radius around the target property for the following databases:

FEDERAL ASTM STANDARD

NPL............................ National Priority List
Proposed NPL................. Proposed National Priority List Sites
CERCLIS...................... Comprehensive Environmental Response, Compensation, and Liability Information System
CERC-NFRAP................. CERCLIS No Further Remedial Action Planned
RCRIS-LQG.................... Resource Conservation and Recovery Information System
ERNS.......................... Emergency Response Notification System

STATE ASTM STANDARD

AWP........................... Annual Workplan Sites

EXECUTIVE SUMMARY

Cal-Sites........................ Calsites Database
Toxic Pits........................ Toxic Pits Cleanup Act Sites
SWF/LF........................ Solid Waste Information System
WMUDS/SWAT................ Waste Management Unit Database
CA BOND EXP. PLAN....... Bond Expenditure Plan
UST........................ List of Underground Storage Tank Facilities
VCP........................ Voluntary Cleanup Program Properties
INDIAN UST................. Underground Storage Tanks on Indian Land

FEDERAL ASTM SUPPLEMENTAL

CONSENT........................ Superfund (CERCLA) Consent Decrees
ROD........................ Records Of Decision
Delisted NPL.................. National Priority List Deletions
FINDS........................ Facility Index System/Facility Identification Initiative Program Summary Report
HMIRS........................ Hazardous Materials Information Reporting System
MLTS........................ Material Licensing Tracking System
MINES........................ Mines Master Index File
NPL Liens..................... Federal Superfund Liens
PADS........................ PCB Activity Database System
DOD........................ Department of Defense Sites
US BROWNFIELDS............ A Listing of Brownfields Sites
RAATS........................ RCRA Administrative Action Tracking System
TRIS........................ Toxic Chemical Release Inventory System
TSCA........................ Toxic Substances Control Act
SSTS........................ Section 7 Tracking Systems
FTTS INSP..................... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

STATE OR LOCAL ASTM SUPPLEMENTAL

AST........................ Aboveground Petroleum Storage Tank Facilities
CLEANERS..................... Cleaner Facilities
CA WDS........................ Waste Discharge System
DEED........................ List of Deed Restrictions
NFA........................ No Further Action Determination
EMI........................ Emissions Inventory Data
REF........................ Unconfirmed Properties Referred to Another Agency
SCH........................ School Property Evaluation Program
NFE........................ Properties Needing Further Evaluation

EDR PROPRIETARY HISTORICAL DATABASES

Coal Gas........................ Former Manufactured Gas (Coal Gas) Sites

BROWNFIELDS DATABASES

US BROWNFIELDS............ A Listing of Brownfields Sites
VCP........................ Voluntary Cleanup Program Properties

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified.

EXECUTIVE SUMMARY

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.

FEDERAL ASTM STANDARD

CORRACTS: CORRACTS is a list of handlers with RCRA Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every handler that has had corrective action activity.

A review of the CORRACTS list, as provided by EDR, and dated 09/17/2003 has revealed that there is 1 CORRACTS site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
OPTICAL SCIENCE GROUP INC	*1331 COMMERCE BLVD*	*1/4 - 1/2 N*	*G29*	*32*

RCRIS: Resource Conservation and Recovery Information System. RCRIS 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). Conditionally exempt small quantity generators (CESQGs): generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs): generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs): generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

A review of the RCRIS-TSD list, as provided by EDR, and dated 09/10/2003 has revealed that there is 1 RCRIS-TSD site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
OPTICAL SCIENCE GROUP INC	*1331 COMMERCE BLVD*	*1/4 - 1/2 N*	*G29*	*32*

RCRIS: Resource Conservation and Recovery Information System. RCRIS 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). Conditionally exempt small quantity generators (CESQGs): generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs): generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs): generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely

EXECUTIVE SUMMARY

hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

A review of the RCRIS-SQG list, as provided by EDR, and dated 09/10/2003 has revealed that there is 1 RCRIS-SQG site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
WESTERN MOTORS INC	*1221 PETALUMA BLVD N*	*1/8 - 1/4 WSW*	*B11*	*14*

STATE ASTM STANDARD

CHMIRS: The California Hazardous Material Incident Report System contains information on reported hazardous material incidents, i.e., accidental releases or spills. The source is the California Office of Emergency Services.

A review of the CHMIRS list, as provided by EDR, and dated 12/31/2002 has revealed that there are 17 CHMIRS sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
Not reported	1106 PETALUMA BLVD NORT	1/4 - 1/2 SW	15	17
Not reported	1482 NORTH PETALUMA BLV	1/4 - 1/2 WNW	C16	18
Not reported	909 PETALUMA BLVD NORTH	1/4 - 1/2 SSW	D20	22
Not reported	1321 COMMERCE STREET	1/4 - 1/2 N	G27	30
Not reported	1340 COMMERCE DR	1/4 - 1/2 N	30	34
Not reported	299 N MCDOWELL AVE	1/2 - 1 NE	36	43
Not reported	34 VALLEJO STREET	1/2 - 1 SSE	37	45
Not reported	900 MARTIN CIR.	1/2 - 1 SE	43	50
Not reported	121 LAKEVILLE STREET	1/2 - 1 S	J46	54
Not reported	900 EAST WASHINGTON ST	1/2 - 1 SE	L53	65
Not reported	1221 KATHLEEN WAY	1/2 - 1 W	66	79
Not reported	S. MCDOWELL BLVD NEAR M	1/2 - 1 E	71	83
Not reported	208 PETALUMA BLVD NORTH	1/2 - 1 S	O76	89
Not reported	400 E. D ST.	1/2 - 1 SSE	P79	91
Not reported	PETALUMA BLVD NO / WASH	1/2 - 1 S	O80	92
Not reported	325 SO. MCDOWELL BLVD.	1/2 - 1 E	81	94
Not reported	2444 PETALUMA BLVD NORT	1/2 - 1 NW	82	95

CORTESE: This database identifies public drinking water wells with detectable levels of contamination, hazardous substance sites selected for remedial action, sites with known toxic material identified through the abandoned site assessment program, sites with USTs having a reportable release and all solid waste disposal facilities from which there is known migration. The source is the California Environmental Protection Agency/Office of Emergency Information.

A review of the Cortese list, as provided by EDR, has revealed that there are 43 Cortese sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
PLAZA CHEVROLET	*1221 PETALUMA BLVD N*	*1/8 - 1/4 WSW*	*B9*	*12*
CAL WEST RENTALS	*1300 PETALUMA BLVD N*	*1/8 - 1/4 W*	*A13*	*15*
AROLO COMPANY	*1490 PETALUMA BLVD N*	*1/4 - 1/2 WNW*	*C17*	*19*
RO SHELLING	909 PETALUMA BLVD N	1/4 - 1/2 SSW	D19	22
SHELL OIL CO	*900 PETALUMA*	*1/4 - 1/2 SSW*	*D22*	*25*

File No. 5286-SE1

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Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
PETALUMA CITY OF	67 MAGNOLIA AVE	1/4 - 1/2 SSW	E23	25
CHEVRON	860 PETALUMA BLVD N	1/4 - 1/2 SSW	F25	28
3M	*1331 COMMERCE STREET*	*1/4 - 1/2 N*	*G28*	*31*
HERITAGE BUICK	*822 PETALUMA BLVD NO*	*1/4 - 1/2 SSW*	*H32*	*37*
PETALUMA VALLEY HOSPITAL	*400 MCDOWELL BLVD N*	*1/4 - 1/2 NNE*	*33*	*38*
RICCI BROS TRUCKING	1 CEDAR GROVE PARK	1/4 - 1/2 S	I35	43
MIKE HUDSON DISTRIBUTING	*1297 DYNAMIC ST*	*1/2 - 1 N*	*38*	*46*
K MART 3501	*261 N MCDOWELL BLVD*	*1/2 - 1 ENE*	*39*	*47*
BP	701 PETALUMA BLVD N	1/2 - 1 S	40	48
MARIN SONOMA MOSQUITO & V	556 MCDOWELL	1/2 - 1 N	41	48
WATER FIELD OFFICE	*202 MCDOWELL BLVD N*	*1/2 - 1 ENE*	*42*	*48*
CLOVER STORNETTA	*91 LAKEVILLE ST*	*1/2 - 1 S*	*J44*	*51*
CALIFORNIA GOLD DAIRY PRO	*51 LAKEVILLE ST*	*1/2 - 1 S*	*K46*	*55*
HUNT & BEHRENS	*30 LAKEVILLE ST.*	*1/2 - 1 S*	*K47*	*56*
SHOTWELL'S AUTO BODY	*600 PETALUMA BLVD N*	*1/2 - 1 S*	*48*	*58*
HANSEN RESIDENCE	*708 KEOKUK ST*	*1/2 - 1 SW*	*49*	*60*
MADDALENA DAIRY SUPPLY	*139 LAKEVILLE ST*	*1/2 - 1 S*	*50*	*61*
JERRY & DON'S PUMP & WELL	*151 LAKEVILLE HWY*	*1/2 - 1 S*	*51*	*62*
LARRY'S AUTO BODY SHOP	*416 MADISON ST*	*1/2 - 1 SSE*	*52*	*63*
SONOMA MARIN FAIRGROUNDS	*866 WASHINGTON ST E*	*1/2 - 1 SE*	*L54*	*66*
RAINTREE CAR WASH & GAS	*420 PETALUMA BLVD N*	*1/2 - 1 S*	*M56*	*68*
SHELL	801 WASHINGTON ST E	1/2 - 1 SE	58	69
SILVA PARTNERSHIP	*601 WASHINGTON ST E*	*1/2 - 1 SSE*	*60*	*70*
EXXON 7-0240 (FORMER)	*532 WASHINGTON ST E*	*1/2 - 1 SSE*	*N61*	*71*
BAR ALE INC	*17 COPELAND ST*	*1/2 - 1 S*	*62*	*73*
TRIPLE S TIRES	*527 WASHINGTON ST E*	*1/2 - 1 SSE*	*N63*	*74*
CHEVRON	1440 WASHINGTON ST E	1/2 - 1 E	64	77
BOSTROM PROPERTY	*745 MCDOWELL BLVD N*	*1/2 - 1 NNW*	*65*	*77*
PETALUMA CAR WASH	*483 WASHINGTON ST E*	*1/2 - 1 SSE*	*67*	*80*
UNOCAL	440 WASHINGTON ST E	1/2 - 1 SSE	69	82
SUPER 7	201 MCDOWELL BLVD	1/2 - 1 E	70	83
LA FORGE ENTERPRISES	*1111 GOSSAGE AVE*	*1/2 - 1 WNW*	*73*	*84*
DAIRYMAN'S FEED & SUPPLY	*323 WASHINGTON ST E*	*1/2 - 1 SSE*	*74*	*86*
COMPLETE AUTO SERVICE	*296 WILSON LN*	*1/2 - 1 SSE*	*75*	*87*
SCHRAM PROPERTY	*300 WATER ST*	*1/2 - 1 S*	*77*	*90*
COIN AMUSEMENT FORMER	416 D ST E	1/2 - 1 SSE	P78	91

Lower Elevation	Address	Dist / Dir	Map ID	Page
BP	101 MCDOWELL BLVD N	1/2 - 1 E	55	67
JOS ELLWOOD COMMUNICATION	301 PAYRAN	1/2 - 1 SE	72	84

NOTIFY 65: Notify 65 records contain facility notifications about any release that could impact drinking water and thereby expose the public to a potential health risk. The data come from the State Water Resources Control Board's Proposition 65 database.

A review of the Notify 65 list, as provided by EDR, has revealed that there are 3 Notify 65 sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
PETALUMA BP	421 PETALUMA BOULEVARD	1/2 - 1 S	M57	69
Not reported	745 N MCDOWELL BLVD	1/2 - 1 NNW	59	70
UNOCAL SERVICE STATION #6214	440 EAST WASHINGTON	1/2 - 1 SSE	66	82

File No. S286-SE1

EXECUTIVE SUMMARY

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the State Water Resources Control Board Leaking Underground Storage Tank Information System.

A review of the LUST list, as provided by EDR, and dated 04/02/2003 has revealed that there are 11 LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
PLAZA CHEVROLET	1221 PETALUMA BLVD N	1/8 - 1/4 WSW	B9	12
CAL WEST RENTALS	1300 PETALUMA BLVD N	1/8 - 1/4 W	A13	15
AROLO COMPANY	1490 PETALUMA BLVD N	1/4 - 1/2 WNW	C17	19
R.O. SHELLING	909 PETALUMA BLVD N	1/4 - 1/2 SSW	D18	20
SHELL - FAVORITE CAR WASH	900 PETALUMA BLVD N	1/4 - 1/2 SSW	D21	23
WESTERN CHARTER TOURS	67 MAGNOLIA AVE	1/4 - 1/2 SSW	E24	25
CHEVRON #99728 (FORMER)	860 PETALUMA BLVD N	1/4 - 1/2 SSW	F26	28
3M	1331 COMMERCE STREET	1/4 - 1/2 N	G28	31
HERITAGE BUICK	822 PETALUMA BLVD NO	1/4 - 1/2 SSW	H32	37
PETALUMA VALLEY HOSPITAL	400 MCDOWELL BLVD N	1/4 - 1/2 NNE	33	38
RICCI BROS. TRUCKING	1 CEDAR GROVE PARK	1/4 - 1/2 S	I34	42

CA FID: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, has revealed that there are 3 CA FID UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
BRODIE'S TIRE & BRAKE	1276 PETALUMA N	1/8 - 1/4 WSW	A4	8
PETALUMA PROPERTIES	1221 N PETALUMA BLVD	1/8 - 1/4 WSW	B8	12
OLD CAL WEST RENTAL YARD	1300 N PETALUMA BLVD	1/8 - 1/4 W	A12	15

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there are 2 HIST UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
BRODIE'S TIRE & BRAKE	1276 PETALUMA BLVD N	1/8 - 1/4 WSW	A3	8
WESTERN MOTORS INC	1221 PETALUMA BLVD N	1/8 - 1/4 WSW	B11	14

STATE OR LOCAL ASTM SUPPLEMENTAL

CA SLIC: SLIC Region comes from the California Regional Water Quality Control Board.

A review of the CA SLIC list, as provided by EDR, has revealed that there is 1 CA SLIC site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
TWO ROCK FINISHERS	821 PETALUMA BLVD	1/4 - 1/2 SSW	H31	36

EXECUTIVE SUMMARY

HAZNET: 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 from non-California manifests & continuation sheets are not included at the present time. 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, & disposal method. The source is the Department of Toxic Substance Control is the agency

A review of the HAZNET list, as provided by EDR, has revealed that there are 7 HAZNET sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Dist / Dir	Map ID	Page
SHOTWELL'S AUTO BODY INC	***213 CINNABAR LANE***	***0 - 1/8 W***	***1***	***6***
STINGER SPORTS WEAR	1270 PETALUMA BLVD NORT	1/8 - 1/4 WSW	A2	8
BRODIE'S TIRE & BRAKE INC	1276 PETALUMA BLVD N	1/8 - 1/4 WSW	A5	9
RIDERCORP-JAY&BILLS TIRE SER	1282 PETALUMA BLVD NO	1/8 - 1/4 W	A6	10
PURE LUXURY LIMONSINE & TRANSP	1221 PETALUMA BLVD NORT	1/8 - 1/4 WSW	B7	11
DAVE'S AUTO BODY & PAINTING	1221 PETALUMA BLVD NO	1/8 - 1/4 WSW	B10	14
CAMP BROS TRUCKING	45 SHASTA AVE STE A	1/8 - 1/4 SSW	14	17

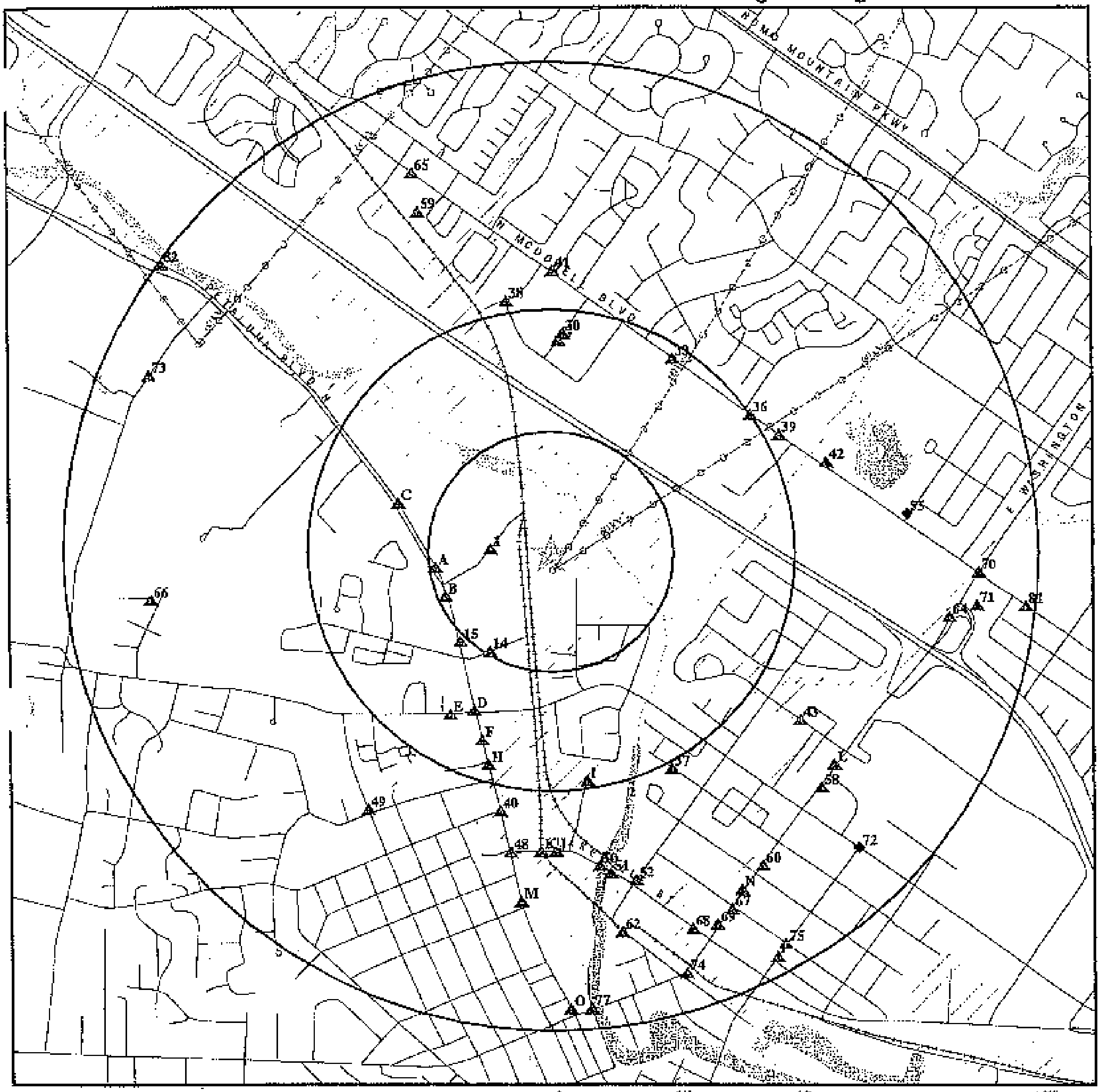
EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
KOLLER'S TOWN & COUNTRY CLEANER	CLEANERS, HAZNET
GAMBONINI MERCURY MINE	CERCLIS, FINDS
PG&E GAS PLANT PETALUMA	CERC-NFRAP
CENTRAL DSPL SITE	CERC-NFRAP
SONOMA COUNTY LANDFILL	CERC-NFRAP
SOUTHERN LAKEVILLE AREA SLUDGE LAND APP	SWF/LF
LORAL SKYNET, LTD.	UST
HICKS VLY FIREHOUSE	UST
MC PAILS	HIST UST
DIVIDEND DEVELOPMENT	CA FID UST
CITY OF PETALUMA WATER DEPT	HAZNET
SONOMA COUNTY WASTE MANAGEMENT AGENCY	HAZNET
LORAL SKYNET	HAZNET
PAUL GOULD TRUCKING	HAZNET
BP GAS	HAZNET
HOLLISTER-STIER LAB INC	RCRIS-SQG, FINDS
CHEVRON STATION NO 90152	RCRIS-SQG, FINDS

File No. 5286-SE1

OVERVIEW MAP - 1103767.3s - United Soil Engineering

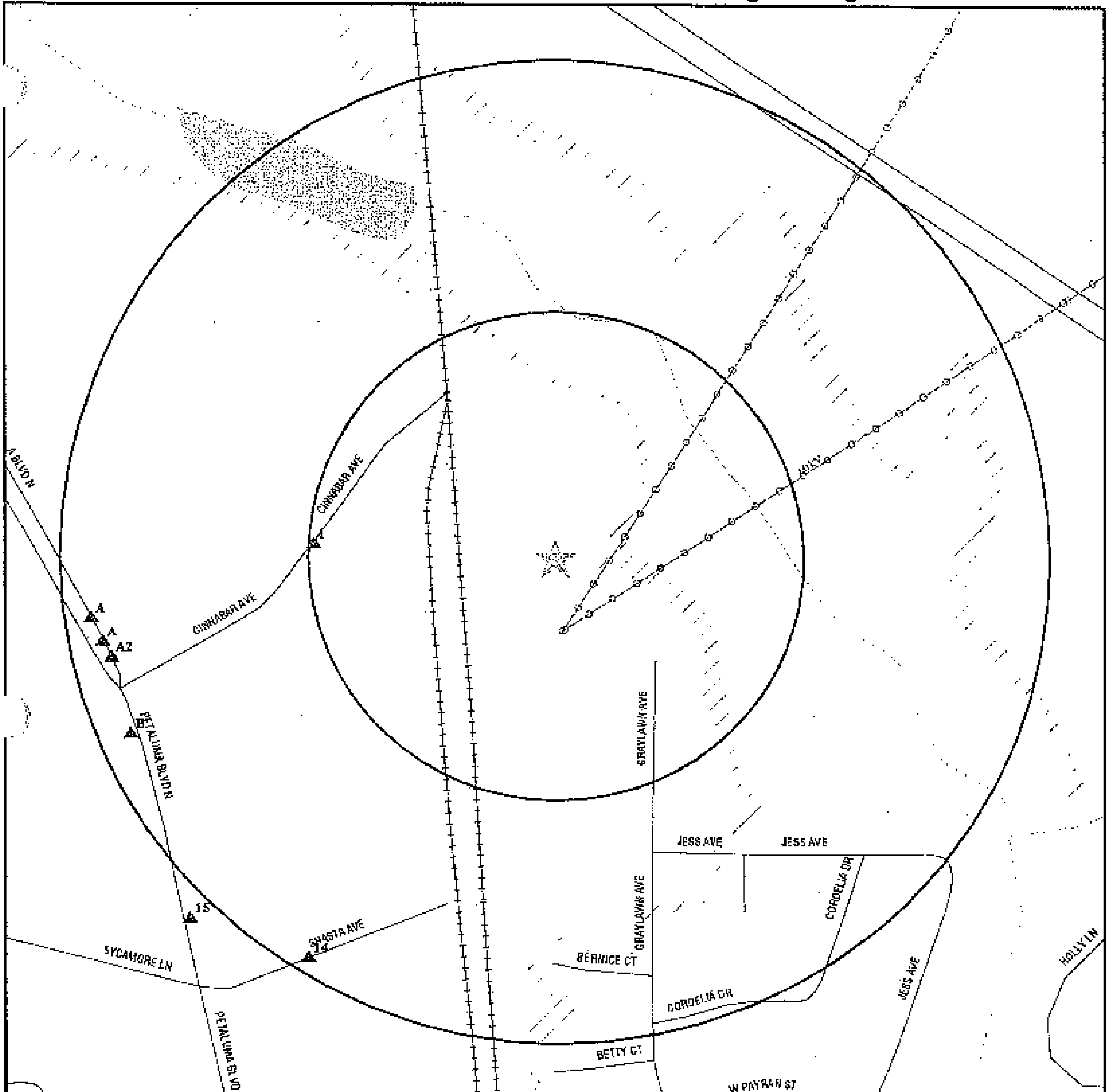


- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Coal Gasification Sites
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Federal Wetlands
- Areas of Concern

TARGET PROPERTY:	Proposed Residential Development	CUSTOMER:	United Soil Engineering
ADDRESS:	150 Grayfawn Avenue	CONTACT:	Mr. Vien Vo
CITY/STATE/ZIP:	Petaluma CA 94952	INQUIRY #:	1103767.3s
LAT/LONG:	38.2498 / 122.6419	DATE:	December 23, 2003 3:54 pm

File No. 5286-SE1

DETAIL MAP - 1103767.3s - United Soil Engineering



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Coal Gasification Sites
- Sensitive Receptors
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Federal Wetlands
- Areas of Concern

TARGET PROPERTY:	Proposed Residential Development	CUSTOMER:	United Soil Engineering
ADDRESS:	150 Graylawn Avenue	CONTACT:	Mr. Vien Vo
CITY/STATE/ZIP:	Petaluma CA 94952	INQUIRY #:	1103767.3s
LAT/LONG:	38.2498 / 122.6419	DATE:	December 23, 2003 3:56 pm

Appendix 11A

Sid Commons Hydraulic Evaluations

West Consultants, Inc., February 2017

WEST
Consultants, Inc.

MEMORANDUM

Project:	Sid Commons Hydraulic Evaluation
Subject:	Results Summary
Date:	February 22, 2017
To:	Curt Bates, City of Petaluma Olivia Ervin, City of Petaluma
From:	David S. Smith, P.E., WEST Consultants, Inc.

REGISTERED PROFESSIONAL ENGINEER
David S. Smith
No. C056132
EXP. 12/31/18
CIVIL
STATE OF CALIFORNIA

David S Smith

This memo summarizes the analysis completed by WEST Consultants, Inc. (WEST) for the City of Petaluma (the City) to evaluate the effect of proposed grading and terracing of the Petaluma River on the right bank adjacent to the proposed Sid Commons development. The terraced reach is about halfway between the Petaluma Outlet Mall and Lynch Creek, located just downstream of the Southern Pacific Railroad crossing extending to a point approximately 0.35 miles downstream. Previous modeling was conducted in 2011 based on a previous grading concept for the subject Sid Commons development. The current evaluation is based on the model used for the FEMA map revision submittal (xpstorm, version May 2010). The hydrologic percent impervious assumptions within this model were adjusted for Buildout (Year 2025) conditions.

Project Topography and Floodplain Terraces

Cross sections in the vicinity of the Sid Commons project were acquired for both base and proposed conditions. Base conditions reflect General Plan 2015 buildout conditions without the Sid Commons project—this is also referred to as "existing" conditions. The existing conditions cross sections reflect current topography in the Sid Commons project area. The proposed conditions cross sections reflect the Sid Commons floodplain terracing and project grading. The base and proposed conditions presume buildout of the Petaluma General Plan 2025. The extent of existing and proposed conditions topography limits are both illustrated on the Sid Commons grading plan (see Attachment 1).

The Sid Commons floodplain terracing and project grading were provided by CSW/Stuber-Stroeh Engineering Group, Inc. (CSWST2). Cross section revisions within the xpstorm model are illustrated in Attachment 2. Each cross section graphic includes two lines:

- Blue – The shape of the cross section used in xpstorm representing existing conditions.
- Orange – The shape of the cross section used in xpstorm representing the Sid Commons floodplain terracing and project grading.

Revised cross sections are located between nodes pr_0490 and pr_0440. Node locations and approximate cross sections in the xpstorm model are illustrated in Figure 1.

Figure 1. xpstorm Model Node Locations

Approach

The 10- and 100-year rainfall events were used to evaluate the effectiveness of the proposed terracing project. Watershed percent imperviousness was based on General Plan buildout (year 2025) conditions for model runs with and without the proposed Sid Commons project, consistent with the data utilized for the General Plan 2025 Environmental Impact Report hydraulic evaluation. Model names are summarized as follows.

- Existing/base condition models:
    - PrefLU10yr_base_12-5-16.xp
    - PrefLU100yr_base_12-5-16.xp
- Proposed condition models:
    - PrefLU10yr_SidCom_12-5-16.xp
    - PrefLU100yr_SidCom_12-5-16.xp

Results/Conclusions

Tabular comparisons of model results with and without the Sid Commons floodplain terracing and project grading for the 10- and 100-year events are provided in Tables 1 and 2.

The model results suggest that the Sid Commons project will provide a water surface elevation reduction in the terraced reach and, to a lesser extent, the reach immediately upstream. As shown in Tables 1 and 2, the reduction in water surface elevation for the terraced reach between nodes pr_0490 and pr_0440) averages 0.75 feet for the 10-year event and 0.3 feet for the 100-year event. A maximum reduction of 1.1 feet occurs at node pr_0470 for the 10-year event and 0.6 feet at node pr_0490 for the 100-year event.

Although the terracing reduces water surface elevations adjacent to the project, there is a small increase in the Petaluma River peak discharge and water surface elevation downstream of the terraced reach. This minor increase was previously documented as part of the Denman Terracing Phase 3 study due to terracing upstream of Corona Road.
The discharge and water surface elevation increases caused by the Sid Commons terracing appear to be due to changes in velocity (primarily slower but also faster in several reaches) which result in slightly higher peak flows downstream. Another potential factor is the unavoidable result of lower water surface elevations due to the terracing which causes less water storage in the overbanks, and therefore higher peak flows downstream.

An additional model run was conducted that includes the Denman Phase 3 terracing and the proposed Sid Commons terracing. The maximum water surface elevations were found to be less than those previously calculated in the 2012 Denman Terracing evaluation, with the exception of one portion of the Denman terracing reach where the amount of terracing was reduced in the final design concept. This means that the overall flooding impacts (i.e. maximum water surface elevation) due to both the Denman terracing and Sid Commons projects in flood-prone areas such as C Street and 1st Street are lower than previously identified in the 2012 Denman Phase 3 terracing project, which was approved by City Council in 2012.

List of Attachments/Exhibits

Table 1	*xpstorm Results With and Without Sid Commons Reach Terraces for 10-year Storm*
Table 2	*xpstorm Results With and Without Sid Commons Reach Terraces for 100-year Storm*
Attachment 1	*CSWST2 Sid Commons Grading Plan*
Attachment 2	*Cross section graphics showing terracing concept*
Attachment 3	*Flood Boundary Comparison Map for 10-year Storm (3 sheets)*
Attachment 4	*Flood Boundary Comparison Map for 100-year Storm (3 sheets)*

Table 1. xpstorm Results With and Without Sid Commons Reach Terraces for 10-year Storm

Reach			Q			U/S WSEL		
Link ID	U/S Node	D/S Node	Base	SidCom	Difference	Base	SidCom	Difference
lpr_0020	pr_0020	pr_0010	30	30		29.00	29.00	
lpr_0030	pr_0030	pr_0020	8840	8842	2	6.53	6.53	
lpr_0040	pr_0040	pr_0030	8839	8842	3	6.59	6.59	
lpr_0050	pr_0050	pr_0040	8839	8841	2	6.66	6.66	
lpr_0060	pr_0060	pr_0050	7477	7475	-1	6.75	6.75	
lpr_0070	pr_0070	pr_0060	7470	7469		6.78	6.78	
lpr_0080	pr_0080	pr_0070	7465	7465		6.97	6.97	
lpr_0090	pr_0090	pr_0080	7461	7461		7.02	7.02	
lpr_0100	pr_0094	pr_0090	7458	7459	1	7.09	7.09	
Link1230	pr_0096	pr_0094	6931	6934	4	7.11	7.11	
Link1229	pr_0098	pr_0096	6928	6932	4	7.24	7.24	
Link1228	pr_0100	pr_0098	6928	6932	4	7.29	7.29	
lpr_0110	pr_0110	pr_0100	6927	6931	4	7.33	7.33	
lpr_0120	pr_0120	pr_0110	6896	6900	4	7.40	7.40	
lpr_0130	pr_0130	pr_0120	6893	6897	4	7.40	7.40	
lpr_0140	pr_0140	pr_0130	6891	6895	4	7.45	7.45	
lpr_0150	pr_0150	pr_0140	6889	6893	3	7.50	7.50	
lpr_0160	pr_0160	pr_0150	6888	6890	3	7.59	7.59	
lpr_0170	pr_0170	pr_0160	6676	6681	5	7.71	7.71	
lpr_0180	pr_0180	pr_0170	6673	6678	6	7.77	7.77	
lpr_0190	pr_0190	pr_0180	6652	6658	6	7.82	7.82	
lpr_0195	pr_0195	pr_0190	6650	6657	6	7.87	7.87	
lpr_0200	pr_0200	pr_0195	6302	6313	10	7.98	7.98	
Link1239	pr_0206	pr_0200	5732	5743	11	8.06	8.06	
lpr_0208	pr_0208	pr_0206	5703	5715	12	8.07	8.07	
lpr_0210	pr_0210	pr_0208	5702	5714	12	8.15	8.15	
lpr_0220	pr_0220	pr_0210	5701	5713	12	8.14	8.14	
lpr_0230	pr_0230	pr_0220	5685	5697	12	8.19	8.19	
lpr_0240	pr_0240	pr_0230	5683	5695	12	8.19	8.20	
lpr_0250	pr_0250	pr_0240	5681	5693	12	8.20	8.20	
lpr_0260	pr_0260	pr_0250	5678	5690	12	8.20	8.20	
lpr_0270	pr_0270	pr_0260	5677	5689	12	8.20	8.21	
lpr_0280	pr_0280	pr_0270	5676	5688	12	8.21	8.21	
lpr_0290	pr_0290	pr_0280	5675	5687	12	8.22	8.22	
lpr_0298	pr_0298	pr_0290	5674	5686	12	8.11	8.11	
lpr_0300	pr_0300	pr_0298	5545	5513	-32	8.50	8.51	
lpr_0308	pr_0308	pr_0300	5545	5512	-33	8.64	8.64	
lpr_0310	pr_0310	pr_0308	5545	5510	-35	8.85	8.85	
lpr_0320	pr_0320	pr_0310	5545	5508	-37	8.97	8.97	
lpr_0322	pr_0322	pr_0320	5545	5507	-38	8.88	8.88	
lpr_0330	pr_0330	pr_0320	5472	5472		19.42	19.42	
lpr_0338	pr_0338	pr_0330	5544	5506	-38	8.99	9.00	
lpr_0340	pr_0340	pr_0338	5522	5475	-47	9.28	9.29	
lpr_0350	pr_0350	pr_0340	5522	5475	-47	9.54	9.55	
lpr_0360	pr_0360	pr_0350	5522	5475	-47	9.87	9.88	
lpr_0370	pr_0370	pr_0360	5522	5475	-47	11.05	11.06	0.01
lpr_0380	pr_0380	pr_0370	5471	5424	-47	11.72	11.73	
lpr_0390	pr_0390	pr_0380	5471	5424	-47	12.23	12.21	-0.02
lpr_0400	pr_0400	pr_0390	4972	4937	-35	13.09	13.05	-0.04
lpr_0410	pr_0410	pr_0400	4430	4408	-22	13.29	13.25	-0.04
lpr_0420	pr_0420	pr_0400	60	60		21.97	21.97	
lpr_0430	pr_0430	pr_0420	4429	4408	-21	13.54	13.50	-0.03
lpr_0440	pr_0440	pr_0430	4429	4408	-21	13.72	13.69	-0.03

Table 1. xpstorm Results With and Without Sid Commons Reach Terraces for 10-year Storm

Reach			Q			U/S WSEL		
Link ID	U/S Node	D/S Node	Base	SidCom	Difference	Base	SidCom	Difference
lpr_0445	pr_0445	pr_0440	4429	4408	-21	15.17	15.12	-0.05
lpr_0448	pr_0448	pr_0445	4428	4408	-20	16.05	15.50	-0.55
lpr_0450	pr_0450	pr_0448	4427	4408	-19	16.30	15.71	-0.59
lpr_0452	pr_0452	pr_0450	4427	4409	-19	16.51	15.87	-0.64
lpr_0458	pr_0458	pr_0452	4428	4410	-18	16.66	15.98	-0.68
lpr_0460	pr_0460	pr_0458	4428	4411	-17	16.95	16.09	-0.86
lpr_0465	pr_0465	pr_0460	4429	4412	-17	17.07	16.12	-0.94
lpr_0470	pr_0470	pr_0465	4399	4383	-16	17.29	16.19	-1.10
lpr_0480	pr_0480	pr_0470	4400	4386	-14	17.44	16.42	-1.02
lpr_0490	pr_0490	pr_0480	4401	4389	-12	17.70	16.68	-1.02
lpr_0496	pr_0496	pr_0490	4402	4393	-10	18.21	17.17	-1.03
lpr_0498	pr_0498	pr_0496	4404	4396	-8	18.43	17.63	-0.80
lpr_0500	pr_0500	pr_0498	4405	4398	-7	18.97	18.32	-0.65
lpr_0510	pr_0510	pr_0500	4406	4399	-7	19.04	18.41	-0.63
lpr_0520	pr_0520	pr_0510	4407	4401	-6	19.34	18.81	-0.54
lpr_0530	pr_0530n	pr_0520	4378	4374	-4	19.79	19.37	-0.42
lpr_0540	pr_0540n	pr_0530n	4381	4378	-3	20.21	19.80	-0.41
lpr_0550	pr_0550	pr_0540n	4384	4381	-3	21.02	20.80	-0.22
lpr_0552	pr_0552	pr_0550	3894	3891	-3	21.57	21.36	-0.20
3876.1	pr_0554	pr_0552	3895	3892	-3	21.67	21.47	-0.20
3876.2	pr_0554	pr_0552	3896	3893	-3	21.64	21.43	-0.20
lpr_0560	pr_0560	pr_0554	0	0		21.64	21.43	-0.20
lpr_0570	pr_0570	pr_0560	3897	3893	-3	22.13	21.96	-0.18
lpr_0580	pr_0580	pr_0570	3907	3922	15	24.17	24.18	0.02
lpr_0590	pr_0590n	pr_0580	3908	3906	-1	25.14	25.14	
lpr_0600	pr_0600n	pr_0590n	3944	3942	-2	26.87	26.86	
lpr_0606	pr_0606n	pr_0600n	4095	4092	-3	27.33	27.33	
UWCorona	pr_0607n	pr_0606n	4046	4043	-3	28.04	28.04	
2150.1	pr_0607n	pr_0606n	0	0		11.26	11.26	
lpr_0608	pr_0608n	pr_0607n	4049	4046	-3	28.30	28.30	
lpr_0610	pr_0610n	pr_0608n	4050	4047	-3	28.33	28.33	
lpr_0612	pr_0612n	pr_0610n	3590	3589		28.69	28.69	
lpr_0614	pr_0614n	pr_0612n	3583	3583		28.84	28.84	
lpr_0616	pr_0616n	pr_0614n	3577	3576		28.99	28.99	
lpr_0618	pr_0618n	pr_0616n	3553	3553		29.09	29.09	
lpr_0620	pr_0620n	pr_0618n	3544	3544		29.34	29.34	
lpr_0630	pr_0630n	pr_0620n	3537	3537		30.04	30.04	
lpr_0640	pr_0640n	pr_0630n	3535	3534		30.54	30.54	
lpr_0650	pr_0650	pr_0640n	3534	3534		31.44	31.44	
lpr_0660	pr_0660	pr_0650	3535	3535		31.52	31.51	
lpr_0670	pr_0670n	pr_0660	3546	3545		31.65	31.65	
lpr_0680	pr_0680n	pr_0670n	3560	3560		32.34	32.34	
682lob	pr_0682	pr_0680n	3550	3549		32.40	32.40	
2792.1	pr_0682	pr_0680n	0	0		15.70	15.70	
684lob	pr_0684	pr_0682	3554	3554		32.51	32.51	
2791.1	pr_0684	pr_0682	0	0		15.89	15.89	
lpr_0690	pr_0690n	pr_0684	3555	3555		32.63	32.63	
lpr_0700	pr_0700	pr_0690n	3556	3556		32.57	32.57	
lpr_0710	pr_0710	pr_0700	3562	3562		32.75	32.75	
lpr_0720	pr_0720	pr_0710	3564	3564		34.73	34.73	
L1208	pr_0720	det_4	3530	3530		35.69	35.69	
lpr_0723	pr_0723	pr_0720	550	550		36.30	36.30	
3663.1	pr_0725	pr_0723	3530	3530		36.93	36.93	

Table 1. xpstorm Results With and Without Sid Commons Reach Terraces for 10-year Storm

Reach			Q			U/S WSEL		
Link ID	U/S Node	D/S Node	Base	SidCom	Difference	Base	SidCom	Difference
3663.2	pr_0725	pr_0723	1082	1082		37.39	37.39	
lpr_0730	pr_0730	pr_0725	3030	3030		37.39	37.39	
lpr_0740	pr_0740	pr_0730	3530	3530		37.65	37.65	
2526.1	pr_0745	pr_0740	3624	3659	35	37.74	37.74	
2526.2	pr_0745	pr_0740	3237	3237		38.06	38.06	
lpr_0750	pr_0750	pr_0745	347	347		38.06	38.06	
lpr_0760	pr_0760	pr_0750	3584	3584		38.19	38.19	

Table 2. xpstorm Results With and Without Sid Commons Reach Terraces for 100-year Storm

Reach			Q			U/S WSEL		
Link ID	U/S Node	D/S Node	Base	SidCom	Difference	Base	SidCom	Difference
lpr_0020	pr_0020	pr_0010	350	350		30.91	30.91	
lpr_0030	pr_0030	pr_0020	12017	12025	8	6.53	6.53	
lpr_0040	pr_0040	pr_0030	12016	12024	8	6.66	6.66	
lpr_0050	pr_0050	pr_0040	12016	12024	8	6.77	6.77	
lpr_0060	pr_0060	pr_0050	10904	10929	25	6.99	6.99	
lpr_0070	pr_0070	pr_0060	10897	10921	25	7.08	7.08	
lpr_0080	pr_0080	pr_0070	10896	10920	25	7.39	7.39	
lpr_0090	pr_0090	pr_0080	10895	10920	25	7.49	7.49	
lpr_0100	pr_0094	pr_0090	10894	10919	25	7.83	7.85	0.02
Link1230	pr_0096	pr_0094	10532	10558	26	7.88	7.90	0.02
Link1229	pr_0098	pr_0096	10533	10559	26	8.12	8.14	0.02
Link1228	pr_0100	pr_0098	10533	10560	26	8.21	8.23	0.02
lpr_0110	pr_0110	pr_0100	10534	10560	26	8.29	8.31	0.02
lpr_0120	pr_0120	pr_0110	10515	10541	27	8.40	8.42	0.02
lpr_0130	pr_0130	pr_0120	10516	10543	27	8.41	8.43	0.02
lpr_0140	pr_0140	pr_0130	10517	10545	28	8.50	8.52	0.02
lpr_0150	pr_0150	pr_0140	10518	10547	28	8.59	8.61	0.02
lpr_0160	pr_0160	pr_0150	10519	10549	29	8.74	8.76	0.02
lpr_0170	pr_0170	pr_0160	10380	10412	32	8.94	8.96	0.02
lpr_0180	pr_0180	pr_0170	10382	10415	33	9.05	9.07	0.02
lpr_0190	pr_0190	pr_0180	10368	10402	34	9.14	9.15	0.02
lpr_0195	pr_0195	pr_0190	10369	10404	35	9.22	9.24	0.02
lpr_0200	pr_0200	pr_0195	10372	10407	35	9.47	9.49	0.02
Link1239	pr_0206	pr_0200	10041	10076	35	9.63	9.65	0.02
lpr_0208	pr_0208	pr_0206	10020	10055	35	9.66	9.68	0.02
lpr_0210	pr_0210	pr_0208	10021	10056	35	9.89	9.91	0.02
lpr_0220	pr_0220	pr_0210	10023	10058	36	9.92	9.94	0.02
lpr_0230	pr_0230	pr_0220	10013	10048	35	10.09	10.12	0.02
lpr_0240	pr_0240	pr_0230	10016	10052	37	10.12	10.15	0.02
lpr_0250	pr_0250	pr_0240	10018	10057	39	10.13	10.15	0.03
lpr_0260	pr_0260	pr_0250	10020	10061	40	10.13	10.15	0.02
lpr_0270	pr_0270	pr_0260	10021	10063	41	10.14	10.16	0.03
lpr_0280	pr_0280	pr_0270	10023	10064	42	10.15	10.18	0.03
lpr_0290	pr_0290	pr_0280	10024	10065	41	10.17	10.20	0.03
lpr_0298	pr_0298	pr_0290	10024	10066	42	9.97	9.99	0.02
lpr_0300	pr_0300	pr_0298	9894	9936	42	10.68	10.70	0.02
lpr_0308	pr_0308	pr_0300	9895	9937	42	10.90	10.93	0.02
lpr_0310	pr_0310	pr_0308	9897	9939	42	11.30	11.33	0.03
lpr_0320	pr_0320	pr_0310	9899	9941	42	11.48	11.51	0.02
lpr_0322	pr_0322	pr_0320	9899	9941	42	11.34	11.36	0.02
lpr_0330	pr_0330	pr_0320	5472	5472		19.42	19.42	
lpr_0338	pr_0338	pr_0330	9900	9942	43	11.52	11.55	0.02
lpr_0340	pr_0340	pr_0338	9868	9911	43	12.07	12.10	0.02
lpr_0350	pr_0350	pr_0340	9868	9912	43	12.44	12.46	0.02
lpr_0360	pr_0360	pr_0350	9869	9913	43	12.83	12.86	0.03
lpr_0370	pr_0370	pr_0360	9870	9914	44	14.22	14.25	0.03
lpr_0380	pr_0380	pr_0370	9795	9840	45	15.05	15.08	0.03
lpr_0390	pr_0390	pr_0380	9795	9841	45	15.67	15.70	0.03
lpr_0400	pr_0400	pr_0390	8710	8733	24	16.55	16.58	0.02
lpr_0410	pr_0410	pr_0400	7809	7820	11	16.79	16.81	0.02
lpr_0420	pr_0420	pr_0400	60	60		21.97	21.97	
lpr_0430	pr_0430	pr_0420	7806	7818	11	17.11	17.13	0.02
lpr_0440	pr_0440	pr_0430	7806	7817	11	17.35	17.37	0.02

Table 2. xpstorm Results With and Without Sid Commons Reach Terraces for 100-year Storm

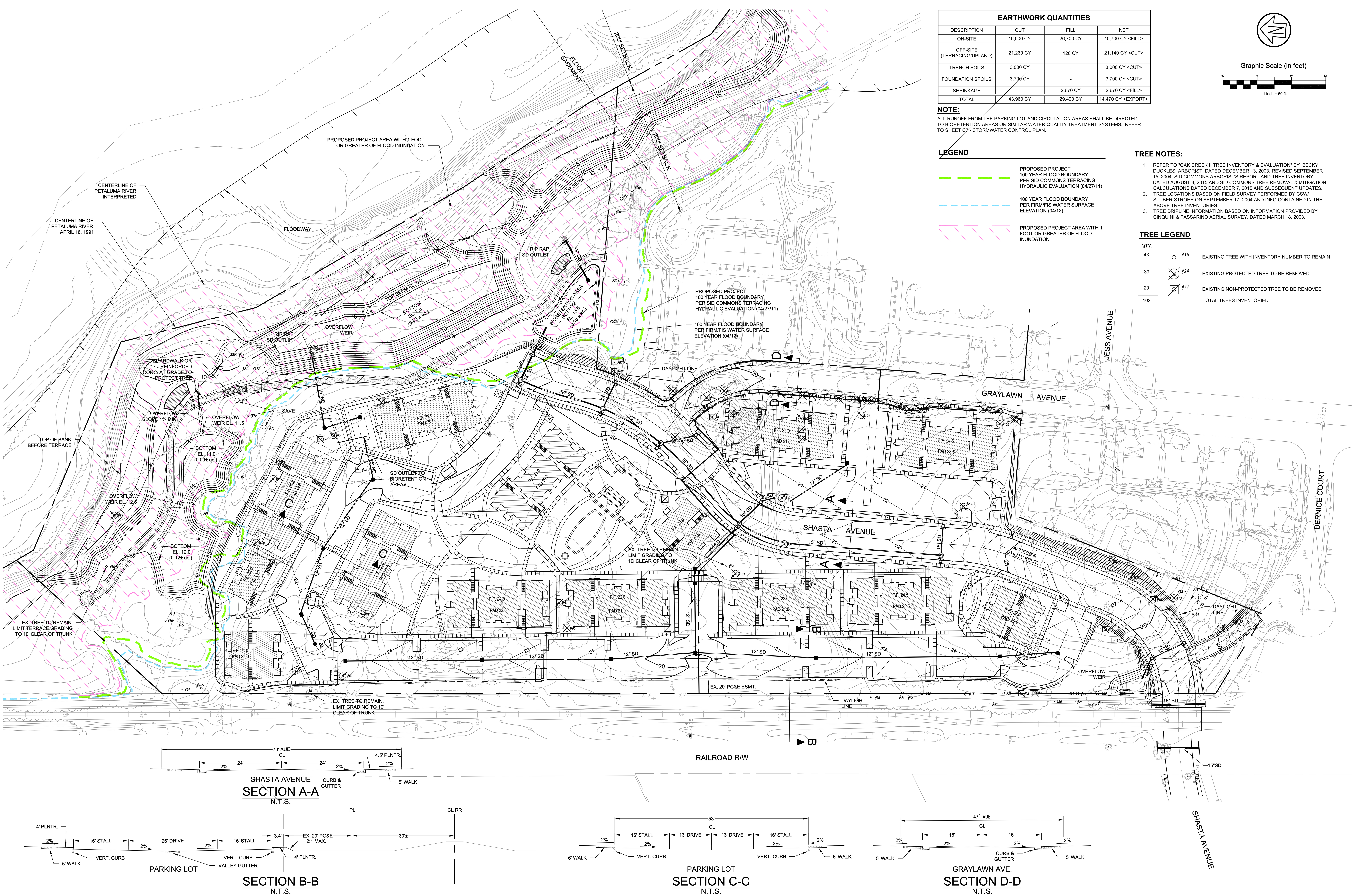
Reach			Q			U/S WSEL		
Link ID	U/S Node	D/S Node	Base	SidCom	Difference	Base	SidCom	Difference
lpr_0445	pr_0445	pr_0440	7801	7812	11	19.05	19.06	0.01
lpr_0448	pr_0448	pr_0445	7798	7809	11	19.41	19.27	-0.14
lpr_0450	pr_0450	pr_0448	7797	7807	10	19.54	19.37	-0.17
lpr_0452	pr_0452	pr_0450	7795	7806	10	19.65	19.44	-0.21
lpr_0458	pr_0458	pr_0452	7796	7806	10	19.73	19.49	-0.24
lpr_0460	pr_0460	pr_0458	7798	7806	8	19.94	19.57	-0.36
lpr_0465	pr_0465	pr_0460	7800	7807	7	20.02	19.61	-0.42
lpr_0470	pr_0470	pr_0465	7758	7764	6	20.19	19.66	-0.52
lpr_0480	pr_0480	pr_0470	7761	7766	5	20.28	19.77	-0.51
lpr_0490	pr_0490	pr_0480	7765	7768	4	20.56	19.96	-0.60
lpr_0496	pr_0496	pr_0490	7770	7772	2	20.94	20.36	-0.58
lpr_0498	pr_0498	pr_0496	7775	7776	1	21.06	20.52	-0.54
lpr_0500	pr_0500	pr_0498	7778	7778		21.93	21.52	-0.42
lpr_0510	pr_0510	pr_0500	7779	7778		22.02	21.62	-0.41
lpr_0520	pr_0520	pr_0510	7782	7781	-1	22.27	21.91	-0.36
lpr_0530	pr_0530n	pr_0520	7740	7735	-5	22.76	22.51	-0.24
lpr_0540	pr_0540n	pr_0530n	7755	7746	-9	23.46	23.31	-0.15
lpr_0550	pr_0550	pr_0540n	7765	7752	-13	24.04	23.93	-0.12
lpr_0552	pr_0552	pr_0550	7097	7078	-19	25.15	25.06	-0.09
3876.1	pr_0554	pr_0552	7113	7090	-23	25.27	25.19	-0.08
3876.2	pr_0554	pr_0552	7186	7278	92	25.29	25.20	-0.09
lpr_0560	pr_0560	pr_0554	1258	797	-462	25.29	25.20	-0.09
lpr_0570	pr_0570	pr_0560	7146	7131	-15	25.62	25.55	-0.07
lpr_0580	pr_0580	pr_0570	6848	6844	-4	25.94	25.88	-0.05
lpr_0590	pr_0590n	pr_0580	6892	6900	8	26.45	26.42	-0.03
lpr_0600	pr_0600n	pr_0590n	6475	6479	4	28.04	28.03	-0.01
lpr_0606	pr_0606n	pr_0600n	6512	6512		28.38	28.37	
UWCorona	pr_0607n	pr_0606n	6415	6415		29.01	29.01	
2150.1	pr_0607n	pr_0606n	0	0		11.26	11.26	
lpr_0608	pr_0608n	pr_0607n	6412	6412		29.63	29.62	
lpr_0610	pr_0610n	pr_0608n	6412	6412		29.67	29.67	
lpr_0612	pr_0612n	pr_0610n	5333	5333		30.05	30.05	
lpr_0614	pr_0614n	pr_0612n	5328	5328		30.15	30.15	
lpr_0616	pr_0616n	pr_0614n	5323	5323		30.39	30.38	
lpr_0618	pr_0618n	pr_0616n	5293	5292		30.48	30.48	
lpr_0620	pr_0620n	pr_0618n	5288	5288		30.63	30.63	
lpr_0630	pr_0630n	pr_0620n	5287	5287		31.11	31.11	
lpr_0640	pr_0640n	pr_0630n	5288	5288		31.89	31.89	
lpr_0650	pr_0650	pr_0640n	5279	5279		33.57	33.57	
lpr_0660	pr_0660	pr_0650	5281	5281		33.60	33.60	
lpr_0670	pr_0670n	pr_0660	5293	5293		33.64	33.64	
lpr_0680	pr_0680n	pr_0670n	5311	5311		34.06	34.06	
682lob	pr_0682	pr_0680n	5311	5312		34.11	34.10	
2792.1	pr_0682	pr_0680n	1460	1459		15.70	15.70	
684lob	pr_0684	pr_0682	4791	4792		34.32	34.32	
2791.1	pr_0684	pr_0682	1985	1985		15.89	15.89	
lpr_0690	pr_0690n	pr_0684	4532	4532		34.50	34.50	
lpr_0700	pr_0700	pr_0690n	5380	5380		34.43	34.43	
lpr_0710	pr_0710	pr_0700	5395	5394		34.50	34.50	
lpr_0720	pr_0720	pr_0710	5409	5409		35.48	35.48	
L1208	pr_0720	det_4	5377	5377		36.47	36.47	
lpr_0723	pr_0723	pr_0720	550	550		36.30	36.30	
3663.1	pr_0725	pr_0723	5383	5383		37.43	37.43	

Table 2. xpstorm Results With and Without Sid Commons Reach Terraces for 100-year Storm

Reach			Q			U/S WSEL		
Link ID	U/S Node	D/S Node	Base	SidCom	Difference	Base	SidCom	Difference
3663.2	pr_0725	pr_0723	3781	3781		37.62	37.62	
lpr_0730	pr_0730	pr_0725	3025	3025		37.62	37.62	
lpr_0740	pr_0740	pr_0730	5383	5383		37.78	37.78	
2526.1	pr_0745	pr_0740	5367	5367		38.02	38.02	
2526.2	pr_0745	pr_0740	3762	3762		38.62	38.62	
lpr_0750	pr_0750	pr_0745	1605	1605		38.62	38.62	
lpr_0760	pr_0760	pr_0750	5367	5367		39.09	39.09	

Attachment 1

CTWST2 Sid Commons Grading Plan



EARTHWORK QUANTITIES

DESCRIPTION	CUT	FILL	NET
ON-SITE	16,000 CY	26,700 CY	10,700 CY <FILL>
OFF-SITE (TERRACING/UPLAND)	21,260 CY	120 CY	21,140 CY <CUT>
TRENCH SOILS	3,000 CY	-	3,000 CY <CUT>
FOUNDATION SPOILS	3,700 CY	-	3,700 CY <CUT>
SHRINKAGE	-	2,670 CY	2,670 CY <FILL>
TOTAL	43,960 CY	29,490 CY	14,470 CY <EXPORT>

Graphic Scale (in feet)

1 inch = 50 ft.

NOTE:

ALL RUNOFF FROM THE PARKING LOT AND CIRCULATION AREAS SHALL BE DIRECTED TO BIORETENTION AREAS OR SIMILAR WATER QUALITY TREATMENT SYSTEMS. REFER TO SHEET C7 - STORMWATER CONTROL PLAN.

LEGEND

- PROPOSED PROJECT 100 YEAR FLOOD BOUNDARY PER SID COMMONS TERRACING HYDRAULIC EVALUATION (04/27/11)
- 100 YEAR FLOOD BOUNDARY PER FIRM/FIS WATER SURFACE ELEVATION (04/12)
- PROPOSED PROJECT AREA WITH 1 FOOT OR GREATER OF FLOOD INUNDATION

TREE NOTES:

1. REFER TO "OAK CREEK II TREE INVENTORY & EVALUATION" BY BECKY DUCKLES, ARBORIST, DATED DECEMBER 13, 2003, REVISED SEPTEMBER 15, 2004, SID COMMONS ARBORIST'S REPORT AND TREE INVENTORY DATED AUGUST 3, 2015 AND SID COMMONS TREE REMOVAL & MITIGATION CALCULATIONS DATED DECEMBER 7, 2015 AND SUBSEQUENT UPDATES.
2. TREE LOCATIONS BASED ON FIELD SURVEY PERFORMED BY CSW/ STUBER-STROEH ON SEPTEMBER 17, 2004 AND INFO CONTAINED IN THE ABOVE TREE INVENTORIES.
3. TREE DRIPLINE INFORMATION BASED ON INFORMATION PROVIDED BY CINQUINI & PASSARINO AERIAL SURVEY, DATED MARCH 18, 2003.

TREE LEGEND

QTY.		
43	#16	EXISTING TREE WITH INVENTORY NUMBER TO REMAIN
39	#24	EXISTING PROTECTED TREE TO BE REMOVED
20	#77	EXISTING NON-PROTECTED TREE TO BE REMOVED
102		TOTAL TREES INVENTORIED

Rev	Date	Description	Designed	Drawn	Checked
					WFL
-	08/19/2016	ISSUED AND RESPONSE TO CITY COMMENTS			WFL
-	06/02/2016	ISSUED AND RESPONSE TO CITY COMMENTS			WFL
-	08/06/2015	ISSUED			WFL
-	02/23/2015	ISSUED			WFL

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City: Petaluma
County: Sonoma
State: California

SID COMMONS

PRELIMINARY GRADING AND DRAINAGE PLAN

J. CYRIL JOHNSON INVESTMENT CORP.

Prepared Under the Direction of:

REGISTERED PROFESSIONAL ENGINEER
WAYNE F. LEACH
No. 54309
CIVIL
STATE OF CALIFORNIA

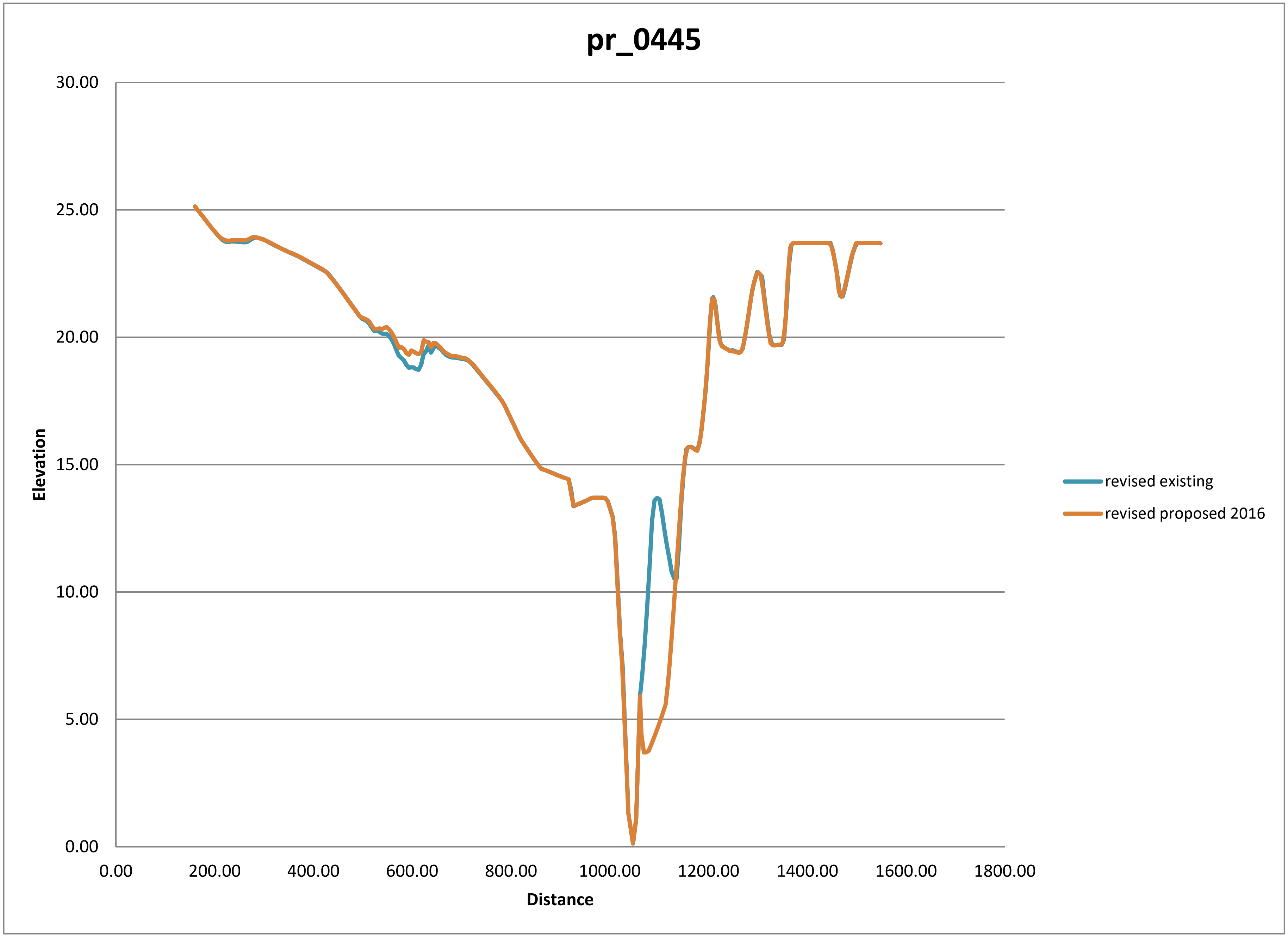
Sheet: C4

Scale: 1"=50'
Date: 11/22/2013
Project Number: 5.1037.00
Plan File: D-5254.04

P:\05\5103700\DWG\Sheet_Drawings\C4 - GRADING & DRAINAGE.dwg 08/23/2016 - 01:48 PM leest 1:1.58

Attachment 2

Cross Section Terracing Edits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1400.00
1600.00
1800.00
Distance
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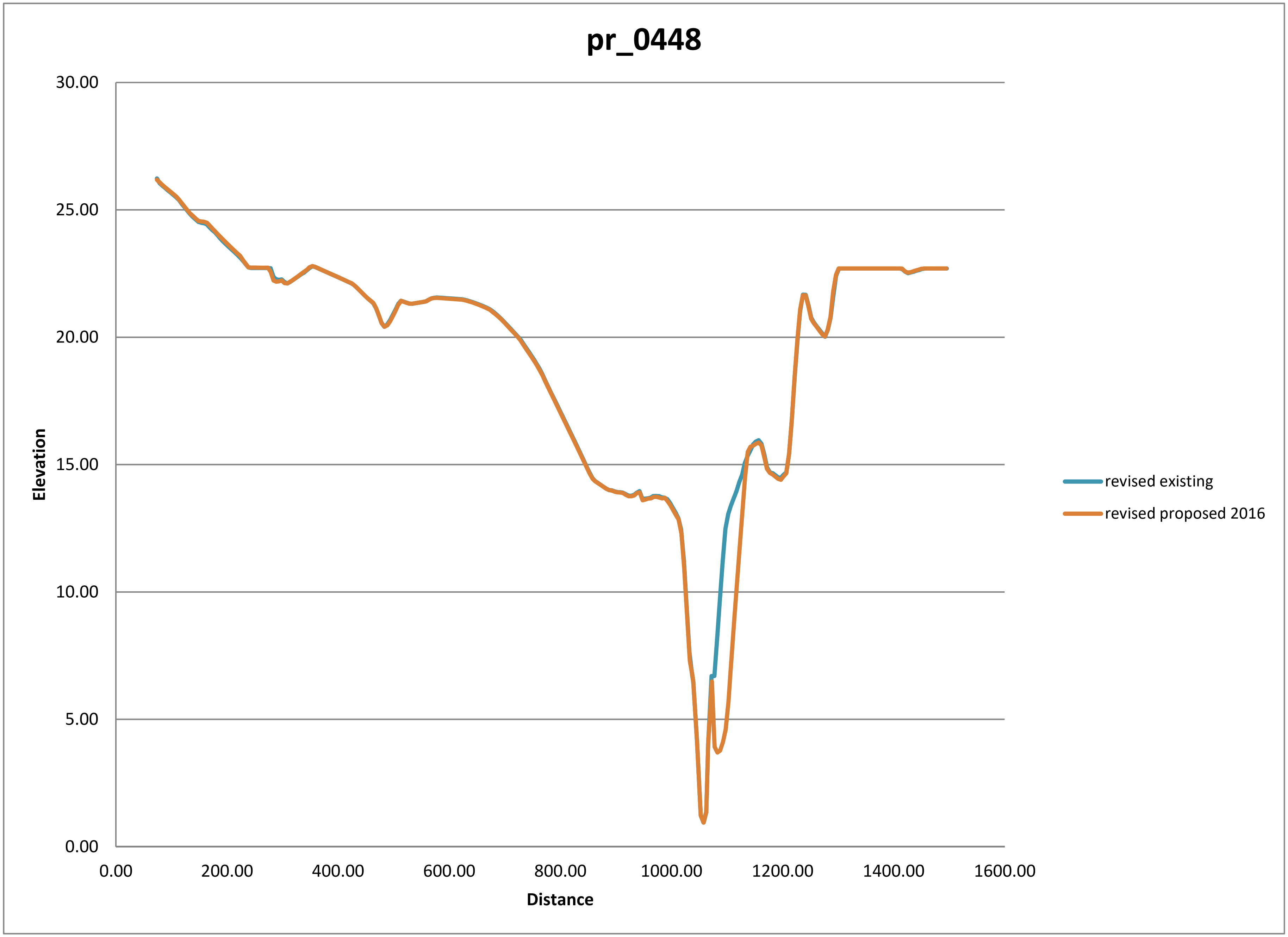
revised proposed 2016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Distance
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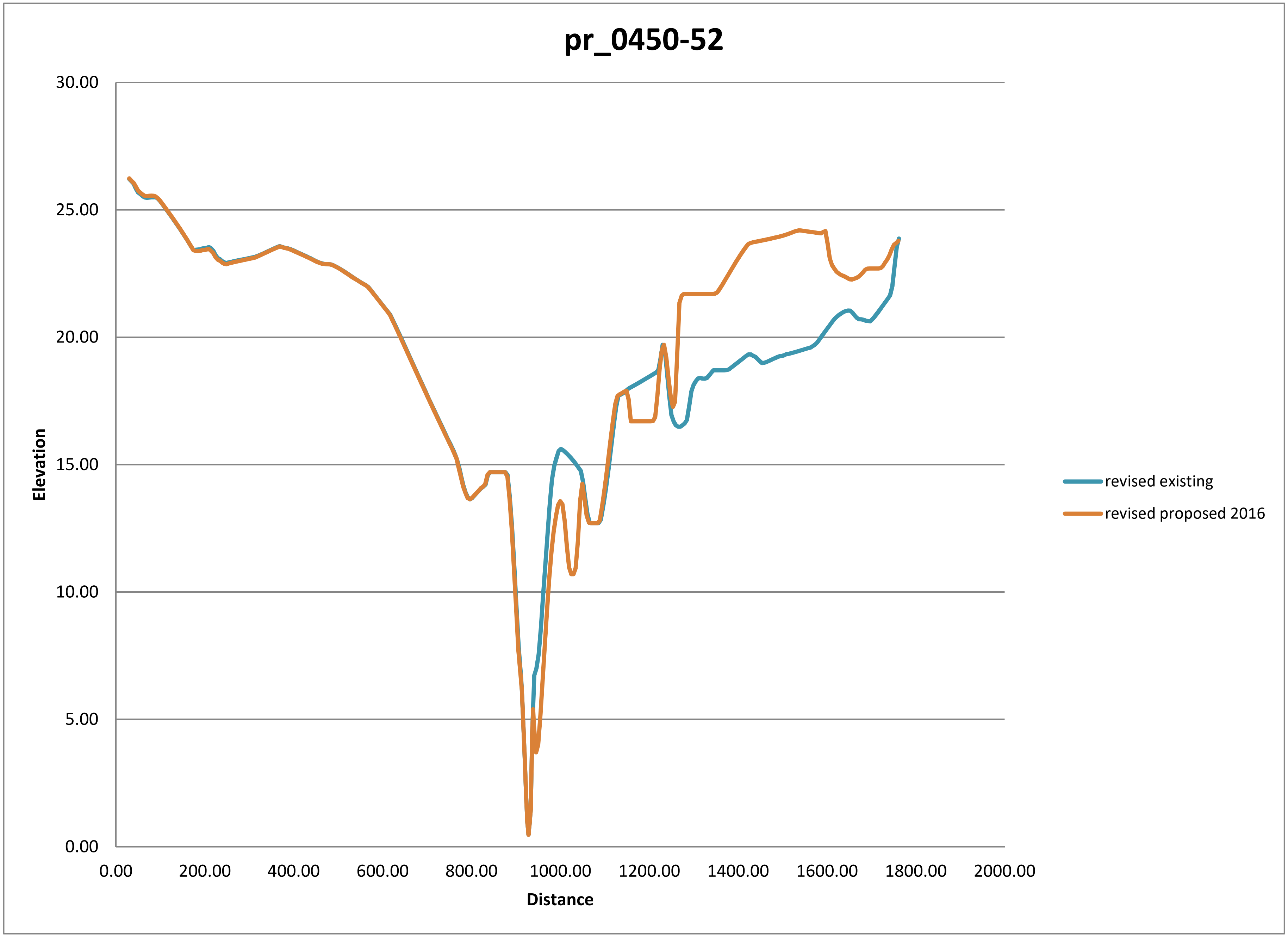
revised proposed 2016



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Distance
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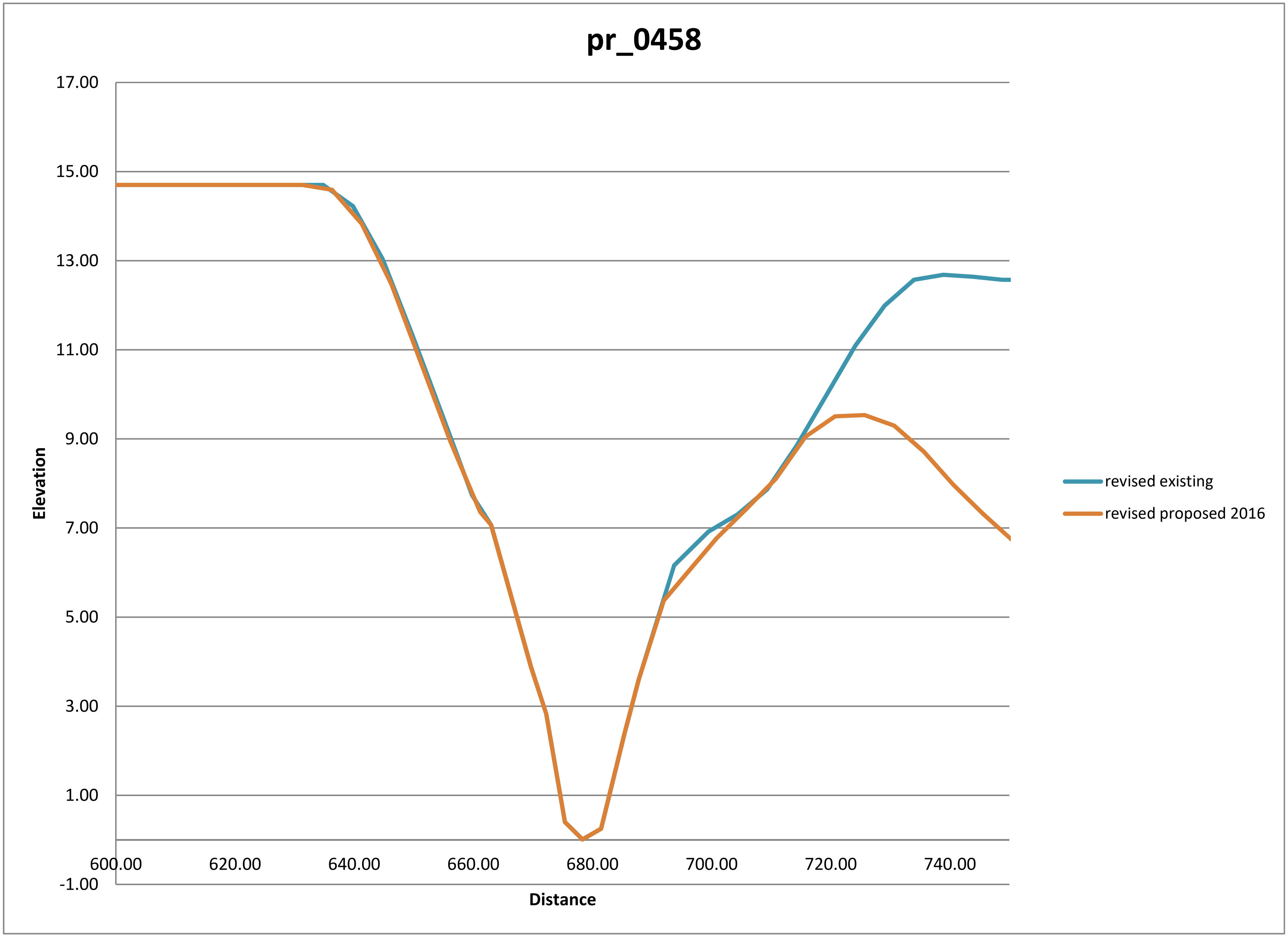
revised proposed 2016



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720.00
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Distance
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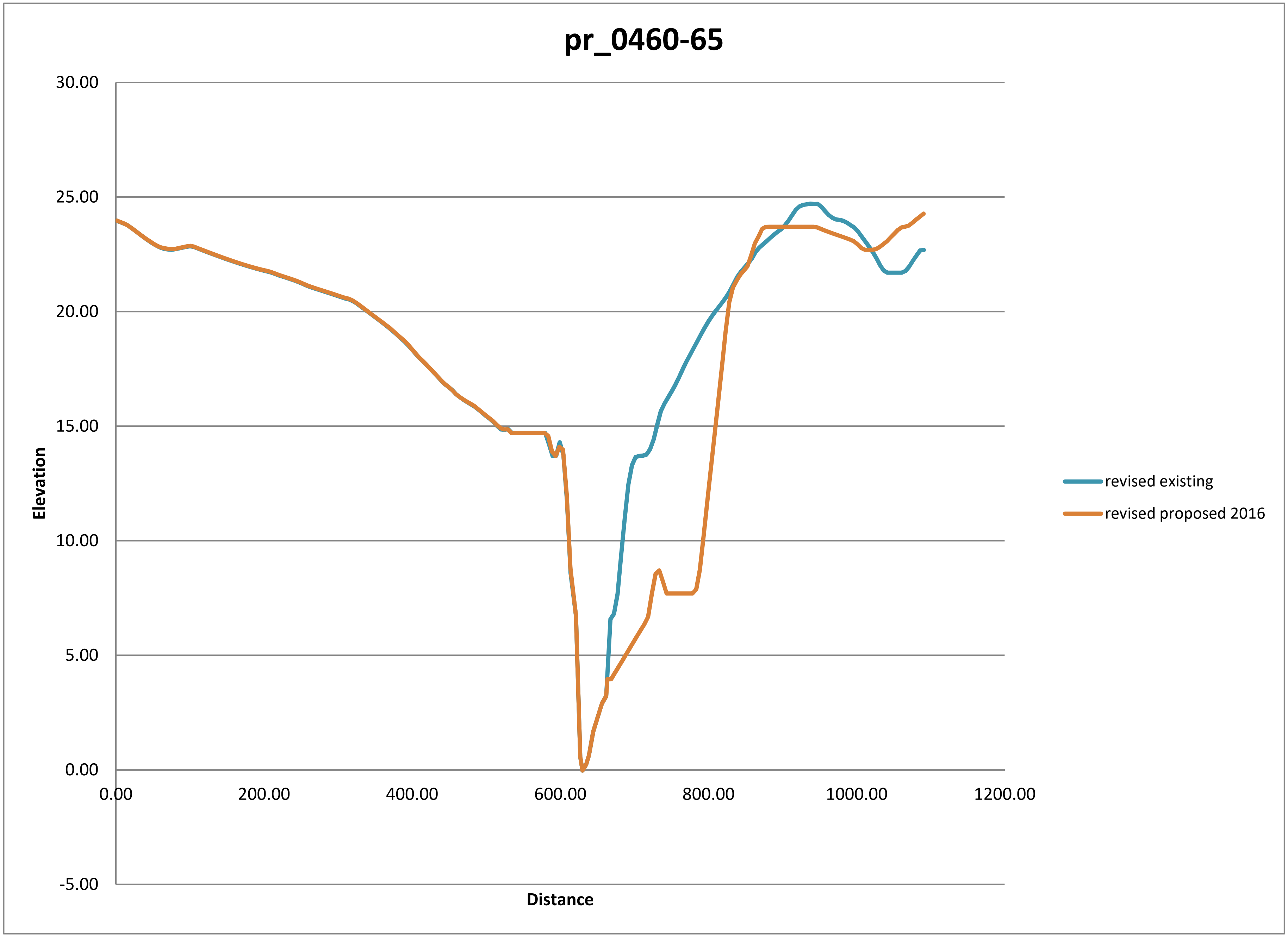
revised proposed 2016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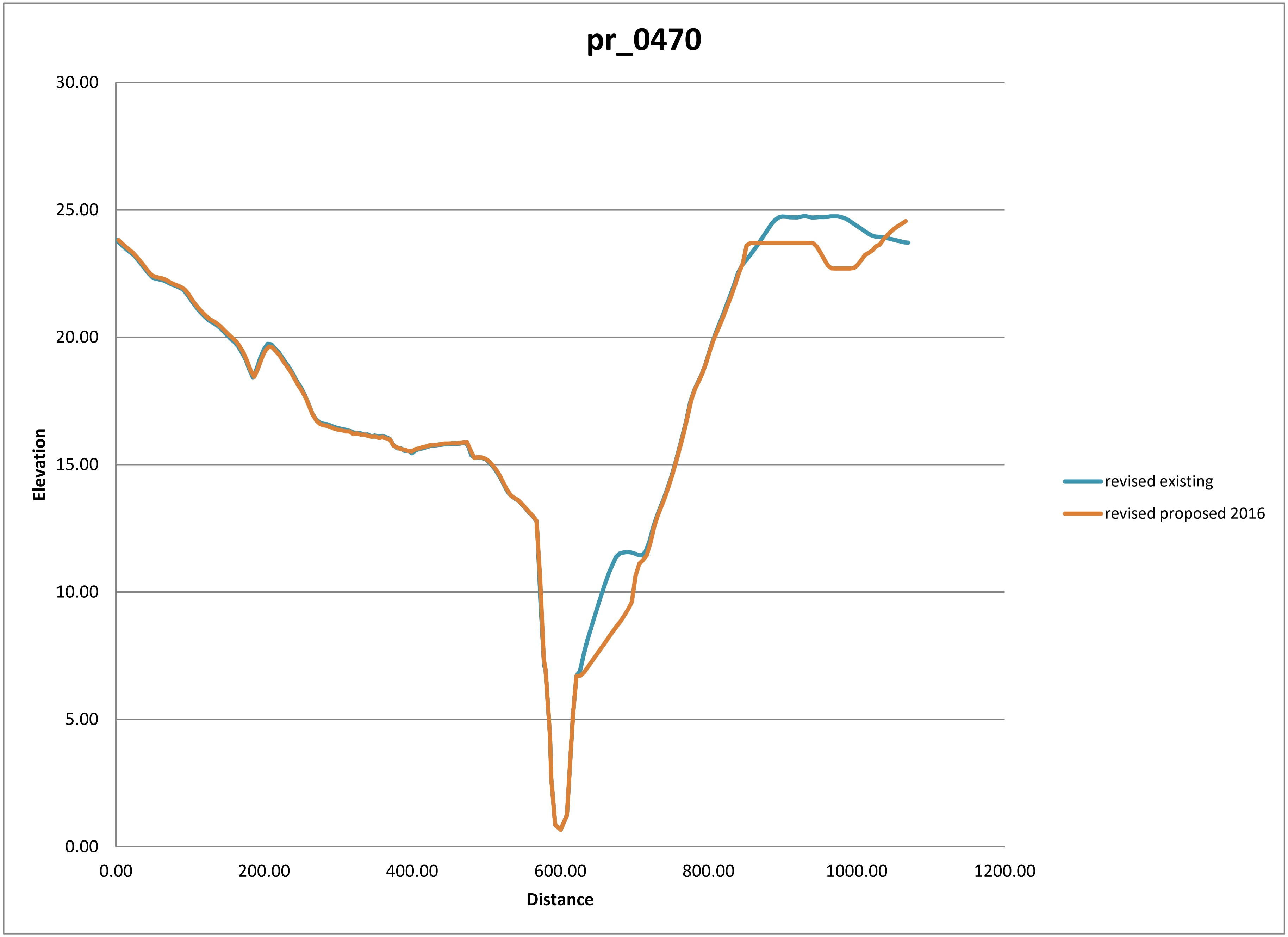
1000.00
1200.00
Distance
revised existing
revised proposed 2016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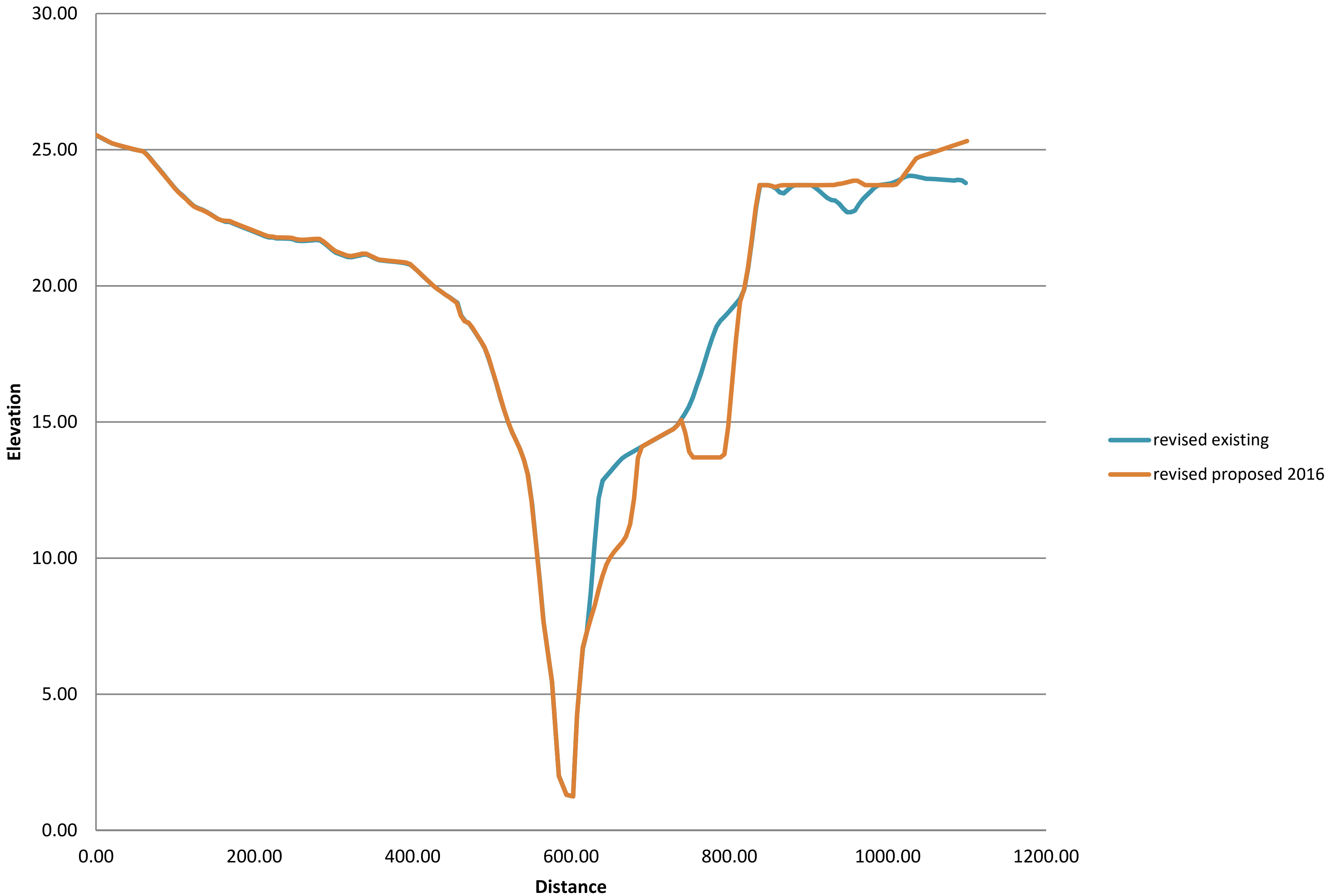
1200.00
Distance
revised existing
revised proposed 2016

pr_0480



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Elevation
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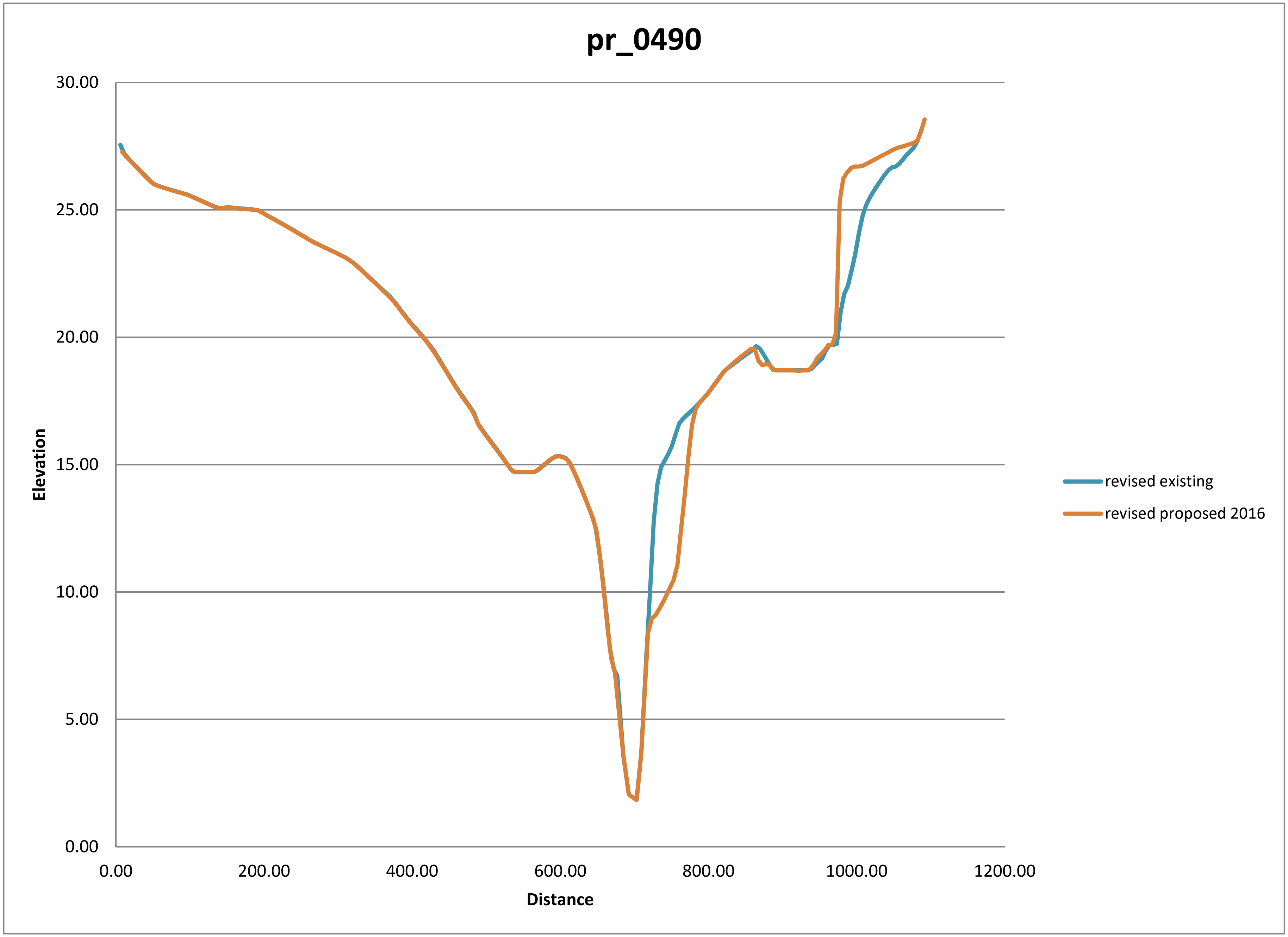
400.00
600.00
800.00
1000.00
1200.00
Distance
revised existing
revised proposed 2016



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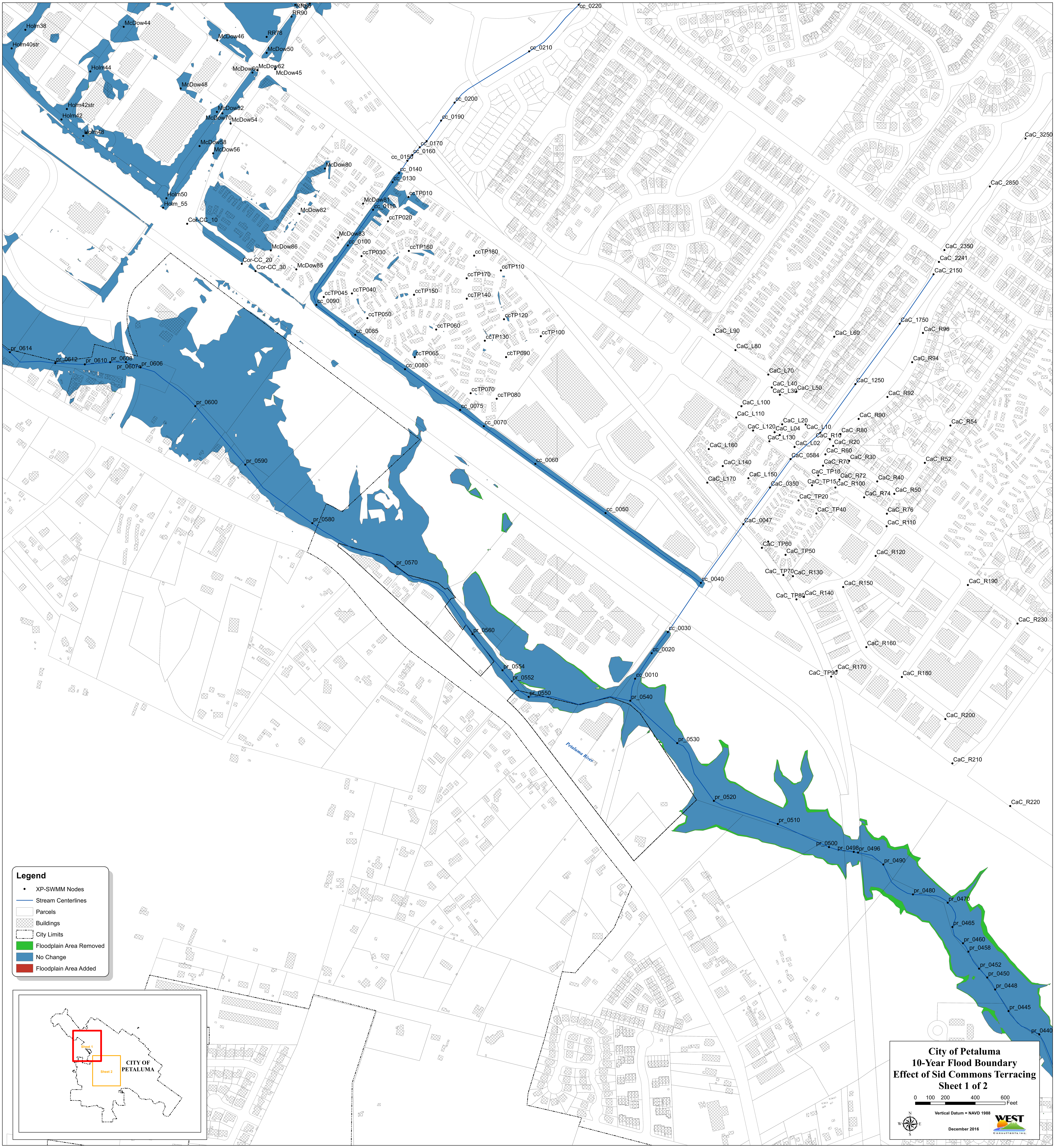
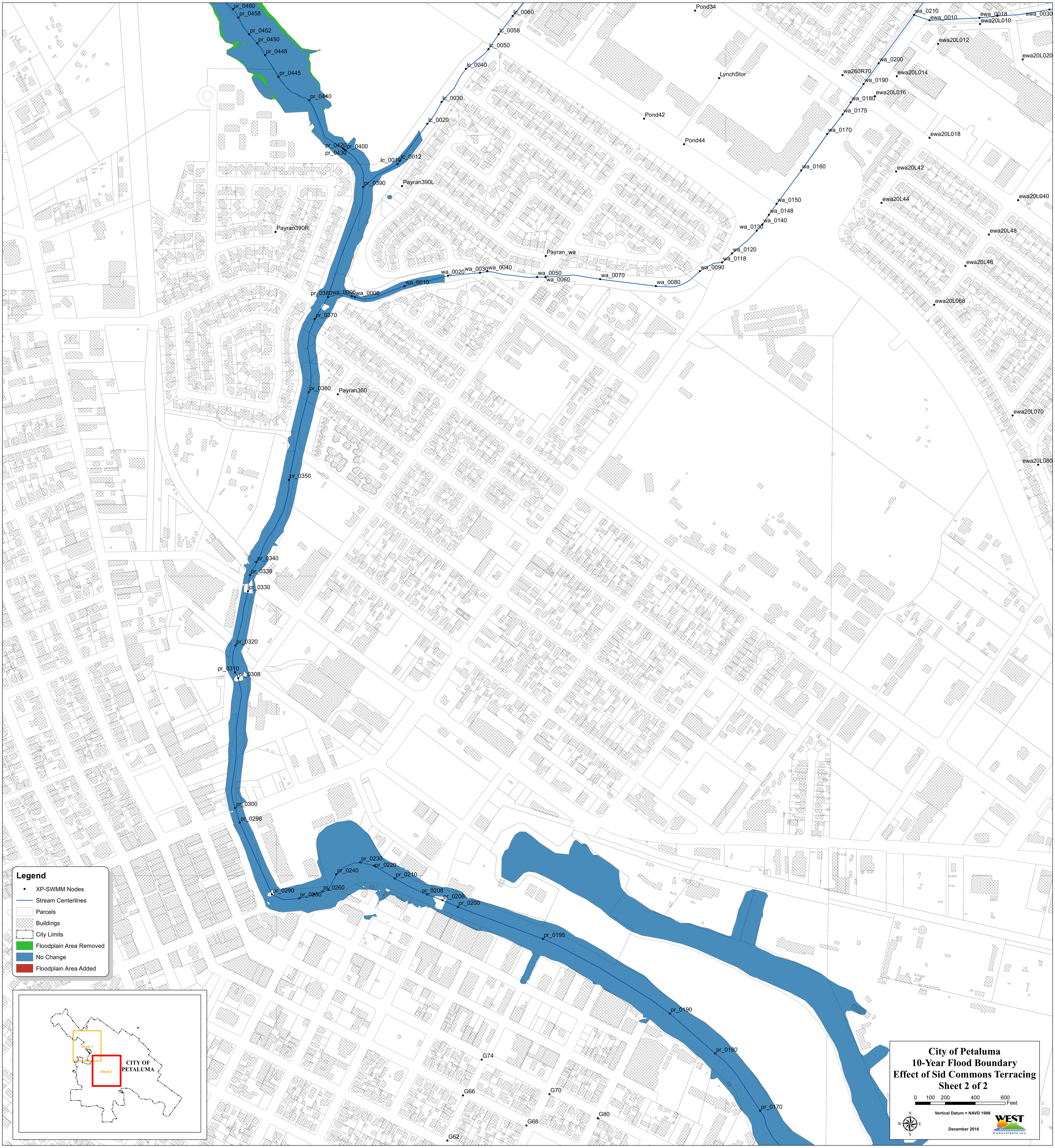
400.00
600.00
800.00
1000.00
1200.00
Distance
revised existing
revised proposed 2016

Attachment 3

Flood Boundary Comparison Map for 10-year Storm (3 sheets)


City of Petaluma
10-Year Flood Boundary
Effect of Sid Commons Terracing
Sheet 1 of 2
0 100 200 400 600
Feet
Vertical Datum = NAVD 1988
December 2016
WEST
Legend
XP-SWMM Nodes
Stream Centerlines
Parcels
Buildings
City Limits
Floodplain Area Removed
No Change
Floodplain Area Added
CITY OF PETALUMA
Sheet 1
Sheet 2
Petaluma River


City of Petaluma
10-Year Flood Boundary
Effect of Sid Commons Terracing
Sheet 2 of 2
0 100 200 400 600
Feet
Vertical Datum = NAVD 1988
December 2016
Legend
XP-SWMM Nodes
Stream Centerlines
Parcels
Buildings
City Limits
Floodplain Area Removed
No Change
Floodplain Area Added
CITY OF PETALUMA
Sheet 1
Sheet 2
pr_0460
pr_0458
pr_0452
pr_0450
pr_0448
pr_0445
pr_0440
pr_0420
pr_0430
pr_0400
pr_0390
pr_0380
pr_0370
pr_0360
pr_0350
pr_0340
pr_0338
pr_0330
pr_0320
pr_0310
pr_0308
pr_0300
pr_0298
pr_0290
pr_0280
pr_0260
pr_0240
pr_0230
pr_0220
pr_0210
pr_0208
pr_0206
pr_0200
pr_0195
pr_0190
pr_0180
pr_0170
lc_0060
lc_0058
lc_0050
lc_0040
lc_0030
lc_0020
lc_0012
lc_0010
Payran390L
Payran390R
Payran_wa
Payran360
wa_0006
wa_0008
wa_0010
wa_0020
wa_0030
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wa_0070
wa_0080
wa_0090
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wa_0148
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wa_0160
wa_0170
wa_0175
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wa_0190
wa_0200
wa_0210
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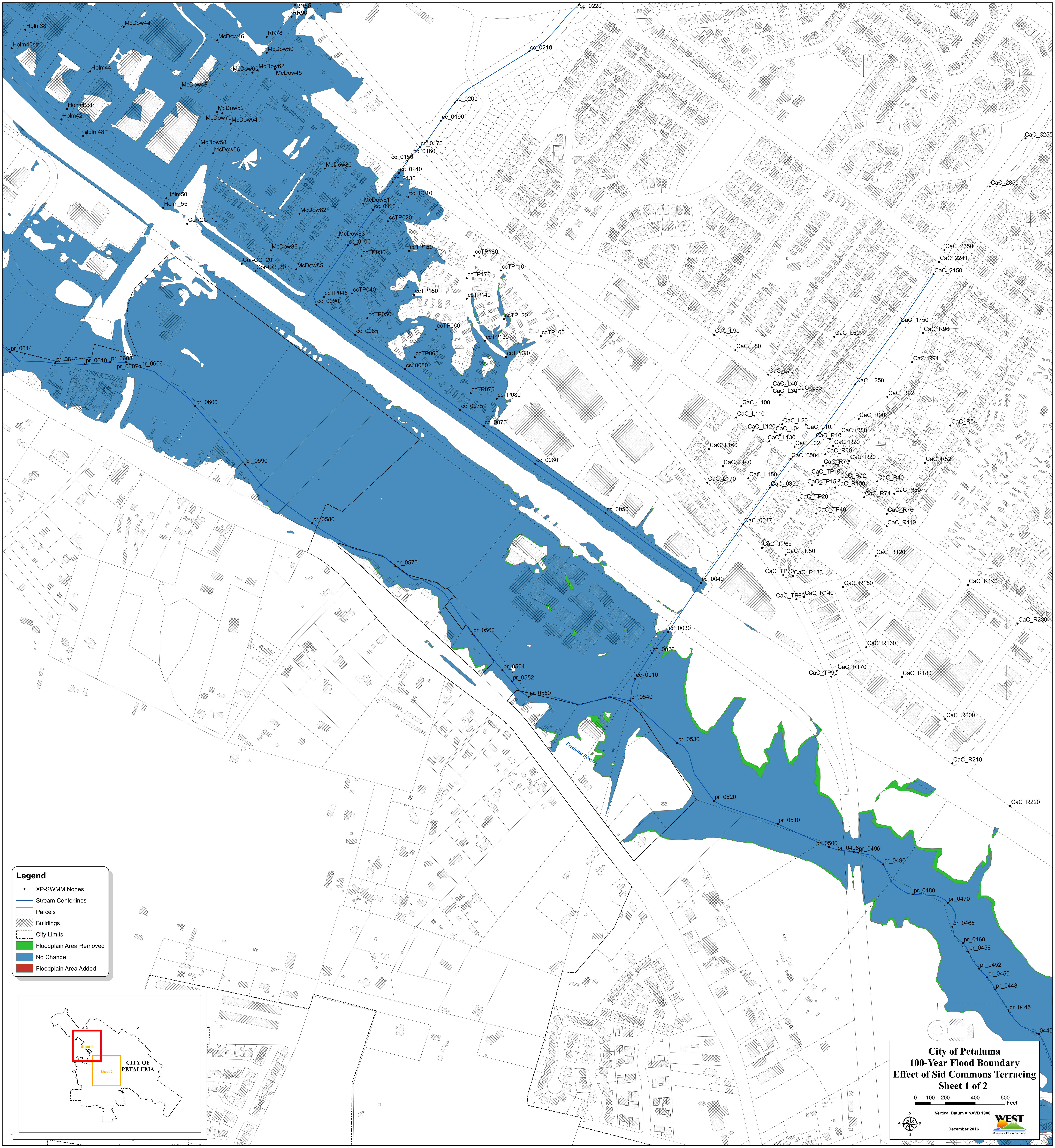
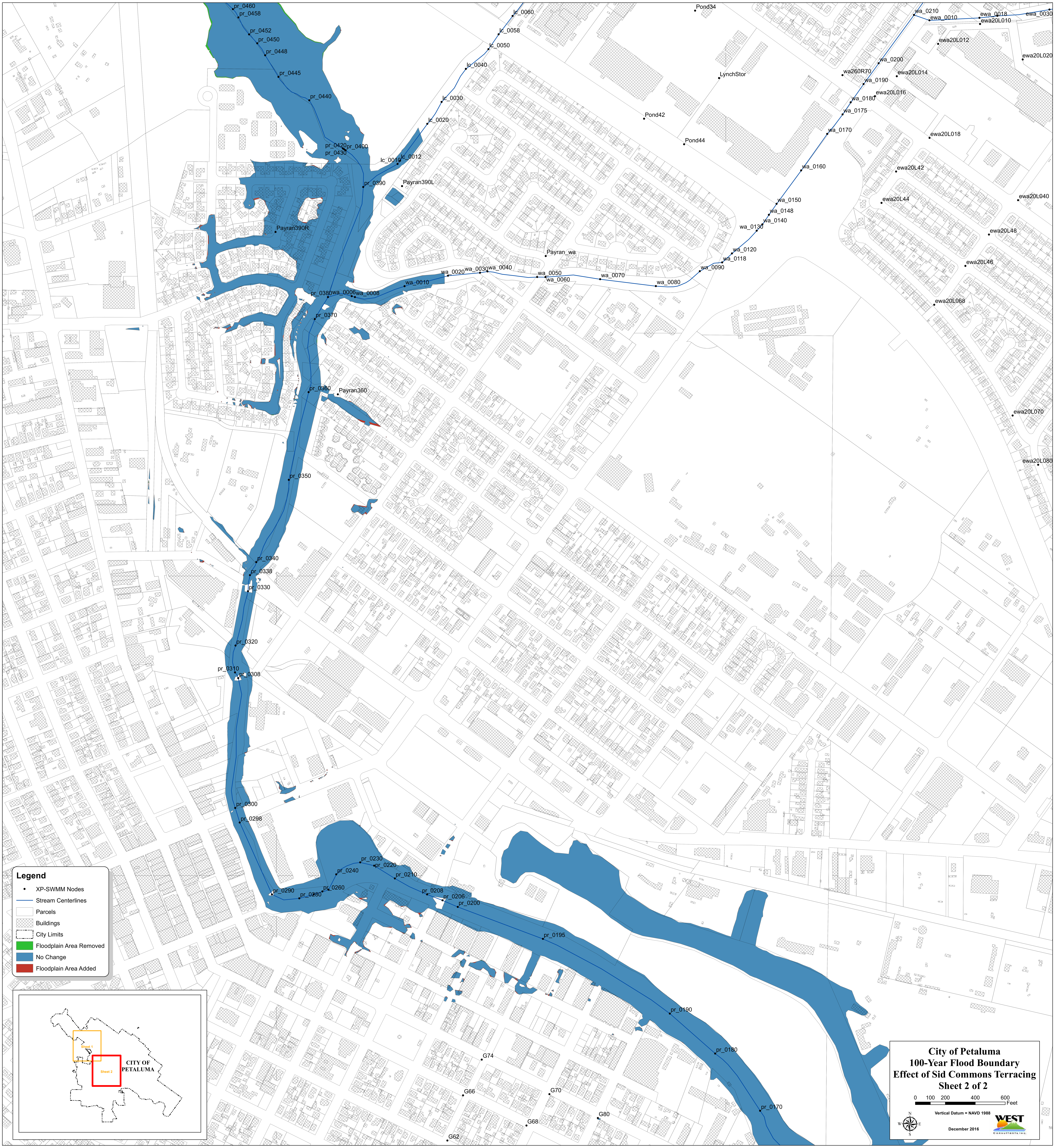
ewa20L040
ewa20L42
ewa20L44
ewa20L46
ewa20L48
ewa20L068
ewa20L070
ewa20L080
Pond34
Pond42
Pond44
LynchStor
G62
G66
G68
G70
G74
G80

Attachment 4

Flood Boundary Comparison Map for 100-year Storm (3 sheets)


City of Petaluma
100-Year Flood Boundary
Effect of Sid Commons Terracing
Sheet 1 of 2
0 100 200 400 600
Feet
Vertical Datum = NAVD 1988
December 2016
WEST
Consultants, Inc.
Legend
XP-SWMM Nodes
Stream Centerlines
Parcels
Buildings
City Limits
Floodplain Area Removed
No Change
Floodplain Area Added
CITY OF PETALUMA
Petaluma River



Legend
XP-SWMM Nodes
Stream Centerlines
Parcels
Buildings
City Limits
Floodplain Area Removed
No Change
Floodplain Area Added
CITY OF PETALUMA
Sheet 1
Sheet 2
City of Petaluma
100-Year Flood Boundary
Effect of Sid Commons Terracing
Sheet 2 of 2
0 100 200 400 600
Feet
Vertical Datum = NAVD 1988
December 2016
WEST
pr_0460
pr_0458
pr_0452
pr_0450
pr_0448
pr_0445
pr_0440
pr_0420
pr_0430
pr_0400
pr_0390
Payran390L
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pr_0380
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pr_0360
Payran360
pr_0350
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pr_0330
pr_0320
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pr_0300
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pr_0280
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lc_0040
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wa_0008
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wa_0020
wa_0030
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wa_0050
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wa_0070
wa_0080
wa_0090
wa_0118
wa_0120
wa_0130
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wa_0150
wa_0160
wa_0170
wa_0175
wa_0180
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wa_0210
Payran_wa
Pond34
Pond42
Pond44
LynchStor
wa260R70
ewa_0010
ewa_0018
ewa_0030
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G62
G66
G68
G70
G74
G80