CLOVER VALLEY

LARGE AND SMALL LOT TENTATIVE SUBDIVISION MAPS

PROJECT# SD-98-05

SCH# 93122077

RECIRCULATED DRAFT ENVIRONMENTAL IMPACT REPORT

VOLUME 2 OF 2: APPENDICES D THROUGH Q

PREPARED FOR
THE CITY OF ROCKLIN

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APPENDICES

Volume 2
(Volume 1 under separate cover)

APPENDIX D

TRANSPORTATION/CIRCULATION

SCOPE AND METHODOLOGY

Overview of Traffic Impact Analysis

The Proposed Project consists of 558 single-family dwelling units and approximately 5 acres of commercial development in the northern portion of Rocklin. Clover Valley would primarily access Sierra College Boulevard and Park Drive. A future access to the Summit property to the south is assumed for future cases. Figure 1 shows the location of the project within the City of Rocklin and the roadway system around the project site.

Traffic impacts of the Proposed Project have been evaluated under the following scenarios:

Existing (2005) Scenarios:
- Existing Conditions
- Existing Plus Project Conditions

2025 Scenarios:
- 2025 No Project Conditions (Current General Plan Roadway Network)
- 2025 Current General Plan Plus Project Conditions
- 2025 Proposed General Plan Plus Project Conditions

Existing conditions are based on traffic counts performed in the spring of 2005. PM peak hour turning movement counts were performed at sixteen intersections in May, 2005. These include intersections closest to the Proposed Project along Sierra College Boulevard and Pacific Street/Taylor Street, as well as intersections along Rocklin Blvd and Park Dr. Figure 2 displays count station locations. Existing PM peak hour turning movement volumes at study area intersections are shown in Figure 3.

For intersection analysis, the PM peak hour was selected for two reasons. First, the City of Rocklin has historically relied on PM counts and conditions for evaluation purposes. Second, PM conditions tend to have higher traffic volumes than AM conditions. As such, PM conditions are evaluated for this study.

Existing daily two-way traffic volumes were counted at 14 locations in May, 2005. These daily volumes are shown in Figure 4.

Traffic volumes with and without the Proposed Project in 2025 are based on the City of Rocklin Travel Demand Model as used for the CIP and General Plan updates. This model was updated and validated in 2001. The model translates estimates of development (e.g. the number of single-family and multi-family dwelling units, and the amount of square footage of various categories of non-residential uses) and descriptions of the roadway system into estimates of daily and peak hour traffic volumes. The model covers not only the City of Rocklin but also the entire Sacramento region.

Three scenarios are being evaluated for 2025 conditions. Two scenarios represent roadway improvements included in the City's existing General Plan. These roadway improvements include the following roadway extensions:

- Argonaut Ave. from its current terminus to Del Mar Ave.
- Rocklin Road from its current terminus to Whitney Blvd.
- "Summit Connector" from Argonaut Ave. to the Clover Valley site

The third scenario represents a circulation system based on the proposed Draft General Plan Update. This roadway system reflects all proposed circulation system changes that were confirmed in concept by the City Council during a hearing on January 25th, 2005. Scenario 3 does not include the following roadway extensions:

- Argonaut Ave. from its current terminus to Del Mar Ave.
- Rocklin Road from its current terminus to Whitney Blvd.
- "Summit Connector" to Argonaut Ave.

Level of Service Definitions

Impacts of the Proposed Project on the study area roadway system are based on a "level of service" analysis. Level of service (LOS) is a term that describes the operating performance of an intersection or roadway. LOS is measured quantitatively and reported on a scale from A to F, with A representing the best performance and F the worst. Table 1 relates the LOS letter designation to a general description of traffic operations.

Signalized intersections were analyzed using the methodology described in *Interim Materials on Highway Capacity - Circular 212* (Transportation Research Board, 1980) consistent with City of Rocklin standards, and as noted above. This methodology determines the level of service by comparing the volume-to-capacity (v/c) ratio of critical intersection movements to the thresholds shown in Table 1.

Unsignalized intersections were analyzed using the methodology contained in the *Highway Capacity Manual 2000* (Transportation Research Board, 2000). Table 1 displays the average delay thresholds for each level of service category.

SETTING

Existing Roadway System

As stated previously, Figure 1 shows the study area for this traffic analysis. Regional and local roadways in the vicinity of the Proposed Project include the following:

Interstate Route 80 (I-80) provides the primary regional access to Rocklin, Roseville, Loomis, and the remainder of Placer County. To the west, the roadway continues into Sacramento County and to the Bay Area. To the east, the roadway continues through Placer County to Auburn, and eventually into Nevada. In the vicinity of the site, I-80 serves both local travel, such as commuter traffic, as well as interstate travel, including goods movement. Through the City of Rocklin, I-80 has three travel lanes in each direction. Access to I-80 within Rocklin is provided via interchanges at Eureka/Taylor Road, Rocklin Road and Sierra College Boulevard.

State Route 193 (SR 193) is an east-west highway that links the City of Lincoln with Newcastle and I-80. SR 193 is a two-lane roadway in the vicinity of the project.

Sierra College Boulevard is a major regional roadway running north-south east of the Proposed Project areas. Sierra College Boulevard intersects with Rocklin Road, I-80 and Pacific Street/Taylor Road and continues north to State Route 193. To the south, Sierra College Boulevard intersects with Douglas Boulevard, Eureka Road, and Roseville Parkway, and continues south into Sacramento County to U.S. 50, becoming Hazel Avenue. In the vicinity of the site, Sierra College Boulevard is mostly a two-lane roadway with a 55 mph speed limit.

Rocklin Road is an east-west arterial in the City of Rocklin. It connects Sierra College Boulevard to I-80 (via the Rocklin Road interchange) and to downtown Rocklin to the west. East of Sierra College Boulevard, Rocklin Road extends to Barton Road in Loomis. Sierra Community College is located along the north side of Rocklin Road, between I-80 and Sierra College Boulevard. Rocklin Road is generally four lanes wide from west of Pacific Street in downtown Rocklin to the Loomis Town Limit east of Sierra College Boulevard.

Granite Drive is a four lane arterial that connects Rocklin Road to Sierra College Boulevard along the north side of I-80.

Park Drive extends northeast from the Roseville/Rocklin City limit line and curves around to the west to Whitney Oaks Drive just south of the Rocklin/Lincoln City limit line. Most of its length currently exists as four lanes; however portions of the roadway have two or six lanes. Adjacent to the Proposed Project, Park Drive is a four lane roadway that provides access to various gated communities and a school but does not have residential frontage. South of the Roseville/Rocklin City limit line, this road becomes Pleasant Grove Boulevard and provides access to SR 65 via an interchange.

Pacific Street is an arterial that connects Rocklin with Roseville to the west and Loomis and Newcastle to the east. East and west of the City it becomes **Taylor Road**. It has four lanes from vicinity of the SR 65 overpass to north of Rocklin Road and two lanes east and west of that section.

King Road is a two-lane roadway in Loomis that connects Sierra College Boulevard with Taylor Road. Between Auburn-Folsom Road and I-80, King Road is classified as a rural arterial.

Existing Traffic Volumes

Figure 2 displays count station locations. Peak hour turn movements have been collected at sixteen intersections in the vicinity of the Proposed Project. All counts were performed by All Traffic Data (ATD) of Roseville. Figure 3 shows the existing PM peak hour turning movement volumes at the sixteen study area intersections. Figure 4 shows the existing daily two-way traffic volumes on roadway segments adjacent to the study area intersections. As Figure 4 shows, Sierra College Blvd. in the vicinity of I-80 has the highest traffic volumes of the surface streets in the project vicinity.

Existing Levels of Service

The level of service at study intersections was determined by comparing the average daily traffic volume to the level of service thresholds in Table 1. It must be noted that for intersections with one or two-way stop sign control, level of service is based on overall intersection average delay per vehicle. It is possible for an intersection to operate with an acceptable average delay per vehicle even though vehicles on the minor approach experience much more lengthy delays. Since the number of vehicles on the minor approach may be small compared to the overall intersection volume, their long delays may not have a major effect on the intersection's overall average delay per vehicle. The City's level of service policy is based on overall intersection delay, not individual movement or approach delay. Numbers for individual movement or approach delay are provided for informational purposes.

Table 2 shows the level of service for the sixteen existing study intersections. The table shows that all but two intersections operate at overall intersection LOS "C" or better. The westbound and eastbound ramps of the I-80/Sierra College Boulevard interchange currently operate at LOS "D" and "E" respectively. Levels of service at the interchange are expected to improve when the planned reconstruction of the interchange is completed.

Existing Transit Facilities

Placer County Transit (PCT) is a fixed-route scheduled transit system operated by Placer County. PCT principally serves the I-80 corridor area between Alta and Roseville, the SR 65 corridor area into Lincoln, and the Highway 49 corridor. Some of the routes are "deviated." A "deviated route" means that the buses generally travel on a main route (i.e., I-80) but can deviate from that route up to a certain distance (three-quarters of a mile in the case of PCT) to serve the specific needs of transit patrons. Currently there are 13 runs a day between Auburn and Rocklin. This route makes some deviations with their buses connecting with Roseville Transit and Sacramento Regional Transit (RT). Other deviated routes provide service to Granite Bay and Loomis. While there are no current plans to extend Sacramento RT's light rail system to Rocklin, at some future time PCT would like to provide connecting service through Rocklin to Sacramento RT's light rail system. Roseville, Lincoln and Auburn operate their own transit system with some cooperation at city boundaries for transferring passengers.

In addition to regular bus service, PCT also provides paratransit services for patrons with more challenging transportation needs. Such services include a Dial-a-Ride program on the Highway 49 corridor and wheelchair access on coaches.

Existing and Planned Bicycle Facilities

Existing bikeway facilities in the vicinity of the project described below. A *Class I* Path is defined as a bike path separated from automobile traffic. A *Class II* Lane is defined as an on-street bike lane with signs, striped lane markings, and pavement legends. A *Class III* Route is defined as an on-street bike route designated by signs, with pavement markings being optional. According to the Placer County Transportation Planning Agency (PCTPA) bikeways currently exist on the following roadways near the project site:

- **Sierra College Boulevard**: *Class III* from Rocklin Road to Pacific Street and from Delmar Ave to SR 193, *Class II* from Pacific Street to Delmar Ave.
- **Taylor Road:** *Class II* from Sierra College Boulevard to Downtown Loomis
- **Park Drive:** *Class II* from Stanford Ranch Road to its current terminus
- **Granite Drive** *Class III* from Sierra College Boulevard to Rocklin Road
- **King Road:** *Class III* from Sierra College Boulevard to Taylor Road

REGULATORY SETTING

Local Policies

The following policies contained in the Circulation Element of the City of Rocklin General Plan relate to the provision of transportation facilities in the City as well as minimum acceptable operating levels for roadways and intersections within the City and are relevant to this Chapter.

> Policy 3: To require bike lanes in the design and construction of major new street and highway improvements, and to establish bike lanes on those City streets wide enough to accommodate bicycles safely.
>
> Policy 5: To promote and support coordinated public transit services that meet residents' needs.
>
> Policy 6: To promote pedestrian convenience through development conditions requiring sidewalks, walking paths, or hiking trails that connect residential areas with commercial, shopping, and employment centers.
>
> Policy 10: To promote the use of public transit throughout development conditions requiring park-and-ride lots, bus turnouts and passenger shelters along major streets.
>
> Policy 12: To promote and support the development of regional bikeway links as established in the County Bikeway Master Plan.

Policy 13: To maintain a minimum traffic level of service "C" for all streets and intersections, except for intersections located within ½ mile from direct access to an interstate freeway where a level of service "D" will be acceptable. Exceptions may be made for peak hour traffic where not all movements exceed the acceptable level of service.

Policy 16: To coordinate with adjacent jurisdictions on the completion and improvement of roads which extend into other communities.

The City of Rocklin adopted the following policy as part of the North Rocklin Circulation Element Update EIR:

Average daily traffic volumes on existing collector streets with residential frontage in excess of 12,000 vehicles are considered to be a significant impact.

Under the Placer County General Plan, the County has set a standard of LOS "C" or better for its roadway system. Within one-half mile of a state highway, LOS "D" is considered acceptable.

The Town of Loomis has the following adopted Level of Service policy:

In order to minimize congestion, maintain Level of Service C on all roads and intersections within the Town of Loomis. Level of Service D may be allowed in conjunction with development approved within the Town as an exception to this standard, at the intersections of King and Taylor, Horseshoe Bar Road and Taylor, Horseshoe Bar Road and I-80, Sierra College and Brace Road, and Webb and Taylor, when:

1. The deficiency is substantially caused by "through" traffic, which neither begins nor ends in Loomis, and is primarily generated by non-residents; or
2. The deficiency will be temporary (less than three years), and a fully-funded plan is in place to provide the improvements needed to remedy the substandard condition.

SIGNIFICANCE CRITERIA

Based on General Plan policies as well as level of service standards from other jurisdictions in the area, the Proposed Project was determined to result in a significant traffic impact if:

- <u>The Proposed Project would cause a study roadway or intersection to operate at an unacceptable level. Unacceptable service levels are defined as: LOS D or worse within the City of Rocklin when located more than ½ mile from a freeway; LOS E or worse within ½ mile of direct access to a freeway; LOS E or worse on a study freeway segment or interchange.</u>

- <u>The addition of project traffic would cause an intersection to degrade from LOS "D" to LOS "E" or from LOS "E" to LOS "F."</u>

- <u>The addition of project traffic would cause an intersection that already operates at LOS "F" to have its volume-to-capacity (V/C) ratio increase by at least 0.05 or to have its overall intersection delay increase by at least 2.0 seconds.</u>

- <u>The proposed project would cause a collector roadway with residential frontage to</u>

increase from less than 12,000 vehicles per day to more than 12,000 vehicles per day.

- The Proposed Project would not meet the City of Rocklin's policies related to transit and bikeways.

IMPACTS AND MITIGATION MEASURES

To analyze the impacts and mitigation measures for each of the scenarios studied, two factors need to be determined: the amount of traffic generated by the project (trip generation), and where the additional traffic goes (trip distribution).

Trip Generation

Trip generation of the Proposed Project was calculated based on an assumption that each dwelling unit creates 9 daily vehicle trip ends. The Proposed Project includes 558 single family dwelling units, thus resulting in a residential trip generation of 5,022 daily trip ends. A trip end represents one trip to or from a household. Therefore a round trip generated by a household contains two trip ends. The Proposed Project also includes a 5 acre neighborhood commercial site. Based on a floor-area-ratio (FAR) of 0.25, this represents approximately 54,450 square feet of commercial space. Trip generation for commercial land uses is estimated at 35 daily vehicle trip ends per 1,000 square feet, or 1,906 daily vehicle trip ends total. Therefore the Proposed Project is estimated to produce approximately 6,928 daily vehicle trips. It must be noted that because the Proposed Project consists of both residential and non-residential uses, some trips generated will be between uses within the project. Some vehicles will be traveling between residential and commercial locations within the project site and thus will not use roadways outside the project area.

Trip Distribution

Trip distribution associated with the Proposed Project was estimated by using the City of Rocklin's Travel Model to determine an area-wide distribution of traffic. Due to major differences in regional land use and roadway networks between 2001 and 2025, the distribution of trips from the project site differs between the Existing Plus Proposed Project and the 2025 Plus Proposed Project conditions. The estimated trip distributions for both scenarios are displayed in Figure 5. Note that the reason that the percentages do not add up to 100 percent is that some trips remain within the project site. It should also be noted that the trip distribution percentages cannot simply be multiplied by the trip generation to determine additional volumes on study area roadways. The model redistributes traffic based on land use and cireculation system changes resulting from development..

Scenarios:

A total of five scenarios have been analyzed for this study. The scenarios are:

Existing (2005) Scenarios:
- Existing Conditions
- Existing Plus Project Conditions

2025 Scenarios:
- 2025 No Project Conditions (Current General Plan Roadway Network)
- 2025 Current General Plan Plus Project Conditions
- 2025 Proposed General Plan Plus Project Conditions

Existing Plus Proposed Project Conditions

Methodology

In the determination of "existing plus project" traffic conditions, traffic associated with the proposed development is superimposed upon existing conditions as if the project were instantaneously fully developed. This provides a clear basis for comparison of traffic volumes and traffic impacts both with and without the project. (Consideration of long-range impacts due to this project combined with other growth is included in the 2025 scenario described later in this section.) The travel demand model updated for the City of Rocklin was used to determine volumes for the Existing Plus Proposed Project scenario. It must be noted that volumes associated with the Proposed Project were not merely layered on top of existing volumes. The travel demand model redistributes volumes based on land use and circulation system changes resulting from development. Therefore the model shows increases on some roadways and decreases on others. The increases and decreases on roadways do not exactly represent the traffic associated with the Proposed Project. They represent a combination of trips associated with the Proposed Project and other trips that change routes based on land use and circulation system changes resulting from development.

Site Access

The Proposed Project subdivision map includes numerous new roadways within the project site. The main access to the site would be provided by Valley View Parkway, an arterial connecting Park Drive with Sierra College Boulevard. This roadway would provide access to most of the site and would contain some fairly steep vertical curves. Valley View Parkway is currently planned as a four lane roadway in the City's existing General Plan. The project application includes a request for a General Plan Amendment that would reduce this roadway to two lanes. Based on discussions with the City, DKS has assumed that this two lane roadway can be widened out at the intersections at each end to provide adequate turning lanes. Major project entrances would be located where Valley View Parkway intersects with Park Drive and Sierra College Boulevard. These intersections have been analyzed under all "Plus Project" conditions.

For the two new intersections created by the Proposed Project, signals were assumed with the following basic geometries: one left turn lane per direction and one right turn lane per direction without a new receiving lane on the existing roadway. Other collector and local roadways would branch off Valley View Parkway and provide access to the clusters of residential development within the project.

Traffic Volumes

Figure 6 shows the PM peak hour intersection turning movement volumes at study intersections under the Existing Plus Project scenario. Some volumes go up and others go down due to the addition of the Proposed Project. Intersection levels of service were calculated for this scenario based on these new turning movement volumes. These levels of service are compared to the No Project scenario in Table 3.

Table 3 shows that most area intersections would not experience significant degradation in level of service with the addition of the Proposed Project under existing conditions. Some intersections, however, would deteriorate under this scenario. The intersection of Sierra College Boulevard/ Del Mar Avenue currently operates at an overall LOS "A" with LOS "C" for the eastbound approach. The addition of the project would result in the eastbound approach deteriorating to LOS "D" while the overall intersection level of service remains at LOS "A." The intersection of Sierra College Boulevard/ King Road currently operates at overall LOS "A" with LOS "C" for the eastbound approach. The addition of the project would result in the eastbound approach deteriorating to LOS "E" while the overall intersection level of service remains at LOS "A." The intersection of Sierra College Boulevard/ I-80 Eastbound Ramps currently operates at LOS "E" which is considered unacceptable. With the addition of the project, this intersection would remain at LOS "E" but the volume-to-capacity (V/C) ratio would deteriorate from 0.951 V/C to 0.958 V/C.

Figure 7 shows the Existing Plus Project daily two-way volumes on segments adjacent to the study intersections. This figure shows that some roadways would experience increases in daily volume and others would experience decreases. The highest increases in daily volume would be on Park Drive and Sierra College Boulevard, which provide the primary access to the project site. Park Drive would increase by 2,900 vehicles north of Valley View Parkway and by 5,800 vehicles south of Valley View Parkway. North of Valley View Parkway, the daily volume on Sierra College Boulevard would increase by 1,700 vehicles. South of King Road, the daily volume on Sierra College Boulevard would increase by 2,300 vehicles. Closer to I-80, the daily volume on Sierra College Boulevard would increase by 1,100 vehicles. English Colony Way and King Road east of Sierra College Boulevard would both experience large increases in daily volume. English Colony Way would increase by 900 vehicles and King Road would increase by 1,500 vehicles. Other roadways would experience decreases in daily volume because the new Valley View Parkway provides an alternative east-west connection in the area. Pacific Street west of Sierra College Boulevard would experience a decrease of 500 daily vehicles. Valley View Parkway would carry between 5,600 and 7,400 daily vehicles as it traverses the project site. The west and east loop roadways within would carry approximately 1,200 and 900 daily vehicles, respectively. These two roadways would have residential driveways on them, but would not exceed the City's threshold of 12,000 daily vehicles.

Transit and Bikeways

Like any residential development, the Proposed Project would increase the demand for transit in the project area. Due to its size and location, Clover Valley would marginally increase demand for transit in the City of Rocklin. In order to comply with City of Rocklin standards for transit, the Proposed Project would have to incorporate into its plan bus turnouts and passenger shelters along major streets.

Within the Proposed Project, a Class II bikeway is planned on the future connector (Valley View Parkway) between Sierra College Boulevard and Park Drive and a Class I bikeway is planned along Clover Valley Creek. These facilities have been incorporated into the project design.

2025 No Project Conditions

Methodology

This scenario does not include the Proposed Project, but does include potential new development throughout the City of Rocklin and the rest of the region. 2025 levels of development within the City of Rocklin are based on forecasts produced in the past two years for the City's Capital Improvement Program (CIP) and Draft General Plan update. These levels of development include buildout of residential land uses within Rocklin and less than buildout in non-residential land uses. The level of non-residential land uses was based on a "straight-line" projection of growth based on growth between 1992 and 2001. Based on these growth rates and the estimated amount of vacant land, it was estimated that residential land uses would be built out by 2015, industrial uses would be close to built out (92%) by 2025, and only about 44% of the City's vacant office and retail land would be built out by 2025. It should also be noted that these 2025 projections included a previous version of the Proposed Project, which has been removed for the 2025 No Project scenario. Outside the City of Rocklin, the 2025 scenarios assume levels of development consistent with other recent studies in the area. This includes buildout of residential and less than buildout of non-residential uses in the City of Roseville and 2020 conditions elsewhere.

Roadway network assumptions are consistent with the networks assumed for the City's CIP update. These include roadway assumptions in the Northwest Annexation area, including the extension of Park Drive and Whitney Boulevard to SR 65. Sierra College Boulevard is assumed to be widened to six lanes south of Taylor Road/Pacific Street and 4 lanes north of Taylor Road/Pacific Street. Argonaut Avenue is assumed to be extended to Del Mar Avenue. A north-south roadway is assumed to be in place through the Summit property south of Clover Valley. This roadway (tentatively called Summit Drive) is assumed to be a two lane roadway providing access from the Summit Property to Argonaut Avenue. Other regional roadway improvements are consistent with county and city capital improvement programs. Based on conversations with Placer County and Town of Loomis staff, signals have been assumed for all future cases at the following intersections:

- Sierra College Boulevard/ SR 193
- Sierra College Boulevard/ English Colony Way
- Sierra College Boulevard/King Road

Traffic Volumes

The high levels of growth anticipated region-wide and especially in South Placer County will lead to increases in vehicular traffic on area roadways. These increases in traffic volumes on City of Rocklin roadways will be in part due to growth in the City of Rocklin and an part due to growth in surrounding communities. "Through" traffic on regional roadways is expected to increase significantly in the next 20 years. Rocklin's version of the Placer County Travel Demand Model was used to estimate future volumes on area roadways.

Figure 8 shows the PM peak hour intersection turning movement volumes at study intersections under the 2025 No Project scenario. Intersection levels of service were calculated for this scenario based on these new turning movement volumes. These levels of service are shown in Table 4. Intersection geometries are based on recent studies including the City of Rocklin CIP update.

Table 4 shows that under 2025 No Project conditions, a number of intersections would operate at LOS "D" or worse. Of the 16 intersections, 4 would operate at LOS "D" and 2 would operate at LOS "E." One of the three stop sign controlled intersections would operate at overall intersection LOS "A" but the minor movements would operate at LOS "F."

Figure 9 shows the 2025 No Project daily two-way volumes on segments in the study area. Most roadways in the area show growth in daily traffic volume between 2001 and 2025. Sierra College Boulevard shows growth ranging from approximately 9,300 daily vehicles south of SR 193 to approximately 20,300 daily vehicles south of I-80. Adjacent to the project site access points, Sierra College Boulevard increases by 14,600 daily vehicles and Park Drive increases by 1,600 daily vehicles.

2025 Current General Plan Plus Project Conditions

Traffic Volumes

This scenario adds the traffic generated by the Proposed Project to the 2025 No Project scenario. It assumes that the extensions of Rocklin Road and Argonaut Avenue are in place, as well as the connection from the Summit to Argonaut Avenue.

Figure 10 shows the PM peak hour intersection turning movement volumes at study intersections under the 2025 Plus Project scenario. Intersection levels of service were calculated for this scenario based on these new turning movement volumes. These levels of service are compared to the 2025 No Project scenario in Table 5. Intersection geometries are based on recent studies including the City of Rocklin CIP. Where geometrics were not readily available, reasonable numbers of turn lanes were assumed.

Table 5 shows that some intersections would deteriorate and others would improve with the addition of the Proposed Project under 2025 conditions. The intersection of Sierra College Boulevard and Taylor Road/Pacific Street would improve from LOS "E" to LOS "D." The intersection of Sierra College Boulevard/King Road would deteriorate from LOS "C" to LOS "F."

It should be noted that volume increases on King Road in Loomis are not necessarily due to Clover Valley residents going through Loomis. The addition of Valley View Parkway (which is in the City of Rocklin's current General Plan) provides new access from SR 65 to I-80. Whether or not the land uses of Clover Valley are built, the addition of Valley View Parkway would result in increases on King Road through Loomis because King Road provides one of the more direct routes to I-80. Loomis residents would also use this route to get to points west of Clover Valley as well.

At the intersection of Sierra College Boulevard/ Del Mar Avenue, the overall intersection would remain at LOS "A" and the minor leg LOS would remain at LOS "F," however, delay for the westbound approach would deteriorate from 121.7 seconds to 244.4 seconds per vehicle. The two new intersections created by the Proposed Project would operate at LOS "D" and C" using the basic geometric assumptions noted above.

The deterioration of overall intersection LOS from acceptable to unacceptable at one existing intersection (Sierra College Blvd/ King Road) and the unacceptable LOS at one proposed intersection (Valley View Parkway/ Park Drive) represent a significant impact. Mitigations are identified to counteract the LOS impacts at these intersections.

Figure 11 shows the 2025 Plus Project daily traffic volumes on study area roadways. The greatest increases in daily traffic volume occur on Park Drive and Sierra College Boulevard adjacent to the Proposed Project. Park Drive increases by 9,000 daily vehicles northwest of the project entrance and increases by 5,100 south of the project entrance. The increases on Park Drive are due not only to the new development introduced on the Clover Valley site, but also the addition of Valley View Parkway, which would provide new access from Park Drive through to Sierra College Boulevard.

Sierra College Boulevard increases north of the project entrance by 3,300 daily vehicles. Both English Colony Way and King Road experience relatively high increases east of Sierra College Boulevard. English Colony Way increases by 1,500 daily vehicles and King Road increases by 2,300 daily vehicles. Other roadways experience decreases in daily volumes with the addition of the project and its new roadways. Taylor Road/Pacific Avenue decreases by approximately 1,600 daily vehicles.

2025 Proposed General Plan Plus Project Conditions

Traffic Volumes

This scenario assumes that the extensions of Rocklin Road and Argonaut Avenue are removed from the General Plan, as well as the connection from the Summit to Argonaut Avenue. Figure 12 shows the PM peak hour intersection turning movement volumes at study intersections under the 2025 Proposed General Plan Plus Project scenario. Intersection levels of service were calculated for this scenario based on these new turning movement volumes. These levels of service are compared to the 2025 Current General Plan Project scenario in Table 6. Intersection geometries are based on recent studies including the City of Rocklin CIP update. Where geometrics were not readily available, reasonable numbers of turn lanes were assumed. For the two new intersections created by the Proposed Project, signals were assumed with the following basic geometries: one left turn lane per direction and one right turn lane per direction without a new receiving lane on the existing roadway.

This scenario was not completed to determine project related impacts. It is for informational purposes to show another possible future scenario (i.e., the worst case condition in Clover Valley assuming all traffic from the Summit project goes to the north.) Therefore Table 6 shows intersection Level of Service summaries for this scenario side-by-side with the previous 2025 Plus Project scenario instead of a no project scenario. The table shows generally similar results to the scenario discussed above. Figure 13 compares daily volumes for the two "Plus Project" scenarios. Volumes are generally similar near the Proposed Project, but differ somewhat due to traffic from the Summit only being able to exit through Clover Valley, not south to Argonaut Avenue. Sierra College Blvd increases south of Valley View Parkway and decreases north of Valley View Parkway. Park Drive increases adjacent to the Clover Valley site.

Mitigations

Impact: **1. Development of the Proposed Project under existing conditions would increase traffic on local streets and roads in the vicinity of the project site.**

Significance: This is considered a **Less-than-Significant** impact.

Mitigation: No mitigation measures are recommended or required for this impact.

Discussion: Under existing conditions, the addition of the Proposed Project would cause volume increases on some local roadways and at some local intersections. While overall intersection level of service would not deteriorate significantly at any intersections, individual movement delay would be affected at two intersections. Since local LOS policies are based on overall intersection delay or V/C ratio, this represents a less-than-significant impact.

Impact: **2. Development of the Proposed Project would create a demand for transit services.**

Significance: This is considered a **Less-than-Significant** impact.

Mitigation: No mitigation measures are recommended or required for this impact.

Discussion: The Proposed Project could generate additional demand for transit services, because a portion of the project residents may choose to use the bus, however, this increase is likely to be minor. City standards require that new developments incorporate adequate bus turnouts and passenger shelters on roadways likely to have transit lines. Applicant shall work with City staff to incorporate these facilities into the project design.

Impact: **3. Development of the Proposed Project would create a demand for bicycle facilities.**

Significance: This is considered a **Less-than-Significant** impact.

Mitigation: No mitigation measures are recommended or required for this impact.

Discussion: Within the Proposed Project, a Class II bikeway is planned on Valley View Parkway and a Class I path is planned along Clover Valley Creek. These facilities have been incorporated into the project design. Other roadways within the Proposed Project are considered local residential roadways and would not require specific bikeway striping. Therefore, the project would accommodate bicycles and is consistent with the City's bikeway policies.

Impact:	**4. Development of the Proposed Project under 2025 conditions would increase traffic on local streets and roads in the vicinity of the project site.**
Significance:	This is considered a **Significant** impact.
Mitigations:	Contribute toward the improvement of the intersection of Sierra College Boulevard and King Road. Design the intersection of Valley View Parkway and Park Drive to accommodate projected PM peak hour traffic volumes.

Discussion: At the intersection of Sierra College Boulevard/King Road, a number of improvements are necessary to bring this intersection back to LOS "C" under 2025 Plus Project conditions. These include the following:

- Add second southbound left turn lane (requires additional right of way on King Road to accept two left turn lanes)
- Make east/west signal phasing "split phase"
- Stripe westbound approach as one through/left lane and one exclusive right turn lane
- Provide receiving lane on Sierra College Boulevard for westbound right turns

Since this intersection is in Loomis, not Rocklin, the City has no direct control over improvements that take place at this intersection. Therefore this impact represents a **Significant and Unavoidable** impact. City staff would have to develop an agreement with Loomis staff to determine an acceptable level of project funding toward improvements at this intersection.

At the project intersection of Valley View Parkway/Park Drive, intersection LOS could be improved to LOS "B" by providing receiving lanes for the northbound and westbound right turn lanes. These could be built into the project entry design.

Table 1
Intersection Level of Service Description

Level of Service	Description	Signalized Intersections (Volume-to-Capacity Ratio)	Unsignalized Intersections (Average Delay Per Vehicle)
A	Represents free flow. Individual users are virtually unaffected by others in the traffic stream.	≤ 0.60	< 10 sec./veh.
B	Stable flow, but the presence of other users in the traffic stream begins to be noticeable.	0.61-0.70	10 – 20 sec./veh.
C	Stable flow, but the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.	0.71-0.80	20-35 sec./veh.
D	Represents high-density, but stable flow.	0.81-0.90	35-55 sec./veh.
E	Represents operating conditions at or near the capacity level.	0.91-1.00	55-80 sec./veh.
F	Represents forced or breakdown flow.	>1.00	> 80 sec./veh.

Source: *Highway Capacity Manual 2000* (Transportation Research Board, 2000) and *Interim Materials on Highway Capacity - Circular 212* (Transportation Research Board, 1980).

Table 2
Existing P.M. Peak Commuter Hour Intersection Operating Conditions

	Intersection	Jurisdiction	Existing Conditions		
			Traffic Control Device	Criteria[1]	LOS
1.	Sierra College Blvd and SR 193 (overall)	Placer Co	All Way Stop	15.6 sec	C
2.	Sierra College Blvd and English Colony Rd (overall)	Placer Co	E/W Stop	1.1 sec	A
	-Westbound Approach			*12.4 sec*	*B*
3.	Sierra College Blvd and Del Mar Ave (overall)	Placer Co	E/W Stop	0.9 sec	A
	-Westbound Approach			*18.9 sec*	*C*
4.	Sierra College Blvd and King Rd	Loomis	E/W Stop	3.4 sec	A
	-Eastbound Approach			*20.0 sec*	*C*
5.	Sierra College Blvd and Taylor Rd/Pacific St	Loomis	Signal	0.671 V/C	B
6.	Sierra College Blvd and Granite Dr	Rocklin	Signal	0.623 V/C	B
7.	Sierra College Blvd and I-80 WB Ramps	Rocklin	Signal	0.834 V/C	D
8.	Sierra College Blvd and I-80 EB Ramps	Rocklin	Signal	0.951 V/C	E
9.	Del Mar Ave and Pacific St	Rocklin	Signal	0.526 V/C	A
10.	N. Grove St and Pacific St	Rocklin	N/S Stop	0.9 sec	A
	-Northbound Approach			*13.5 sec*	*B*
11.	Pacific St and E Midas Ave	Rocklin	Signal	0.659 V/C	B
12.	Pacific St and Rocklin Rd	Rocklin	Signal	0.730 V/C	C
13.	Granite Dr and Rocklin Rd	Rocklin	Signal	0.658 V/C	B
14.	Rocklin Rd and I-80 Westbound Ramps	Rocklin	Signal	0.691 V/C	B
15.	Rocklin Rd and I-80 Eastbound Ramps	Rocklin	Signal	0.647 V/C	B
16.	Valley View Pkwy and Park Dr	Rocklin	N/A	N/A	N/A
17.	Sierra College Blvd and Valley View Pkwy	Rocklin	N/A	N/A	N/A

[1] Signalized intersection - volume-capacity ratio (V/C); Unsignalized intersection – average vehicle delay (seconds)

Table 3
Existing Plus Project P.M. Peak Commuter Hour Intersection Operating Conditions

	Intersection	Jurisdiction	Existing Conditions		Existing Plus Project Conditions	
			Criteria[1]	LOS	Criteria[1]	LOS
1.	Sierra College Blvd and SR 193 (overall)	Placer Co	15.6 sec	C	16.7 sec	C
2.	Sierra College Blvd and English Colony Rd (overall)	Placer Co	1.1 sec	A	1.7 sec	A
	-Westbound Approach		*12.4 sec*	*B*	*17.3 sec*	*C*
3.	Sierra College Blvd and Del Mar Ave (overall)	Placer Co	0.9 sec	A	1.0 sec	A
	-Westbound Approach		*18.9 sec*	*C*	*28.3 sec*	*D*
4.	Sierra College Blvd and King Rd	Loomis	3.4 sec	A	6.4 sec	A
	-Eastbound Approach		*20.0 sec*	*C*	*43.1 sec*	*E*
5.	Sierra College Blvd and Taylor Rd/Pacific St	Loomis	0.671 V/C	B	0.699 V/C	B
6.	Sierra College Blvd and Granite Dr	Rocklin	0.623 V/C	B	0.644 V/C	B
7.	Sierra College Blvd and I-80 WB Ramps	Rocklin	0.834 V/C	D	0.869 V/C	D
8.	Sierra College Blvd and I-80 EB Ramps	Rocklin	0.951 V/C	E	0.958 V/C	E
9.	Del Mar Ave and Pacific St	Rocklin	0.526 V/C	A	0.506 V/C	A
10.	N. Grove St and Pacific St	Rocklin	0.9 sec	A	0.9 sec	A
	-Northbound Approach		*13.5 sec*	*B*	*12.8 sec*	*B*
11.	Pacific St and E Midas Ave	Rocklin	0.659 V/C	B	0.621 V/C	B
12.	Pacific St and Rocklin Rd	Rocklin	0.730 V/C	C	0.707 V/C	C
13.	Granite Dr and Rocklin Rd	Rocklin	0.658 V/C	B	0.643 V/C	B
14.	Rocklin Rd and I-80 Westbound Ramps	Rocklin	0.691 V/C	B	0.688 V/C	B
15.	Rocklin Rd and I-80 Eastbound Ramps	Rocklin	0.647 V/C	B	0.626 V/C	B
16.	Valley View Pkwy and Park Dr	Rocklin	N/A	N/A	0.282 V/C	A
17.	Sierra College Blvd and Valley View Pkwy	Rocklin	N/A	N/A	0.379 V/C	A

[1] Signalized intersection - volume-capacity ratio (V/C); Unsignalized intersection – average vehicle delay (seconds)

Table 4
2025 No Project P.M. Peak Commuter Hour Intersection Operating Conditions

	Intersection	Jurisdiction	2025 No Project Conditions		
			Traffic Control Device	Criteria[1]	LOS
1.	Sierra College Blvd and SR 193	Placer Co	Signal	0.968 V/C	E
2.	Sierra College Blvd and English Colony Rd	Placer Co	Signal	0.839 V/C	D
3.	Sierra College Blvd and Del Mar Ave (overall)	Placer Co	E/W Stop	2.0 sec	A
	-Westbound Approach			*121.7 sec*	*F*
4.	Sierra College Blvd and King Rd	Loomis	Signal	0.739 V/C	C
5.	Sierra College Blvd and Taylor Rd/Pacific St	Loomis	Signal	0.904 V/C	E
6.	Sierra College Blvd and Granite Dr	Rocklin	Signal	0.725 V/C	C
7.	Sierra College Blvd and I-80 WB Ramps	Rocklin	Signal	0.756 V/C	C
8.	Sierra College Blvd and I-80 EB Ramps	Rocklin	Signal	0.715 V/C	C
9.	Del Mar Ave and Pacific St	Rocklin	Signal	0.537 V/C	A
10.	N. Grove St and Pacific St	Rocklin	N/S Stop	1.0 sec	A
	-Northbound Approach			*15.4 sec*	*C*
11.	Pacific St and E Midas Ave	Rocklin	Signal	0.792 V/C	C
12.	Pacific St and Rocklin Rd	Rocklin	Signal	0.899 V/C	D
13.	Granite Dr and Rocklin Rd	Rocklin	Signal	0.799 V/C	C
14.	Rocklin Rd and I-80 Westbound Ramps	Rocklin	Signal	0.876 V/C	D
15.	Rocklin Rd and I-80 Eastbound Ramps	Rocklin	Signal	0.893 V/C	D
16.	Valley View Pkwy and Park Dr	Rocklin	N/A	N/A	N/A
17.	Sierra College Blvd and Valley View Pkwy	Rocklin	N/A	N/A	N/A

[1] Signalized intersection - volume-capacity ratio (V/C); Unsignalized intersection – average vehicle delay (seconds)

Table 5
2025 Current General Plan
Plus Proposed Project P.M. Peak Commuter Hour Intersection Operating Conditions

	Intersection	Jurisdiction	2025 No Project Conditions		2025 Plus Project Conditions	
			Criteria[1]	LOS	Criteria[1]	LOS
1.	Sierra College Blvd and SR 193	Placer Co	0.968 V/C	E	0.931 V/C	E
2.	Sierra College Blvd and English Colony Rd	Placer Co	0.839 V/C	D	0.827 V/C	D
3.	Sierra College Blvd and Del Mar Ave (overall)	Placer Co	2.0 sec	A	3.7 sec	A
	-Westbound Approach		*121.7 sec*	*F*	*244.4 sec*	*F*
4.	Sierra College Blvd and King Rd	Loomis	0.739 V/C	C	**1.001 V/C**	**F**
5.	Sierra College Blvd and Taylor Rd/Pacific St	Loomis	0.904 V/C	E	0.865 V/C	D
6.	Sierra College Blvd and Granite Dr	Rocklin	0.725 V/C	C	0.732 V/C	C
7.	Sierra College Blvd and I-80 WB Ramps	Rocklin	0.756 V/C	C	0.750 V/C	C
8.	Sierra College Blvd and I-80 EB Ramps	Rocklin	0.715 V/C	C	0.703 V/C	C
9.	Del Mar Ave and Pacific St	Rocklin	0.537 V/C	A	0.519 V/C	A
10.	N. Grove St and Pacific St	Rocklin	1.0 sec	A	1.1 sec	A
	-Northbound Approach		*15.4 sec*	*C*	*14.2 sec*	*B*
11.	Pacific St and E Midas Ave	Rocklin	0.792 V/C	C	0.701 V/C	C
12.	Pacific St and Rocklin Rd	Rocklin	0.899 V/C	D	0.853 V/C	D
13.	Granite Dr and Rocklin Rd	Rocklin	0.799 V/C	C	0.758 V/C	C
14.	Rocklin Rd and I-80 Westbound Ramps	Rocklin	0.876 V/C	D	0.874 V/C	D
15.	Rocklin Rd and I-80 Eastbound Ramps	Rocklin	0.893 V/C	D	0.890 V/C	D
16.	Valley View Pkwy and Park Dr	Rocklin	N/A	N/A	**0.829 V/C**	**D**
17.	Sierra College Blvd and Valley View Pkwy	Rocklin	N/A	N/A	0.771 V/C	C

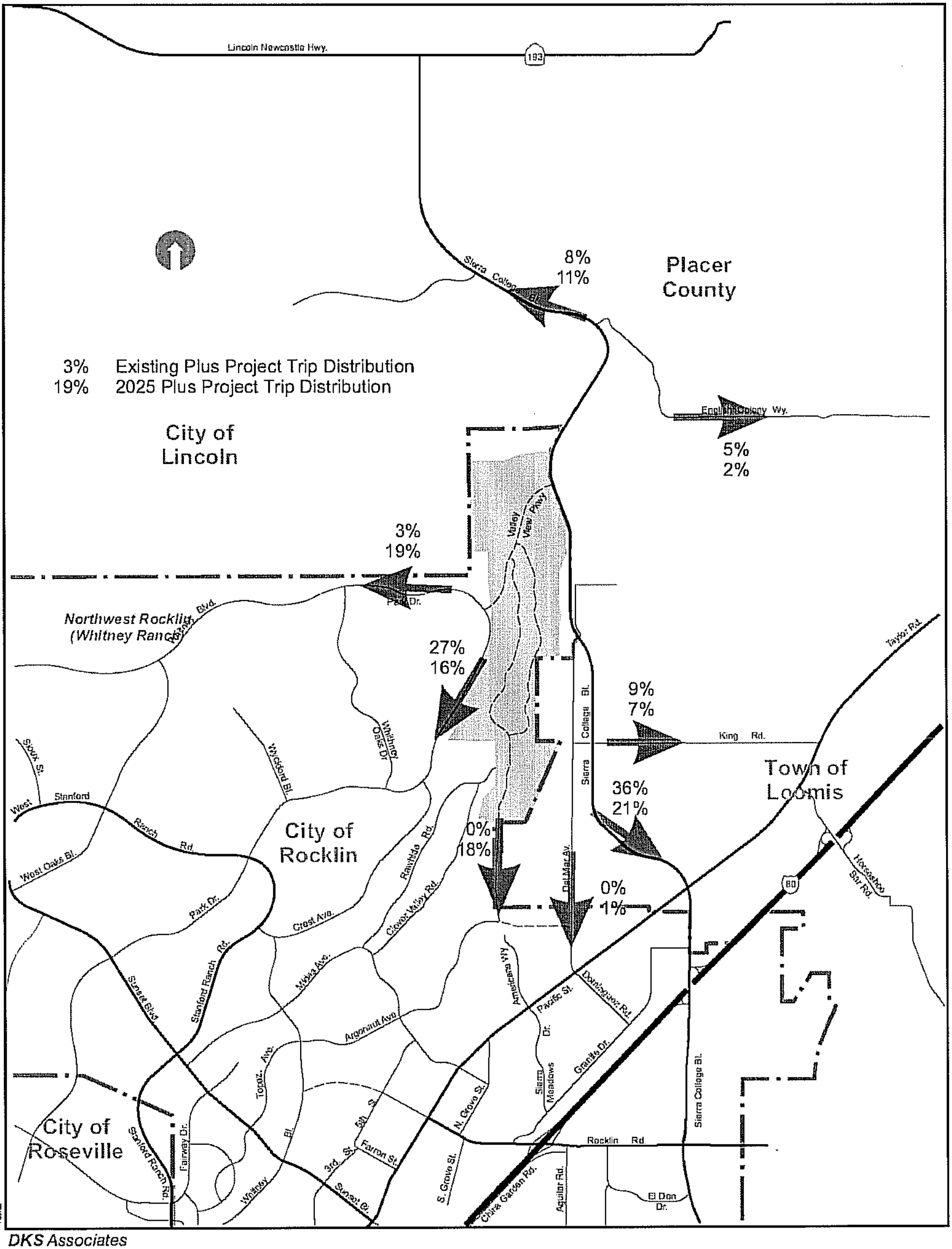
[1] Signalized intersection - volume-capacity ratio (V/C); Unsignalized intersection – average vehicle delay (seconds)

Table 6
2025 Proposed General Plan
Plus Project P.M. Peak Commuter Hour Intersection Operating Conditions

	Intersection	Jurisdiction	2025 Current G.P. Plus Project Conditions		2025 Proposed G.P. Plus Project Conditions	
			Criteria[1]	LOS	Criteria[1]	LOS
1.	Sierra College Blvd and SR 193	Placer Co	0.931 V/C	E	0.931 V/C	E
2.	Sierra College Blvd and English Colony Rd	Placer Co	0.827 V/C	D	0.845 V/C	D
3.	Sierra College Blvd and Del Mar Ave (overall)	Placer Co	3.7 sec	A	4.0 sec	A
	-Westbound Approach		*244.4 sec*	*F*	*271.3 sec*	*F*
4.	Sierra College Blvd and King Rd	Loomis	1.001 V/C	F	1.017 V/C	F
5.	Sierra College Blvd and Taylor Rd/Pacific St	Loomis	0.865 V/C	D	0.870 V/C	D
6.	Sierra College Blvd and Granite Dr	Rocklin	0.732 V/C	C	0.741 V/C	C
7.	Sierra College Blvd and I-80 WB Ramps	Rocklin	0.750 V/C	C	0.759 V/C	C
8.	Sierra College Blvd and I-80 EB Ramps	Rocklin	0.703 V/C	C	0.717 V/C	C
9.	Del Mar Ave and Pacific St	Rocklin	0.519 V/C	A	0.509 V/C	A
10.	N. Grove St and Pacific St	Rocklin	1.1 sec	A	1.1 sec	A
	-Northbound Approach		*14.2 sec*	*B*	*16.7 sec*	*B*
11.	Pacific St and E Midas Ave	Rocklin	0.701 V/C	C	0.791 V/C	C
12.	Pacific St and Rocklin Rd	Rocklin	0.853 V/C	D	0.833 V/C	D
13.	Granite Dr and Rocklin Rd	Rocklin	0.758 V/C	C	0.765 V/C	C
14.	Rocklin Rd and I-80 Westbound Ramps	Rocklin	0.874 V/C	D	0.876 V/C	D
15.	Rocklin Rd and I-80 Eastbound Ramps	Rocklin	0.890 V/C	D	0.894 V/C	D
16.	Valley View Pkwy and Park Dr	Rocklin	0.829 V/C	D	0.862 V/C	D
17.	Sierra College Blvd and Valley View Pkwy	Rocklin	0.771 V/C	C	0.793 V/C	C

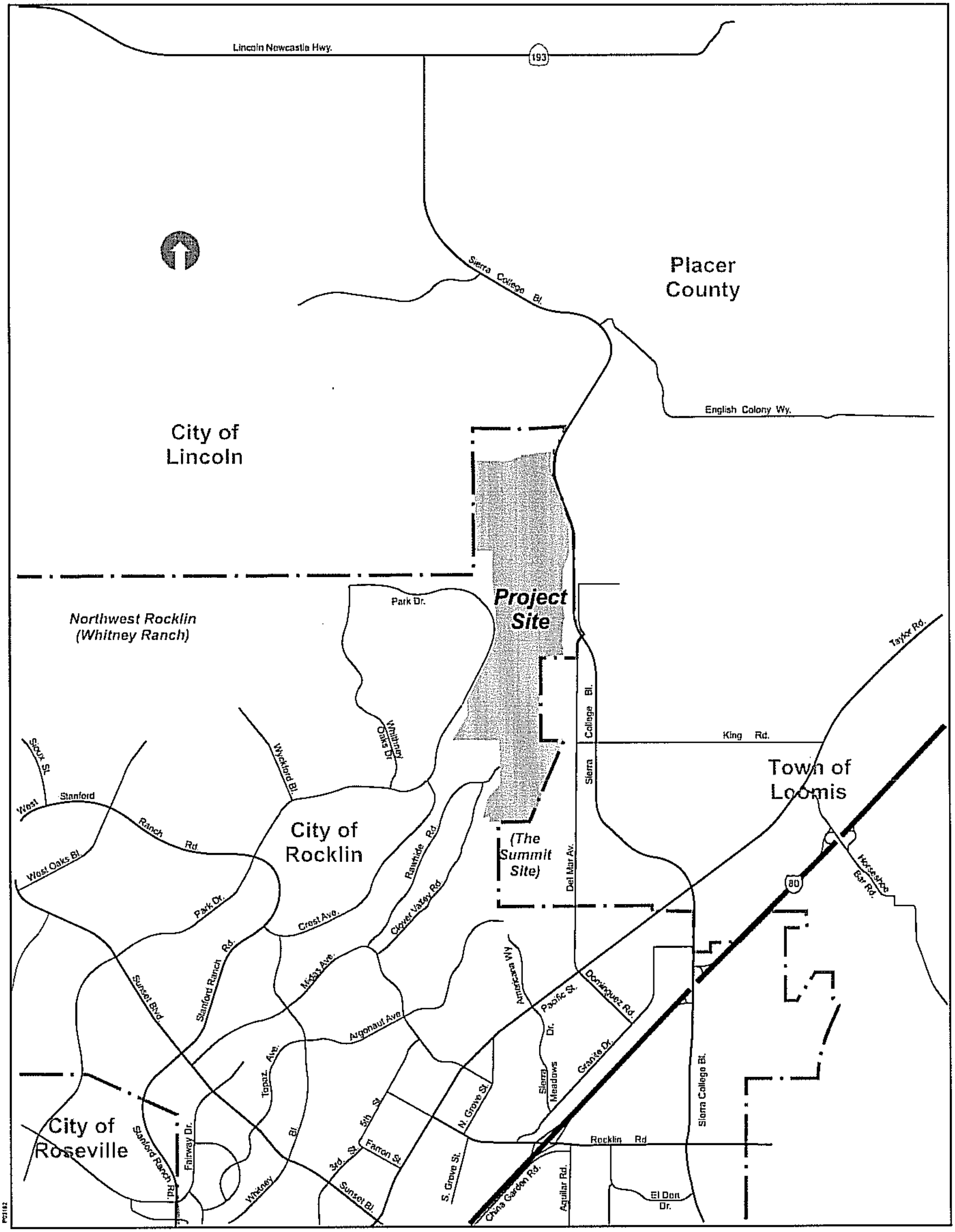
[1] Signalized intersection - volume-capacity ratio (V/C); Unsignalized intersection – average vehicle delay (seconds)

FIGURE 4.4-5
Estimated Project Trip Distribution



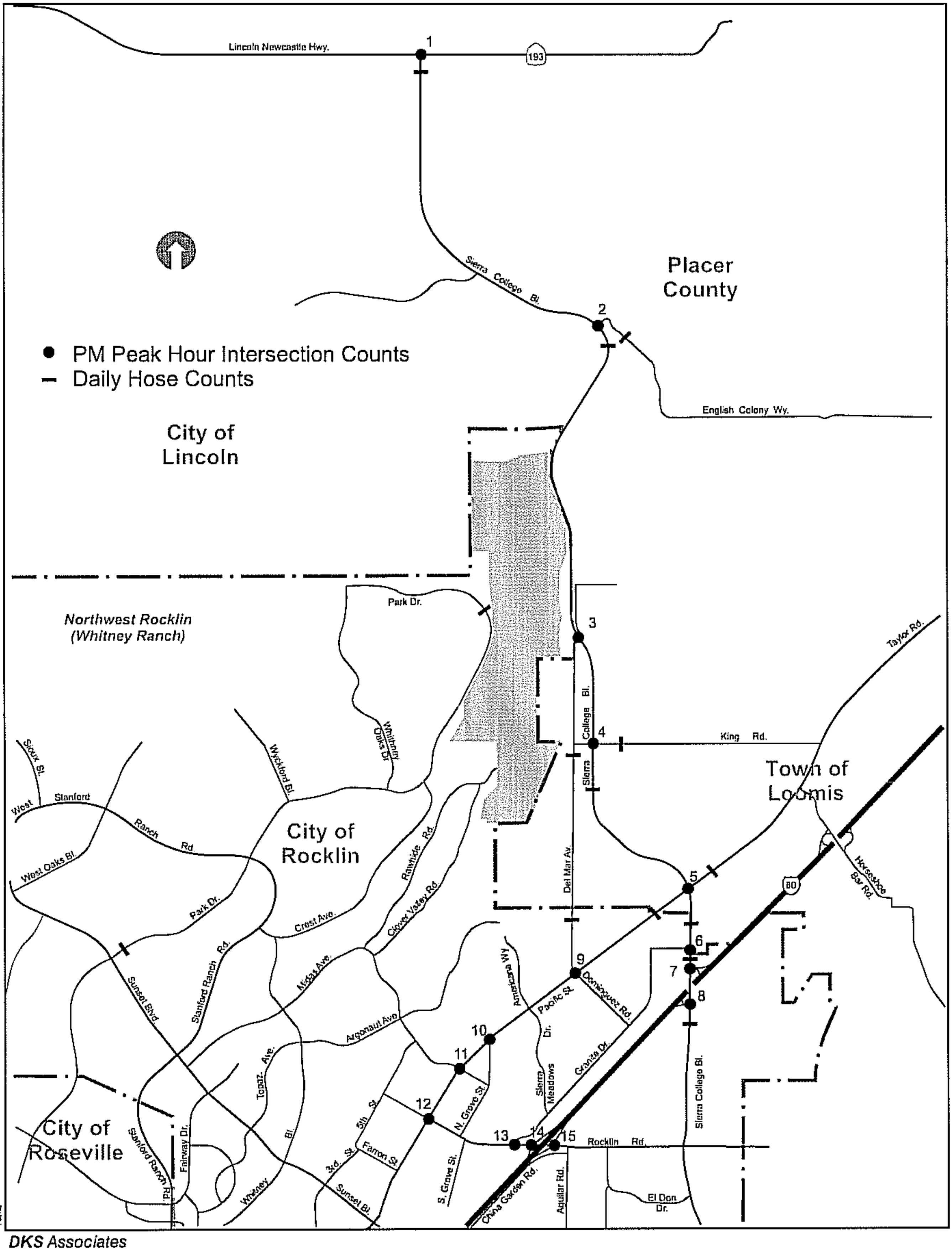
DKS Associates

FIGURE 1
Project Site Location



DKS Associates

FIGURE 2
Existing Count Locations



DKS Associates

FIGURE 3
Existing PM Peak Hour Intersection Volumes

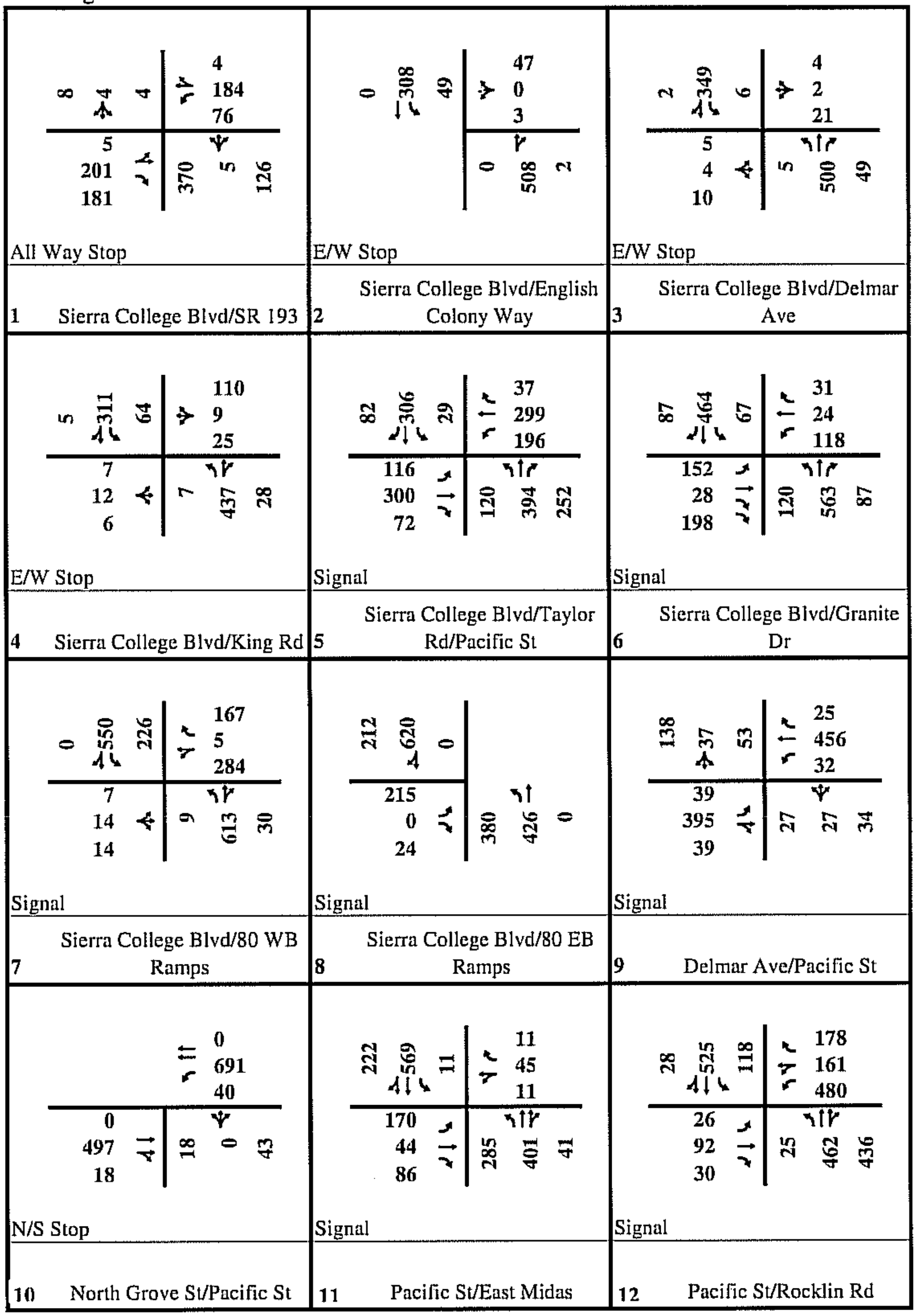


FIGURE 3
Existing PM Peak Hour Intersection Volumes

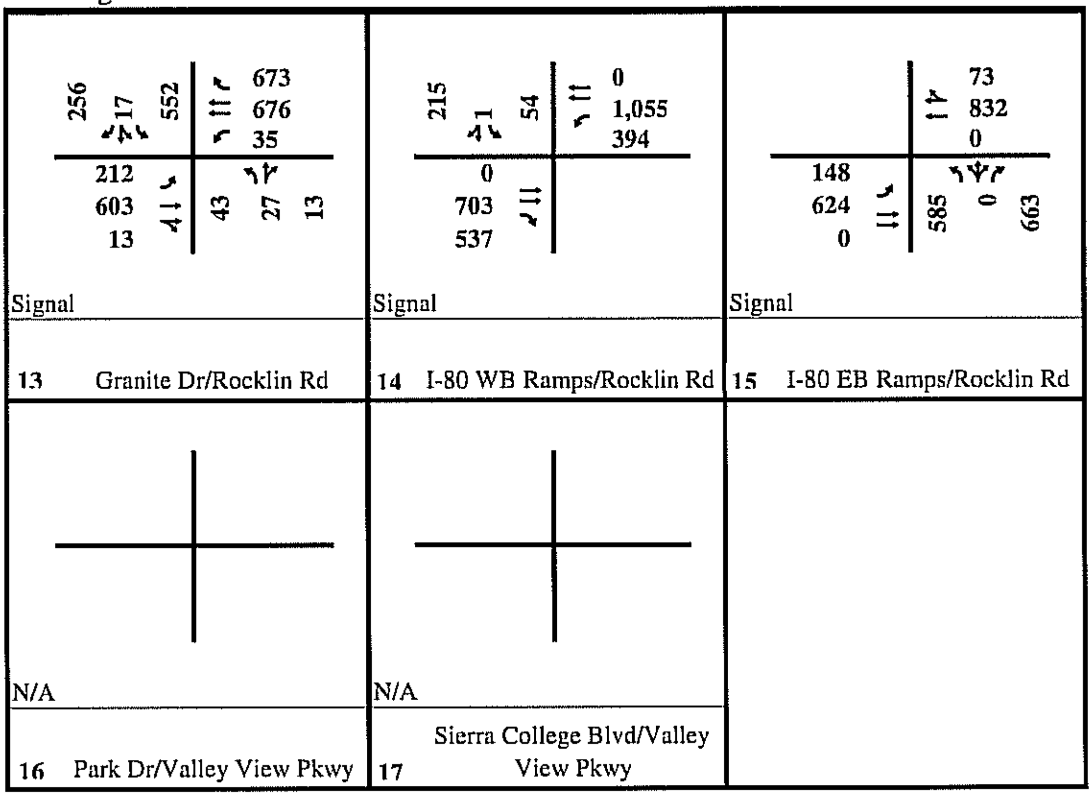
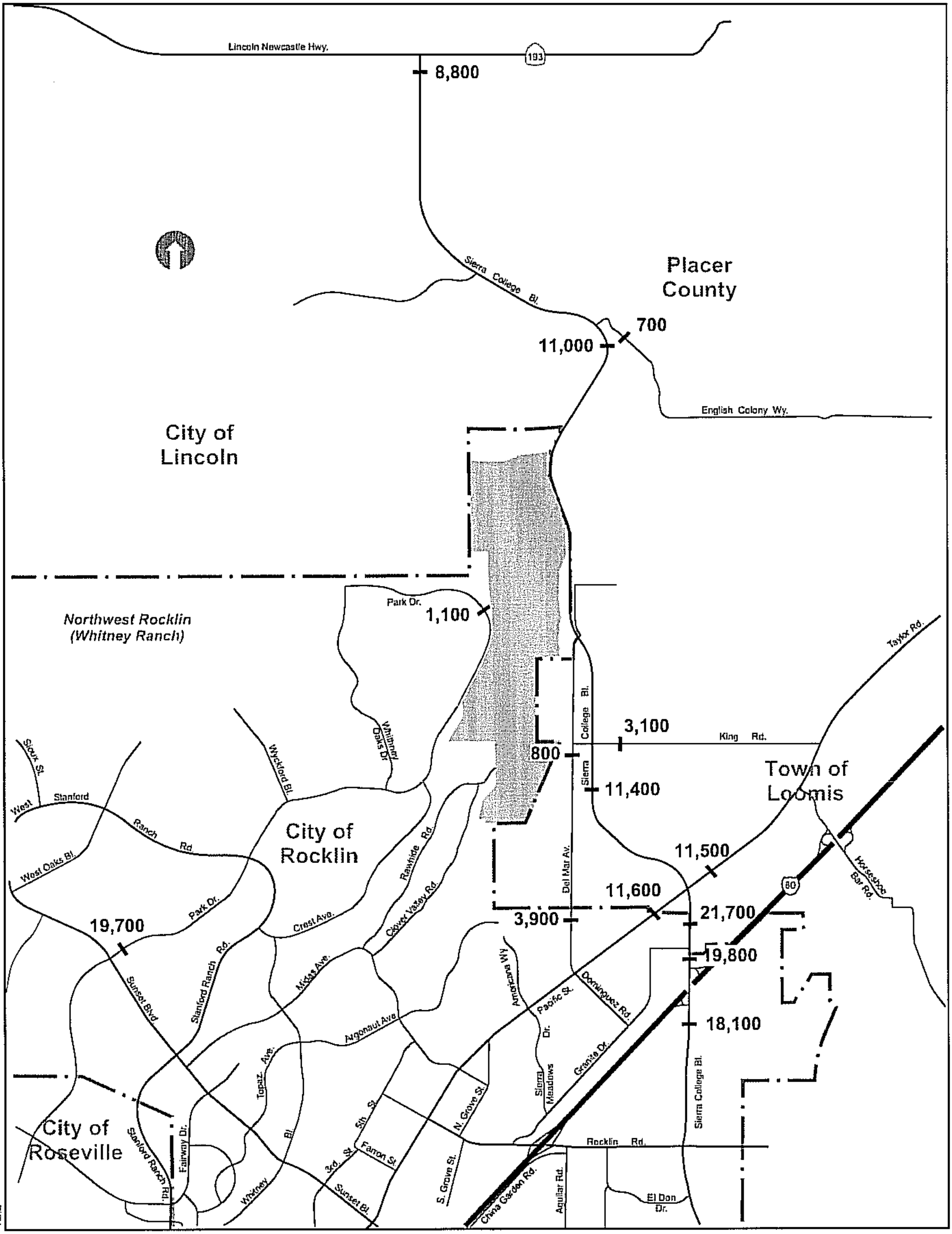
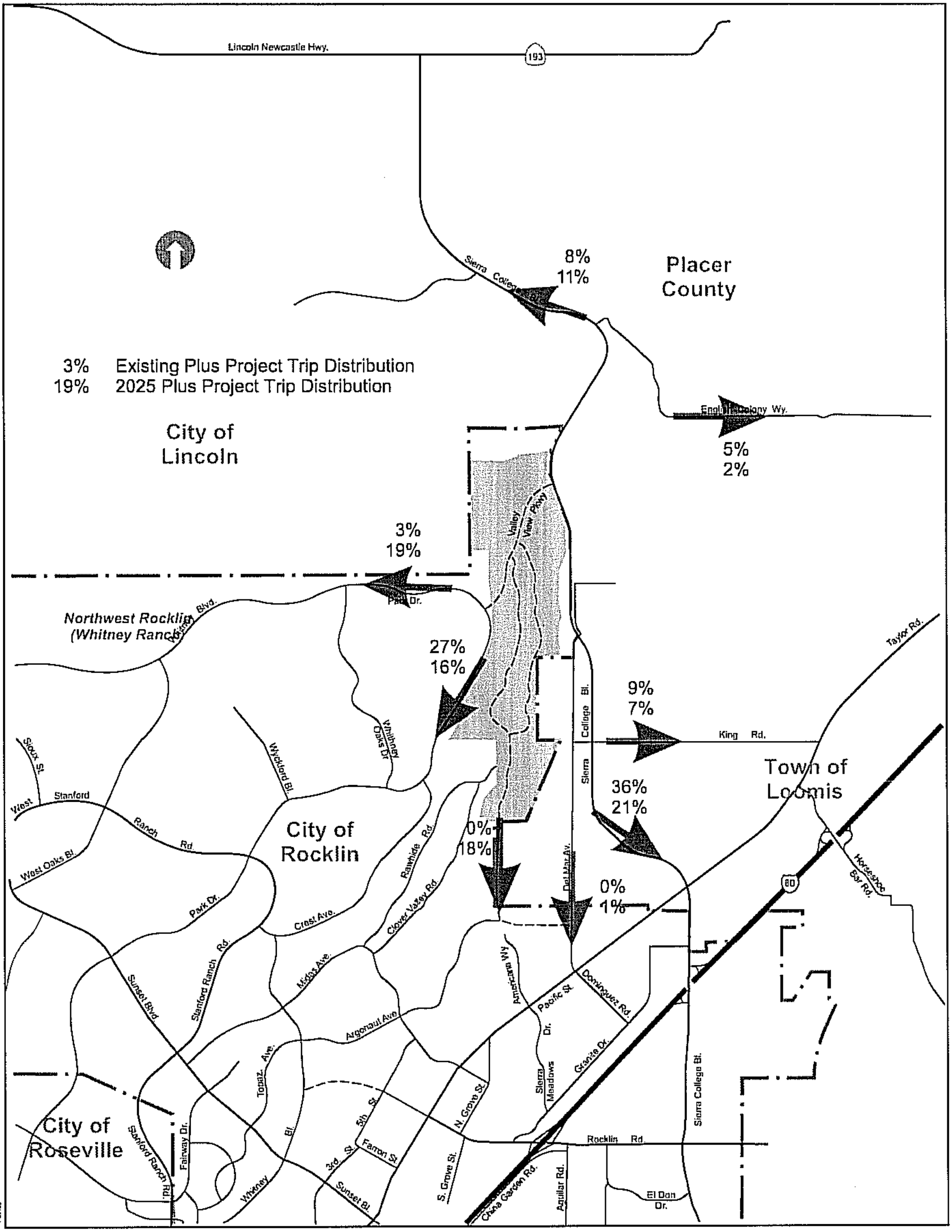


FIGURE 4
Existing 2005 Daily Traffic Volumes



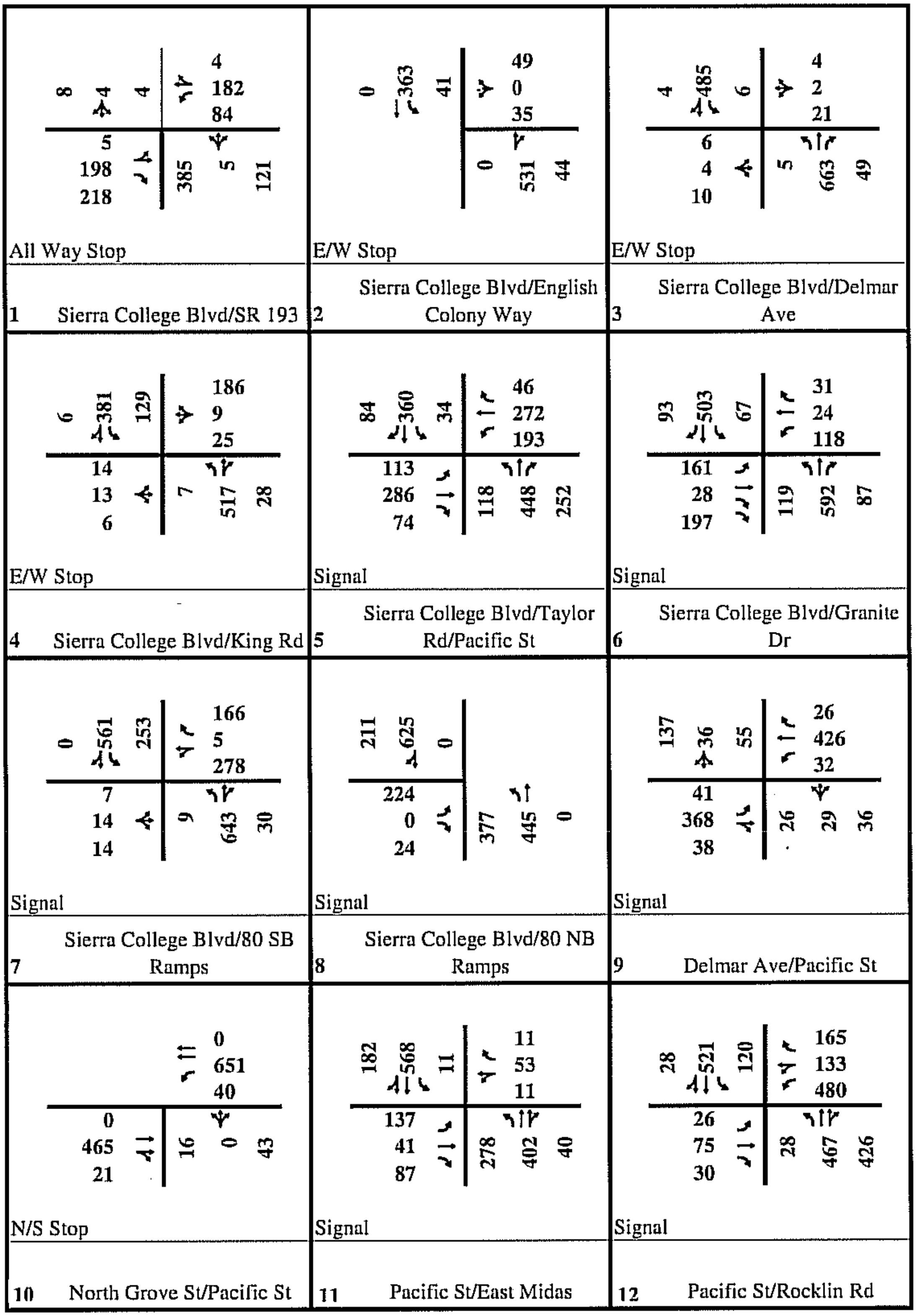
DKS Associates

FIGURE 4.4-5
Estimated Project Trip Distribution



DKS Associates

FIGURE 6
Existing Plus Project PM Peak Hour Intersection Volumes



DKS Associates

FIGURE 6
Existing Plus Project PM Peak Hour Intersection Volumes

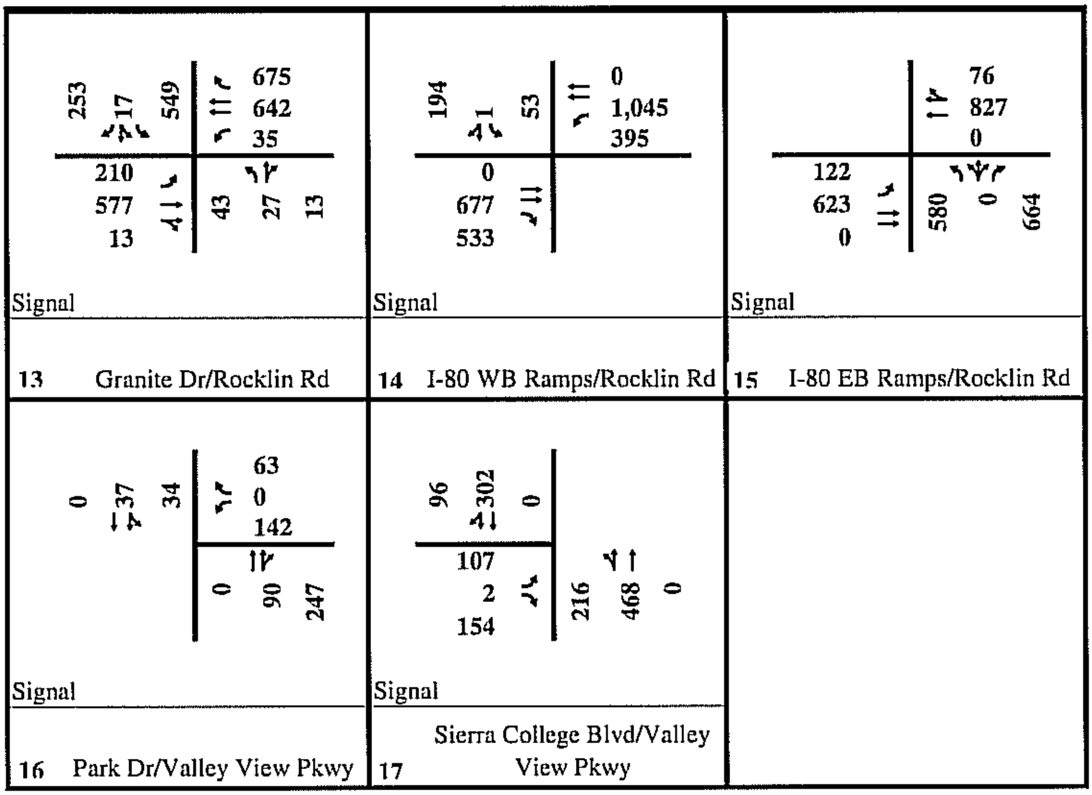
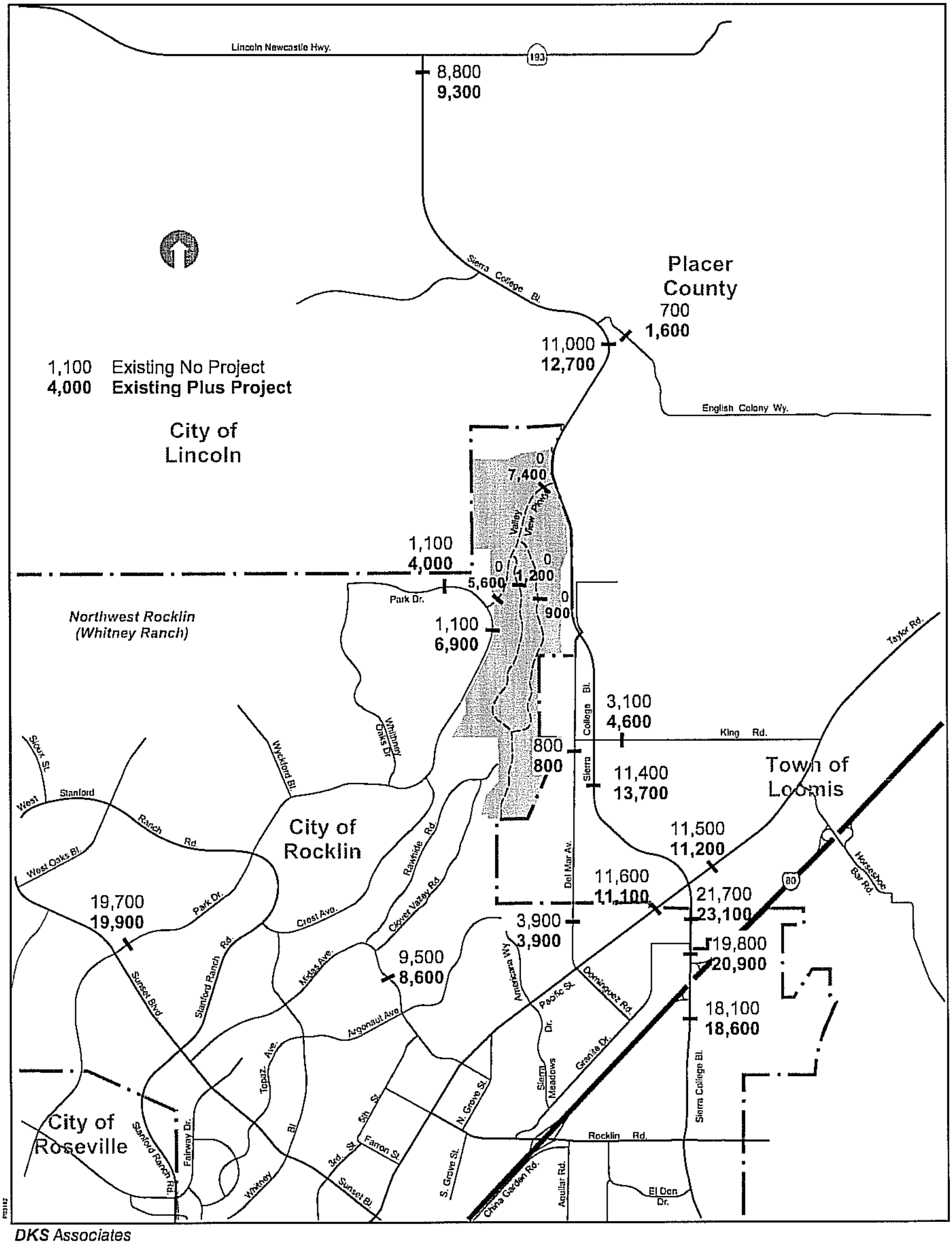


FIGURE 7
Existing Plus Project Daily Traffic Volumes



DKS Associates

FIGURE 8
2025 No Project PM Peak Hour Intersection Volumes

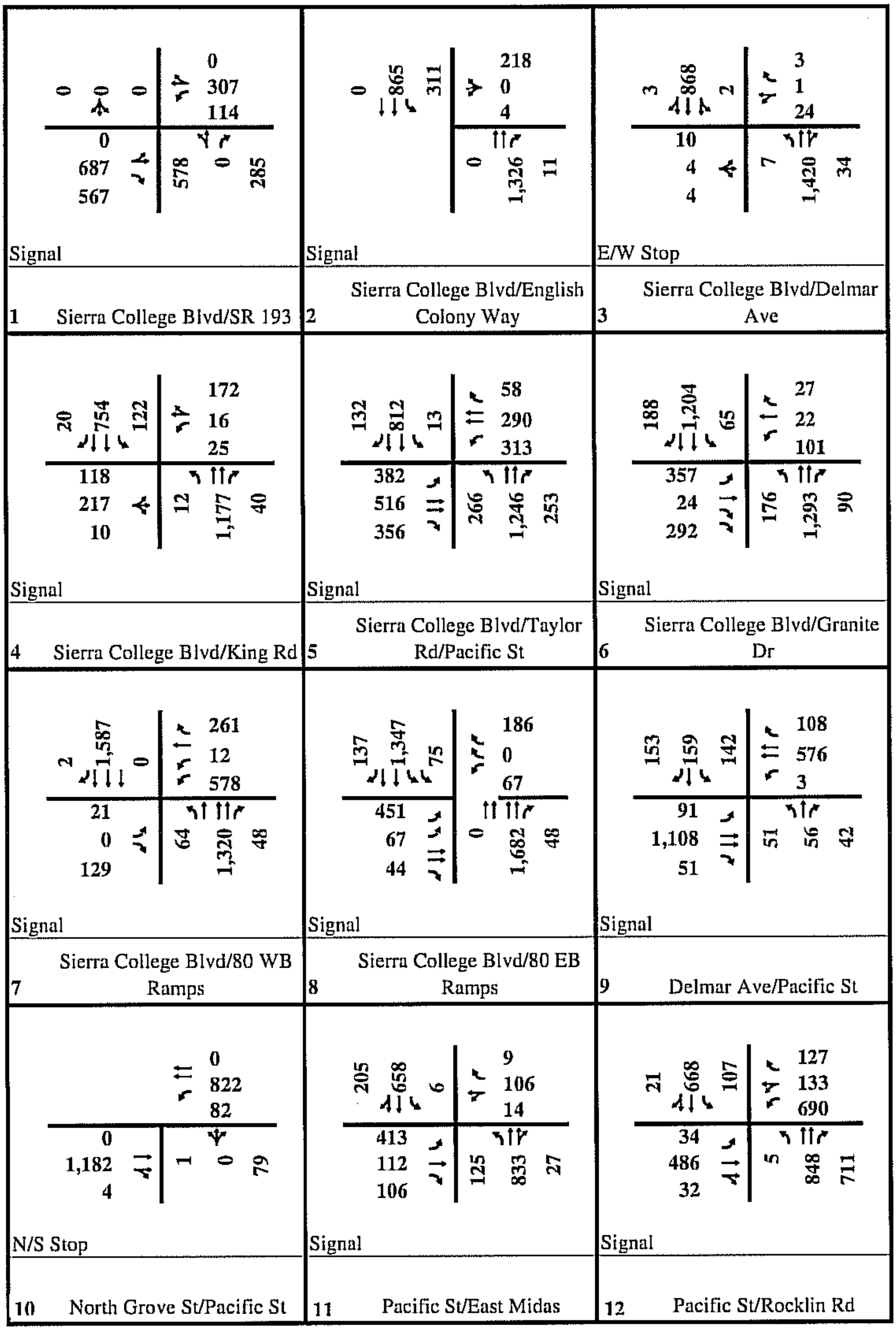


FIGURE 8
2025 No Project PM Peak Hour Intersection Volumes

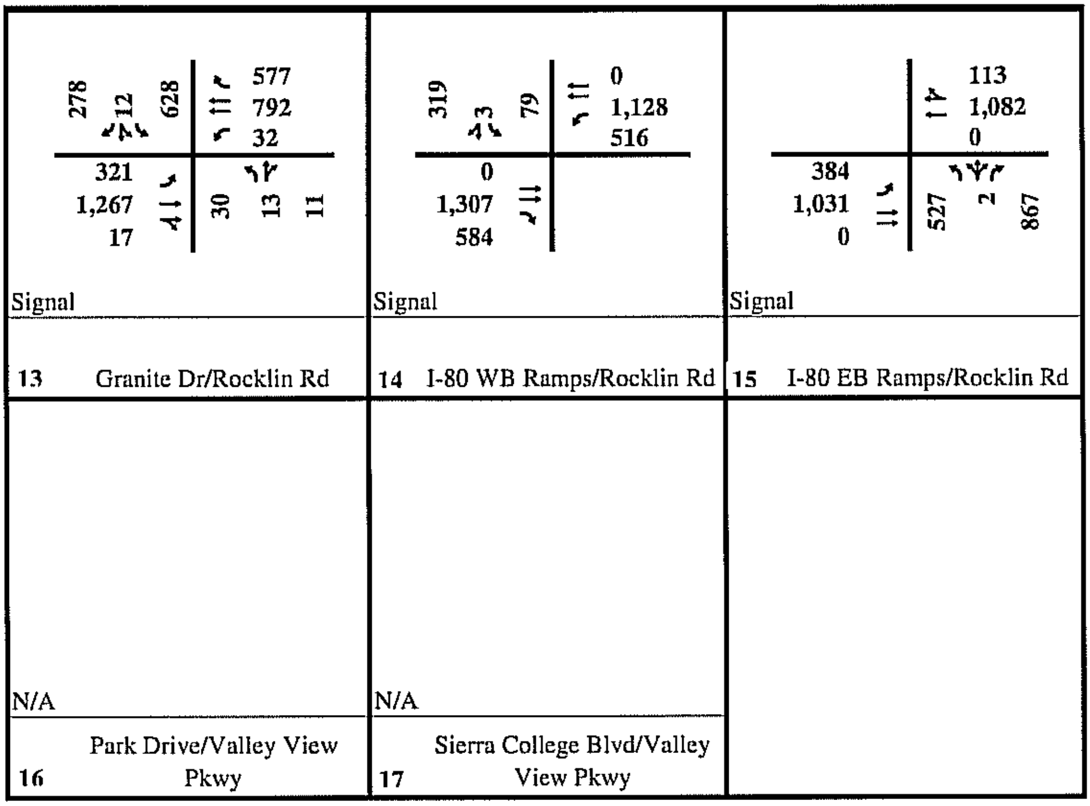
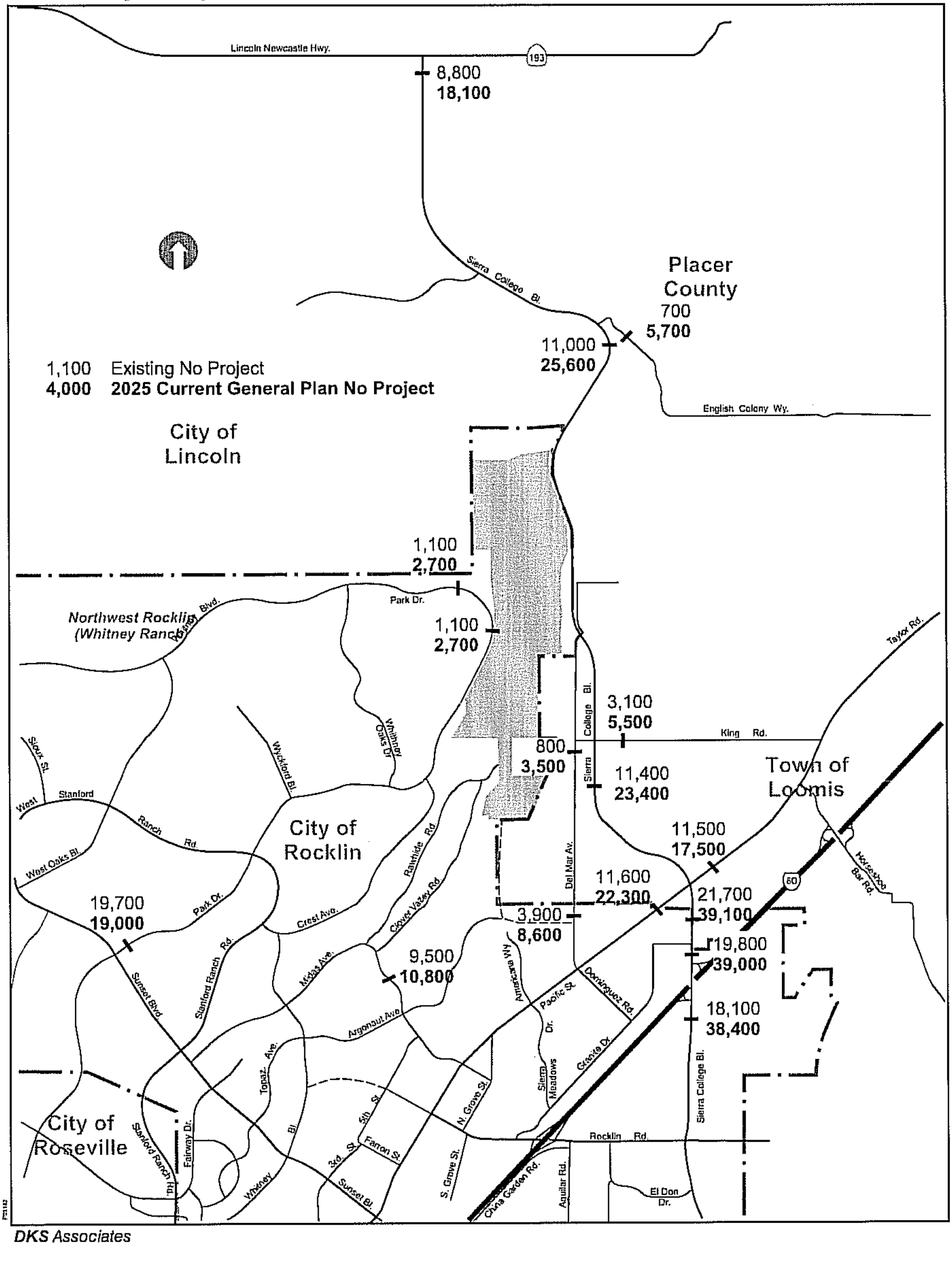


FIGURE 9
2025 No Project Daily Traffic Volumes



DKS Associates

FIGURE 10
2025 Current General Plan Plus Project PM Peak Hour Intersection Volumes

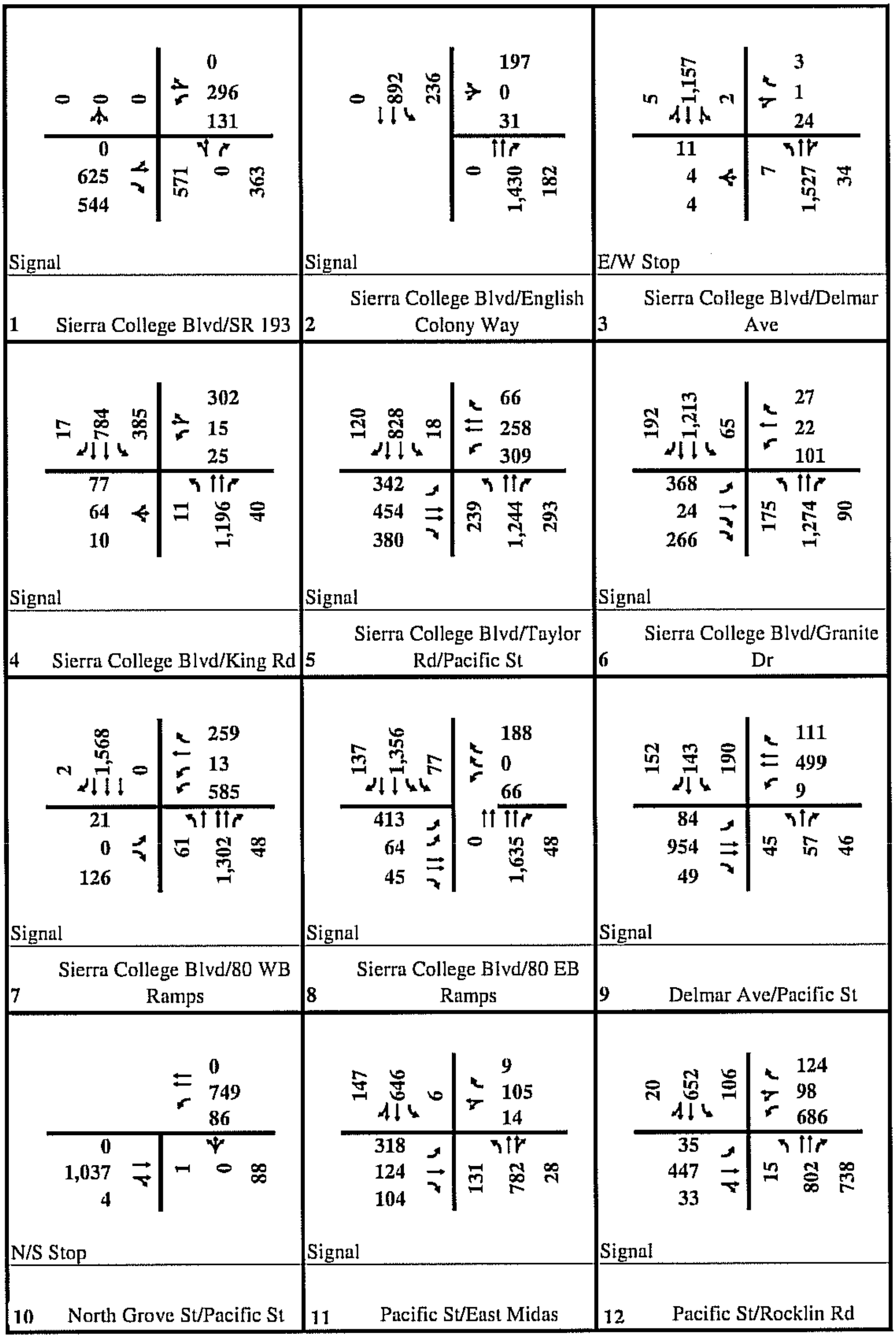


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FIGURE 10

2025 Current General Plan Plus Project PM Peak Hour Intersection Volumes

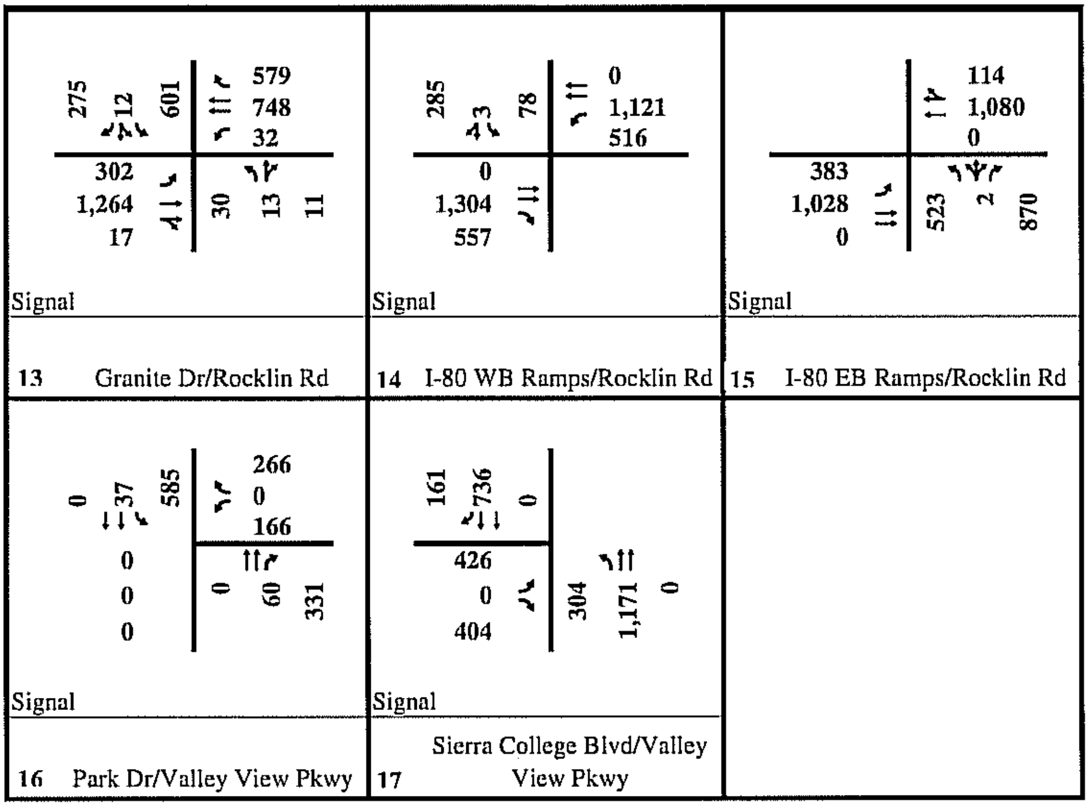
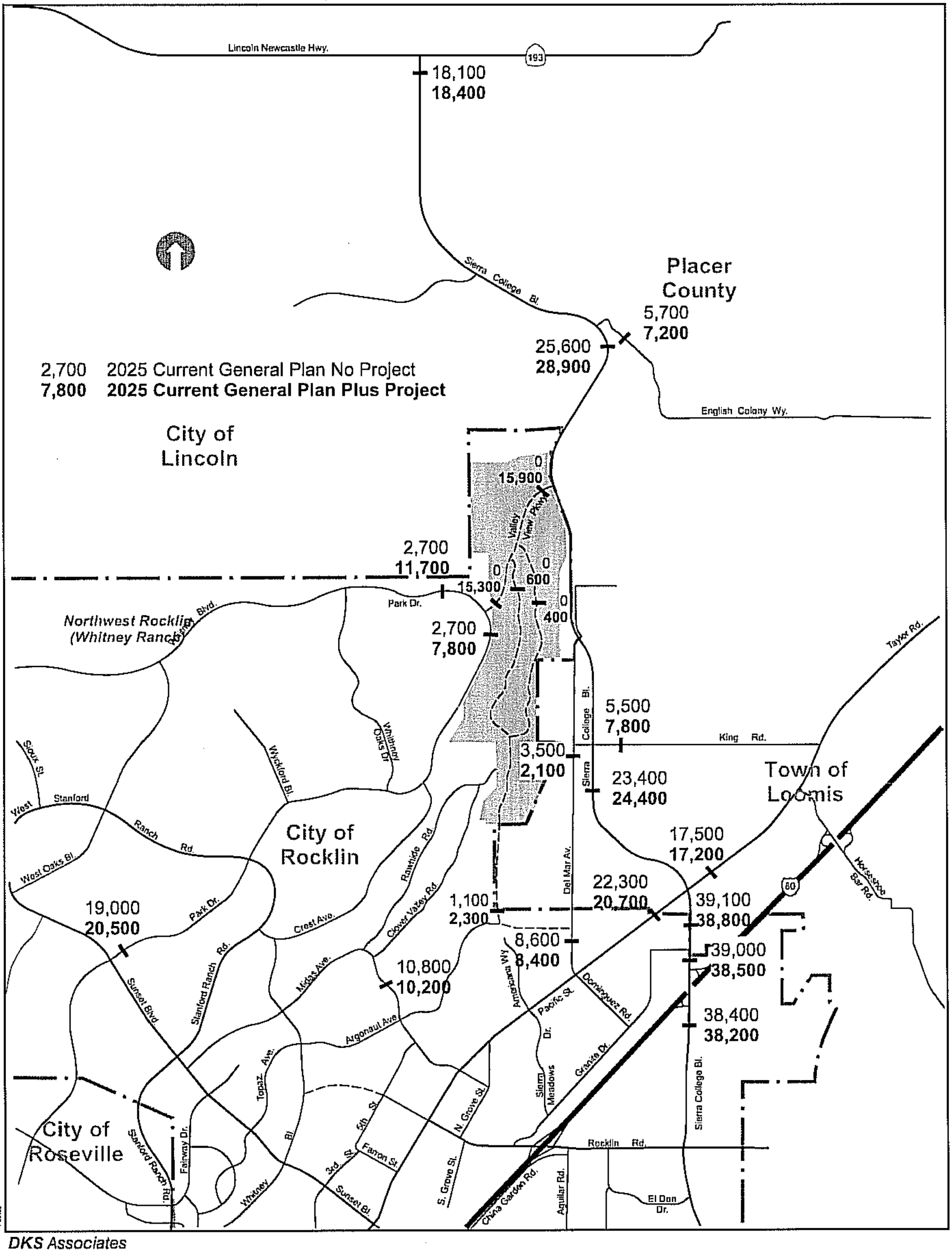


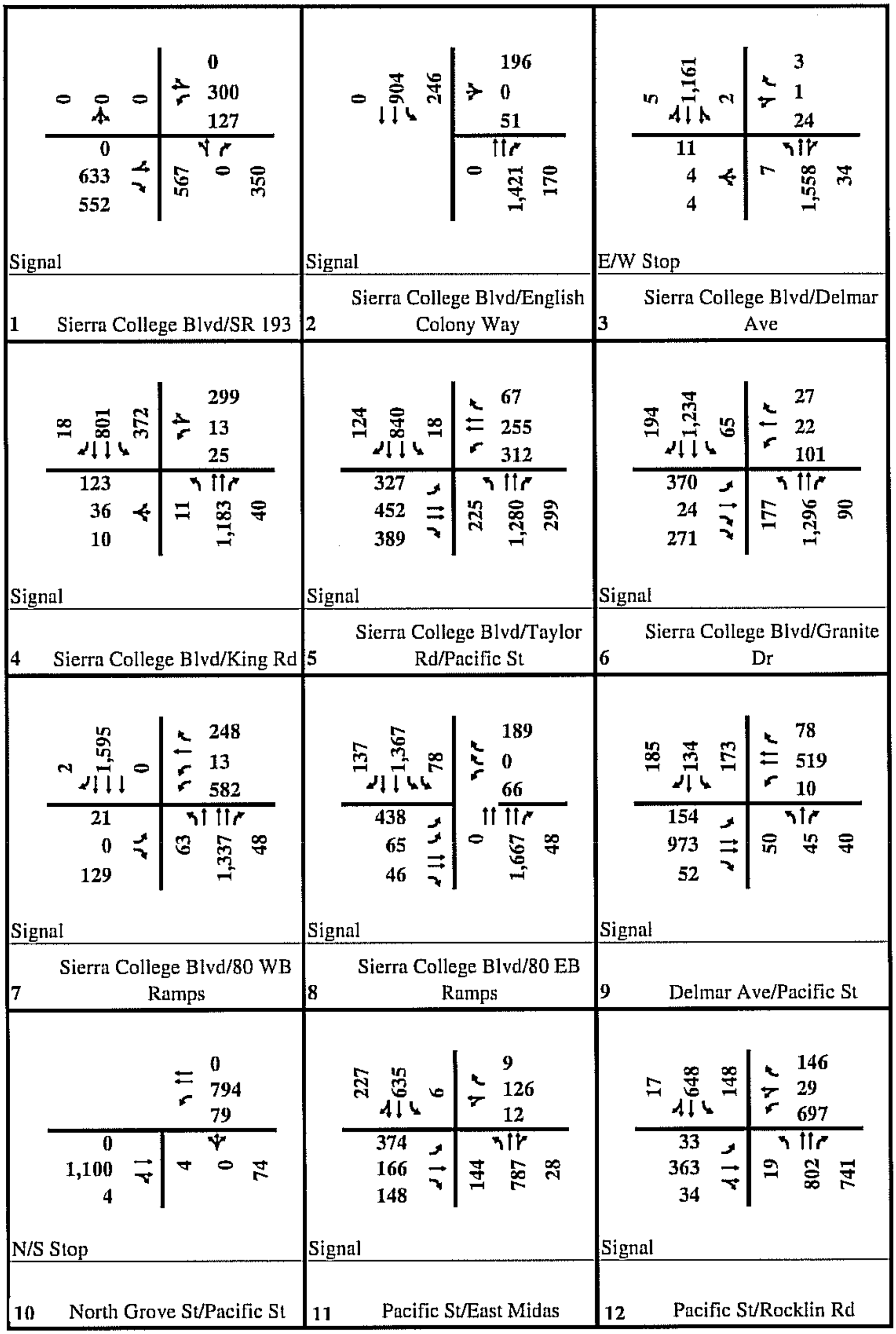
FIGURE 11
2025 Current General Plan Plus Project Daily Traffic Volumes



DKS Associates

FIGURE 12

2025 Proposed General Plan Plus Project PM Peak Hour Intersection Volumes



DKS Associates

FIGURE 12

2025 Proposed General Plan Plus Project PM Peak Hour Intersection Volumes

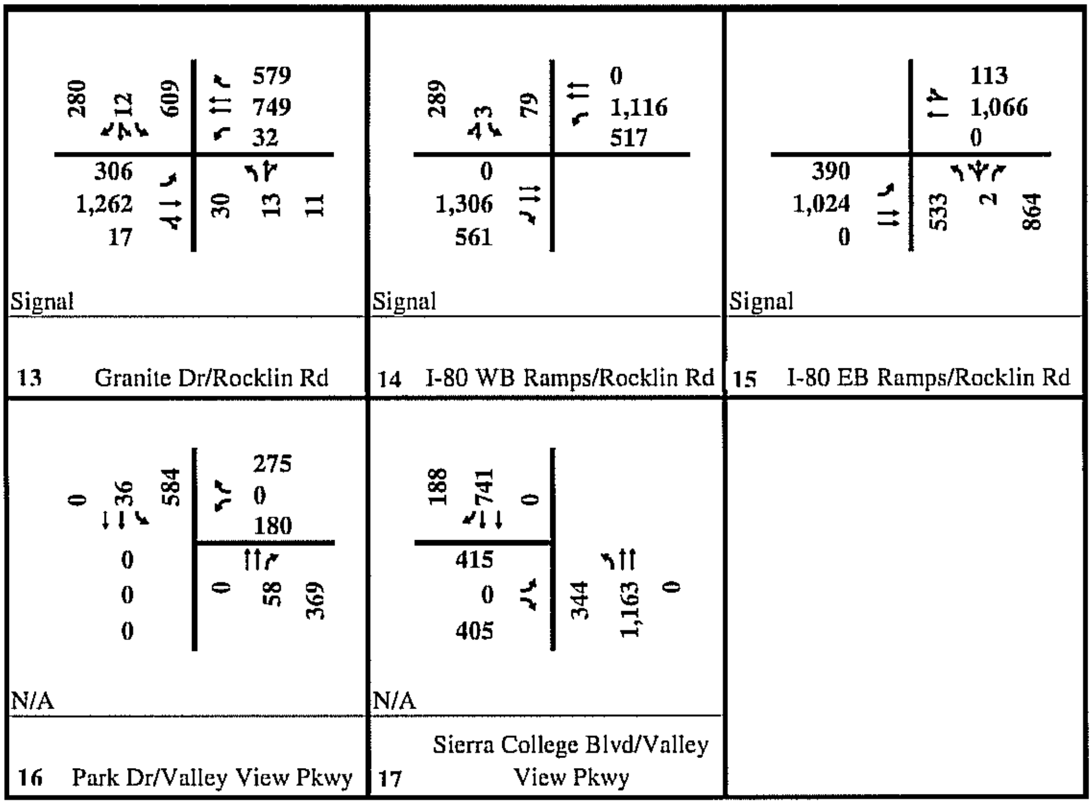
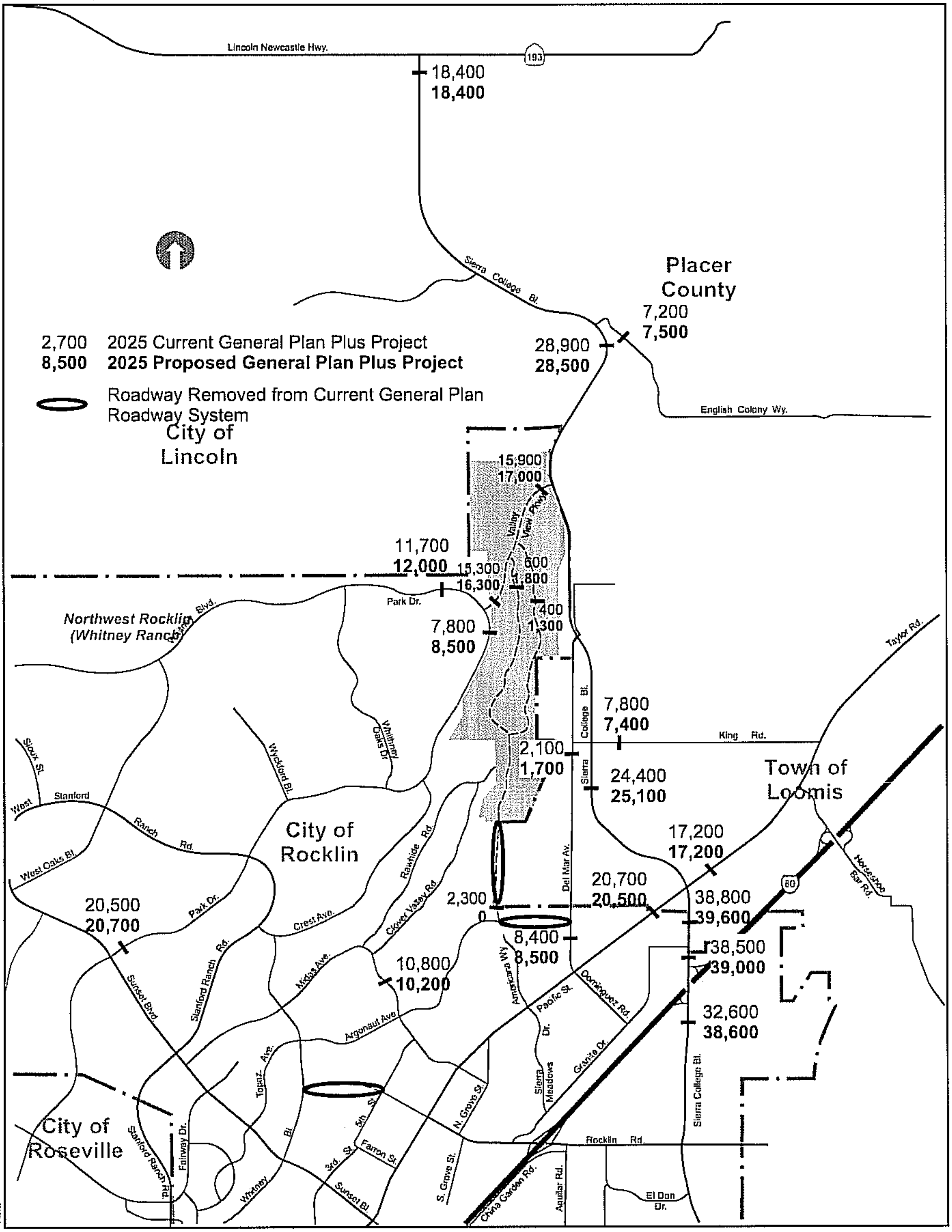


FIGURE 13
2025 Proposed General Plan Plus Project Daily Traffic Volumes



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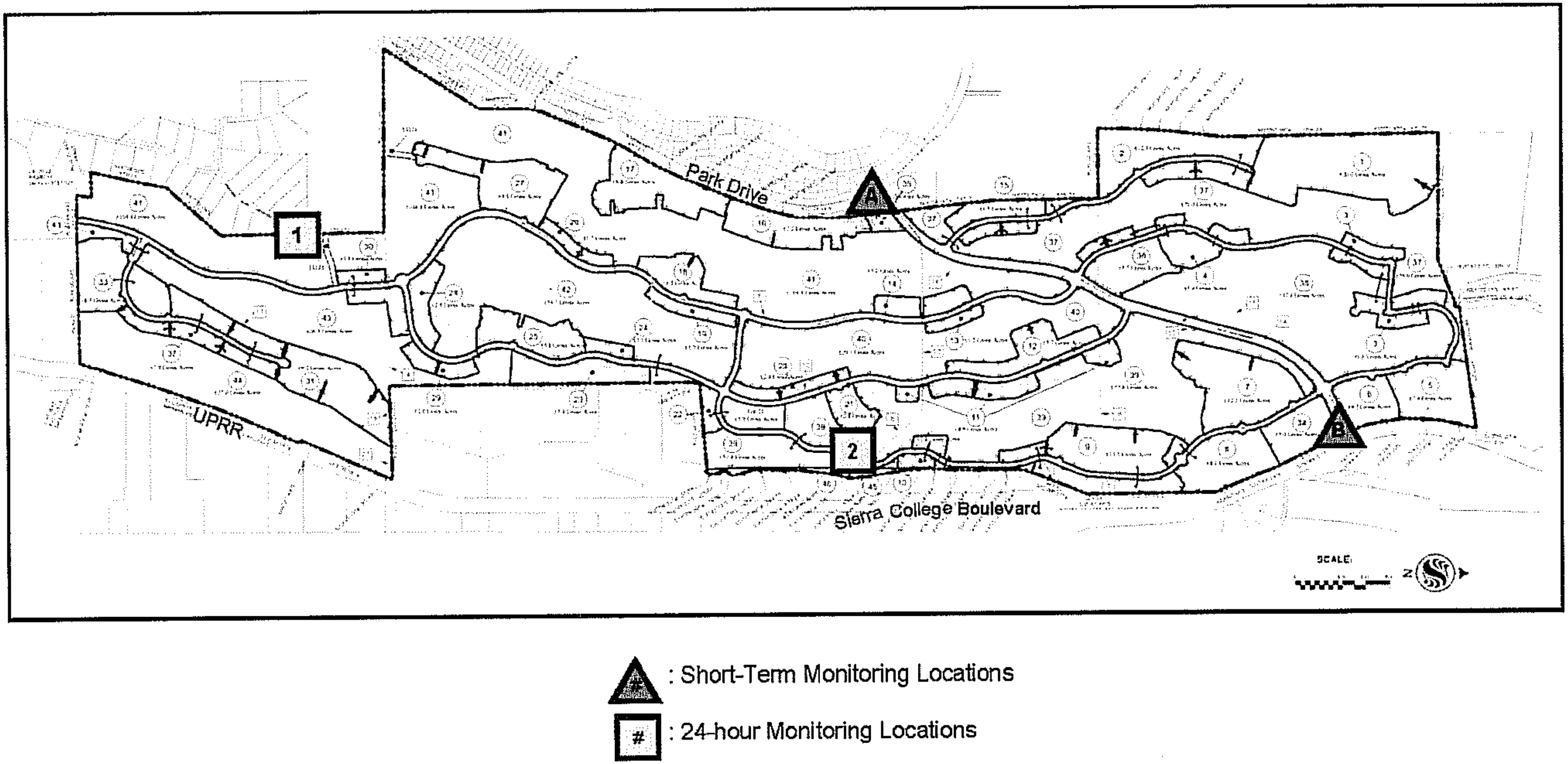
APPENDIX E



Park Drive
Sierra College Boulevard
UPRR
1
2
A
B
SCALE:
N
: Short-Term Monitoring Locations
#
: 24-hour Monitoring Locations

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Clover Lakes Operation.urb
Project Name: Clover Lakes Construction
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

					PM10	PM10	PM10
*** 2006 ***	ROG	NOx	CO	SO2	TOTAL	EXHAUST	DUST
TOTALS (lbs/day,unmitigated)	52.98	385.25	441.54	0.01	1,226.38	17.77	1,208.61
TOTALS (lbs/day, mitigated)	52.98	385.25	441.54	0.01	136.45	17.77	118.68
					PM10	PM10	PM10
*** 2007 ***	ROG	NOx	CO	SO2	TOTAL	EXHAUST	DUST
TOTALS (lbs/day,unmitigated)	50.50	367.41	387.59	0.00	16.71	16.33	0.38
TOTALS (lbs/day, mitigated)	50.50	367.41	387.59	0.00	16.71	16.33	0.38
					PM10	PM10	PM10
*** 2008 ***	ROG	NOx	CO	SO2	TOTAL	EXHAUST	DUST
TOTALS (lbs/day,unmitigated)	50.30	349.56	398.31	0.00	15.27	14.89	0.38
TOTALS (lbs/day, mitigated)	50.30	349.56	398.31	0.00	15.27	14.89	0.38
					PM10	PM10	PM10
*** 2009 ***	ROG	NOx	CO	SO2	TOTAL	EXHAUST	DUST
TOTALS (lbs/day,unmitigated)	50.08	331.22	409.37	0.00	14.31	13.93	0.38
TOTALS (lbs/day, mitigated)	50.08	331.22	409.37	0.00	14.31	13.93	0.38
					PM10	PM10	PM10
*** 2010 ***	ROG	NOx	CO	SO2	TOTAL	EXHAUST	DUST
TOTALS (lbs/day,unmitigated)	49.89	313.37	420.07	0.00	12.87	12.49	0.38
TOTALS (lbs/day, mitigated)	49.89	313.37	420.07	0.00	12.87	12.49	0.38
					PM10	PM10	PM10
*** 2011 ***	ROG	NOx	CO	SO2	TOTAL	EXHAUST	DUST
TOTALS (lbs/day,unmitigated)	68.61	416.14	568.17	0.01	15.71	15.31	0.40
TOTALS (lbs/day, mitigated)	68.61	416.14	568.17	0.01	15.71	15.31	0.40

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Clover Lakes Operation.urb
Project Name: Clover Lakes Construction
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

Construction Start Month and Year: June, 2006
Construction Duration: 60
Total Land Use Area to be Developed: 309.9 acres
Maximum Acreage Disturbed Per Day: 77.47 acres
Single Family Units: 558 Multi-Family Units: 0
Retail/Office/Institutional/Industrial Square Footage: 54450

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2006***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	1,208.58	-	1,208.58
Off-Road Diesel	52.46	346.96	430.48	-	14.87	14.87	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.52	0.62	11.06	0.01	0.05	0.02	0.03
Maximum lbs/day	52.98	347.58	441.54	0.01	1,223.50	14.89	1,208.61
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	47.95	383.60	341.41	-	17.74	17.74	0.00
Bldg Const Worker Trips	2.74	1.65	34.86	0.00	0.41	0.03	0.38
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	50.69	385.25	376.26	0.00	18.15	17.77	0.38
Max lbs/day all phases	52.98	385.25	441.54	0.01	1,226.38	17.77	1,208.61
*** 2007***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	47.95	365.86	354.83	-	16.30	16.30	0.00
Bldg Const Worker Trips	2.55	1.55	32.76	0.00	0.41	0.03	0.38
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	50.50	367.41	387.59	0.00	16.71	16.33	0.38

Max lbs/day all phases	50.50	367.41	387.59	0.00	16.71	16.33	0.38

*** 2008***

Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	47.95	348.12	367.78	-	14.86	14.86	0.00
Bldg Const Worker Trips	2.35	1.44	30.54	0.00	0.41	0.03	0.38
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	50.30	349.56	398.31	0.00	15.27	14.89	0.38
Max lbs/day all phases	50.30	349.56	398.31	0.00	15.27	14.89	0.38
*** 2009***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	47.95	329.90	381.20	-	13.91	13.91	0.00
Bldg Const Worker Trips	2.13	1.33	28.16	0.00	0.41	0.03	0.38
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	50.08	331.22	409.37	0.00	14.31	13.93	0.38
Max lbs/day all phases	50.08	331.22	409.37	0.00	14.31	13.93	0.38
*** 2010***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	47.95	312.16	394.15	-	12.47	12.47	0.00

Bldg Const Worker Trips	1.94	1.21	25.92	0.00	0.41	0.03	0.38
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-

Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	49.89	313.37	420.07	0.00	12.87	12.49	0.38
Max lbs/day all phases	49.89	313.37	420.07	0.00	12.87	12.49	0.38

*** 2011***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	47.95	312.16	394.15	-	12.47	12.47	0.00
Bldg Const Worker Trips	1.94	1.21	25.92	0.00	0.41	0.03	0.38
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	1.26	-	-	-	-	-	-
Asphalt Off-Road Diesel	17.22	99.87	146.35	-	2.75	2.75	0.00
Asphalt On-Road Diesel	0.15	2.85	0.57	0.01	0.06	0.06	0.00
Asphalt Worker Trips	0.09	0.05	1.17	0.00	0.02	0.00	0.02
Maximum lbs/day	68.61	416.14	568.17	0.01	15.71	15.31	0.40
Max lbs/day all phases	68.61	416.14	568.17	0.01	15.71	15.31	0.40

Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Jun '06
Phase 2 Duration: 6.6 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
8	Crawler Tractors	143	0.575	8.0
8	Graders	174	0.575	8.0
8	Off Highway Trucks	417	0.490	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Dec '06
Phase 3 Duration: 53.4 months
Start Month/Year for SubPhase Building: Dec '06
SubPhase Building Duration: 53.4 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
23	Other Equipment	190	0.620	8.0

SubPhase Architectural Coatings Turned OFF
Start Month/Year for SubPhase Asphalt: Mar '11
SubPhase Asphalt Duration: 2.7 months
Acres to be Paved: 28.5
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
8	Pavers	132	0.590	8.0
8	Rollers	114	0.430	8.0

Changes made to the default values for Land Use Trip Percentages

The Trip Rate and/or Acreage values for Single family housing
have changed from the defaults 9.57/186. to 9.0/186.

Changes made to the default values for Construction

Site Grading Fugitive Dust Option changed from Level 1 to Level 2
Phase 2 mitigation measure Soil Disturbance: Apply soil stabilizers to inactive areas
has been changed from off to on.
Phase 2 mitigation measure Soil Disturbance: Replace ground cover in disturbed areas quickly
has been changed from off to on.
Phase 2 mitigation measure Soil Disturbance: Water exposed surfaces - 3x daily
has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Water all haul roads 3x daily
has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
has been changed from off to on.

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Clover Lakes Operation.urb
Project Name: Clover Lakes
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	50.98	7.63	25.23	0.25	0.10

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	43.08	48.56	492.10	0.34	57.58

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	94.05	56.20	517.34	0.59	57.68

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Clover Lakes Operation.urb
Project Name: Clover Lakes
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Winter)

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	364.38	18.48	582.72	1.38	86.37

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	45.87	72.88	560.64	0.33	57.58

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	410.25	91.37	1,143.35	1.71	143.95

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Clover Lakes Operation.urb
Project Name: Clover Lakes
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Winter)

AREA SOURCE EMISSION ESTIMATES (Winter Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.58	7.52	3.42	0	0.01
Hearth	316.74	10.96	579.30	1.38	86.35
Landscaping - No winter emissions					
Consumer Prdcts	27.30	-	-	-	-
Architectural Coatings	19.77	-	-	-	-
TOTALS(lbs/day,unmitigated)	364.38	18.48	582.72	1.38	86.37

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Single family housing	35.05	55.91	430.10	0.26	44.38
Commercial	10.82	16.98	130.54	0.08	13.20
TOTAL EMISSIONS (lbs/day)	45.87	72.88	560.64	0.33	57.58

Does not include correction for passby trips.
Includes the following double counting adjustment for internal trips:
Residential trips: 0.00 % reduction. Nonresidential trips: 0.00 % reduction.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2010 Temperature (F): 40 Season: Winter

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
Single family housing	186.00	9.00 trips/dwelling unit	558.00	5,022.00
Commercial		35.00 trips/1000 sq. ft.	54.45	1,905.75
			Sum of Total Trips	6,927.75
			Total Vehicle Miles Traveled	37,943.25

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.70	1.10	98.70	0.20
Light Truck < 3,750 lbs	15.20	2.00	96.00	2.00
Light Truck 3,751- 5,750	16.20	1.20	98.10	0.70
Med Truck 5,751- 8,500	7.30	1.40	95.90	2.70
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.60	68.80	31.20	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.40	7.10	85.70	7.20

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	9.7	3.8	4.6	7.8	4.5	4.5
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	27.3	21.2	51.5			
% of Trips - Commercial (by land use)						
Commercial				2.0	1.0	97.0

Changes made to the default values for Land Use Trip Percentages

The Trip Rate and/or Acreage values for Single family housing

have changed from the defaults 9.57/186. to 9.0/186.

Changes made to the default values for Area

Changes made to the default values for Operations

The double counting option switch changed from off to on.
The operational emission year changed from 2005 to 2010.

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Clover Lakes Operation.urb
Project Name: Clover Lakes
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

AREA SOURCE EMISSION ESTIMATES (Summer Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.58	7.52	3.42	0	0.01
Hearth - No summer emissions					
Landscaping	3.33	0.12	21.82	0.25	0.09
Consumer Prdcts	27.30	-	-	-	-
Architectural Coatings	19.77	-	-	-	-
TOTALS(lbs/day,unmitigated)	50.98	7.63	25.23	0.25	0.10

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Single family housing	34.20	37.20	382.72	0.26	44.38
Commercial	8.87	11.36	109.38	0.08	13.20
TOTAL EMISSIONS (lbs/day)	43.08	48.56	492.10	0.34	57.58

Does not include correction for passby trips.
Includes the following double counting adjustment for internal trips:
Residential trips: 0.00 % reduction. Nonresidential trips: 0.00 % reduction.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2010 Temperature (F): 85 Season: Summer

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
Single family housing	186.00	9.00 trips/dwelling unit	558.00	5,022.00
Commercial		35.00 trips/1000 sq. ft.	54.45	1,905.75
		Sum of Total Trips		6,927.75
		Total Vehicle Miles Traveled		37,943.25

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.70	1.10	98.70	0.20
Light Truck < 3,750 lbs	15.20	2.00	96.00	2.00
Light Truck 3,751- 5,750	16.20	1.20	98.10	0.70
Med Truck 5,751- 8,500	7.30	1.40	95.90	2.70
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.60	68.80	31.20	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.40	7.10	85.70	7.20

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	9.7	3.8	4.6	7.8	4.5	4.5
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	27.3	21.2	51.5			
% of Trips - Commercial (by land use)						
Commercial				2.0	1.0	97.0

Changes made to the default values for Land Use Trip Percentages

The Trip Rate and/or Acreage values for Single family housing
have changed from the defaults 9.57/186. to 9.0/186.

Changes made to the default values for Area

Changes made to the default values for Operations

The double counting option switch changed from off to on.
The operational emission year changed from 2005 to 2010.

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Clover Lakes Operation.urb
Project Name: Clover Lakes Operation-No Wood Burning
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	50.98	7.63	25.23	0.25	0.10

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	43.08	48.56	492.10	0.34	57.58

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	94.05	56.20	517.34	0.59	57.68

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Clover Lakes Operation.urb
Project Name: Clover Lakes Operation-No Wood Burning
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Winter)

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	47.91	12.15	5.39	0.03	0.39

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	45.87	72.88	560.64	0.33	57.58

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	93.79	85.03	566.02	0.36	57.97

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Clover Lakes Operation.urb
Project Name: Clover Lakes Operation-No Wood Burning
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Winter)

AREA SOURCE EMISSION ESTIMATES (Winter Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.58	7.52	3.42	0	0.01
Hearth	0.27	4.63	1.97	0.03	0.37
Landscaping - No winter emissions					
Consumer Prdcts	27.30	-	-	-	-
Architectural Coatings	19.77	-	-	-	-
TOTALS(lbs/day,unmitigated)	47.91	12.15	5.39	0.03	0.39

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Single family housing	35.05	55.91	430.10	0.26	44.38
Commercial	10.82	16.98	130.54	0.08	13.20
TOTAL EMISSIONS (lbs/day)	45.87	72.88	560.64	0.33	57.58

Does not include correction for passby trips.
Includes the following double counting adjustment for internal trips:
Residential trips: 0.00 % reduction. Nonresidential trips: 0.00 % reduction.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2010 Temperature (F): 40 Season: Winter

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
Single family housing	186.00	9.00 trips/dwelling unit	558.00	5,022.00
Commercial		35.00 trips/1000 sq. ft.	54.45	1,905.75

Sum of Total Trips 6,927.75
Total Vehicle Miles Traveled 37,943.25

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.70	1.10	98.70	0.20
Light Truck < 3,750 lbs	15.20	2.00	96.00	2.00
Light Truck 3,751- 5,750	16.20	1.20	98.10	0.70
Med Truck 5,751- 8,500	7.30	1.40	95.90	2.70
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.60	68.80	31.20	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.40	7.10	85.70	7.20

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	9.7	3.8	4.6	7.8	4.5	4.5
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	27.3	21.2	51.5			
% of Trips - Commercial (by land use)						
Commercial				2.0	1.0	97.0

Changes made to the default values for Land Use Trip Percentages

The Trip Rate and/or Acreage values for Single family housing
have changed from the defaults 9.57/186. to 9.0/186.

Changes made to the default values for Area

The wood stove percentage changed from 35 to .
The wood fireplace percentage changed from 10 to .
The natural gas fireplace percentage changed from 55 to 100.

Changes made to the default values for Operations

The double counting option switch changed from off to on.
The operational emission year changed from 2005 to 2010.

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Clover Lakes Operation.urb
Project Name: Clover Lakes Operation-No Wood Burning
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

AREA SOURCE EMISSION ESTIMATES (Summer Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.58	7.52	3.42	0	0.01
Hearth - No summer emissions					
Landscaping	3.33	0.12	21.82	0.25	0.09
Consumer Prdcts	27.30	-	-	-	-
Architectural Coatings	19.77	-	-	-	-
TOTALS(lbs/day,unmitigated)	50.98	7.63	25.23	0.25	0.10

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Single family housing	34.20	37.20	382.72	0.26	44.38
Commercial	8.87	11.36	109.38	0.08	13.20
TOTAL EMISSIONS (lbs/day)	43.08	48.56	492.10	0.34	57.58

Does not include correction for passby trips.
Includes the following double counting adjustment for internal trips:
Residential trips: 0.00 % reduction. Nonresidential trips: 0.00 % reduction.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2010 Temperature (F): 85 Season: Summer

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
Single family housing	186.00	9.00 trips/dwelling unit	558.00	5,022.00
Commercial		35.00 trips/1000 sq. ft.	54.45	1,905.75
		Sum of Total Trips		6,927.75
		Total Vehicle Miles Traveled		37,943.25

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.70	1.10	98.70	0.20
Light Truck < 3,750 lbs	15.20	2.00	96.00	2.00
Light Truck 3,751- 5,750	16.20	1.20	98.10	0.70
Med Truck 5,751- 8,500	7.30	1.40	95.90	2.70
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.60	68.80	31.20	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.40	7.10	85.70	7.20

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	9.7	3.8	4.6	7.8	4.5	4.5
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	27.3	21.2	51.5			
% of Trips - Commercial (by land use)						
Commercial				2.0	1.0	97.0

Changes made to the default values for Land Use Trip Percentages

The Trip Rate and/or Acreage values for Single family housing
have changed from the defaults 9.57/186. to 9.0/186.

Changes made to the default values for Area

The wood stove percentage changed from 35 to .
The wood fireplace percentage changed from 10 to .
The natural gas fireplace percentage changed from 55 to 100.

Changes made to the default values for Operations

The double counting option switch changed from off to on.
The operational emission year changed from 2005 to 2010.

APPENDIX F

4.5 NOISE

INTRODUCTION

This section provides an assessment of the existing noise environment, as well as impacts and related mitigation measures for the Clover Valley Lakes Project (Project). Information for this section was drawn from ambient noise measurements and application of accepted noise prediction algorithms conducted by Bollard Acoustical Consultants, Inc.

ENVIRONMENTAL SETTING

Acoustical Terminology

Appendix A of this Section provides a description of the acoustical terminology used in this report. Unless otherwise stated, all sound levels reported are in A-weighted decibels (dB). A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards utilize A-weighting, as it provides a high degree of correlation with human annoyance and health effects.

PROJECT LOCATION

The proposed project is located in the northeast corner of the City of Rocklin, along the west side of Sierra College Boulevard and Union Pacific Railroad tracks, two miles north of Interstate 80, and three miles south of State Route 193. Surrounding lands to the south within the City limits of Rocklin include the Summit Property and Clover Valley Woods. Rocklin's Whitney Oaks residential subdivision is located to the west. (See Figure 4.5-1, Project Location Map).

Existing Noise Environment in the Project Vicinity

The project area is mostly isolated from major noise sources due to mainly to shielding of the valley by hills in all directions. As a result, existing ambient noise conditions within the project confines are subjectively considered to be fairly low. At the northeastern portion of the project area, noise from Sierra College Boulevard defines the ambient conditions, but that roadway mostly shielded from view by intervening topography. Railroad operations on the Union Pacific Railroad tracks near the eastern site boundary are audible within the valley area where residences are proposed, but railroad noise is considerably attenuated at those locations by the intervening hills.

To generally quantify ambient noise levels on the project site, continuous and short-term noise measurements were conducted December 8, 2005 at locations identified on Figure 4.5-1. The detailed results of the continuous noise surveys are provided in tabular and graphical form in Appendices B & C. Those data indicate that existing ambient noise levels at the continuous monitoring locations ranged from 46-48 dB Ldn. Noise levels in this range are considered very low.

At the short term ambient noise measurement locations, measured daytime average noise levels ranged from 46 dB Leq near the water treatment facility to 54 dB Leq at the location closest to Sierra College Boulevard. As with the continuous measurement results, these ambient noise levels are considered to be low, and this noise environment is well within acceptable limits for new residential development.

Existing traffic noise levels adjacent to existing roadways in the project vicinity were calculated using the FHWA Highway Traffic Noise Prediction Model. This is the standard methodology that is used to calculate both existing and predicted future traffic noise levels. Input data for the model included traffic conditions (volumes, speed, truck proportions and day/night proportions) and distance to receptor. Table 4.5-1 shows traffic noise levels at 100 feet from road centerlines and the distance to the 60 and 65 dB L_{dn} contours from road centerlines.

TABLE 4.5-1
EXISTING TRAFFIC NOISE LEVELS

Roadway	Segment Description	L_{dn} @ 100′	Distance (Ft.) to L_{dn} Contours	
			65 dB	60 dB
Sierra College Blvd.	Hwy 193 to English Colony Wy.	64.8	96	208
	English Colony Wy. To King Rd.	65.7	112	241
	King Rd. to Taylor Rd.	63.9	84	181
	Taylor Rd. to Granite Dr.	64.3	90	193
	Granite Dr. to Interstate 80	63.9	84	182
	South of Interstate 80	65.9	114	246
English Colony Wy.	East of Sierra College Blvd.	51.0	12	25
Park Dr.	North of Valley View Pkwy.	52.9	16	34
	South of Valley View Pkwy.	52.9	16	34
	East of Sunset Blvd.	65.5	108	232
King Rd.	East of Sierra College Blvd.	57.4	31	68
Del Mar Ave.	South of King Rd.	51.6	13	27
	North of Pacific St.	58.4	37	79
Pacific St./Taylor Rd.	West of Sierra Collge Blvd.	63.9	85	183
	East of Sierra College Blvd.	63.9	84	182

Source: Bollard Acoustical Consulatnts , Inc.

Railroad activities on the eastbound Union Pacific Railroad (UPRR) tracks which border a portion of the eastern project property line generate audible noise levels within the Clover Valley Estates project area. The distance to the 60 dB Ldn railroad noise contour is identified in the City of Rocklin General Plan Noise Element as being approximately 250 feet from the tracks in areas where warning horns are not used. This level is consistent with Bollard Acoustical railroad noise level data collected on these tracks in recent years. Because there are no at grade crossings in the immediate project area, warning horns are not typically utilized in this area. Because the railroad tracks are considerably depressed in elevation relative to the proposed residential lots within the project confines, and substantially shielded from view by intervening topography, and because the nearest proposed residential property lines to the railroad tracks are over 350 feet away at the southern portion of the site, railroad noise levels at those proposed residential areas are predicted to be well below 60 dB Ldn.

Proposed residential lots 210 through 214 would be located closer to the railroad tracks, with property lines ranging between 130 and 230 feet from the tracks. The railroad tracks are depressed approximately 80 feet relative to these lots, and the cut of the ridgeline would provide additional shielding of railroad noise at these locations. Given this distance and shielding by intervening topography (as well as a reduction in railroad noise exposure due to the tunnel, railroad noise levels at these lots are predicted to be approximately 60 dB Ldn.

Figure 4.5-1

REGULATORY CONTEXT

To limit population exposure to physically and/or psychologically damaging noise levels, the State of California, various county governments, and most municipalities in the State have established standards and ordinances to control noise. The General Plan Noise Element and CEQA provide standards regarding noise levels for uses relevant to the proposed project. The following provides a general overview of the existing regulations established by the City and CEQA.

State Regulations

The California Environmental Quality Act (CEQA) Guidelines in Appendix G, indicates that a significant noise impact may occur if a project exposes persons to noise levels in excess of local general plans or noise ordinance standards, or cause a substantial permanent or temporary increase in ambient noise levels.

Local Regulations

City of Rocklin General Plan

The following are applicable goals and policies from the City of Rocklin General Plan related to noise associated with this project:

Goal 1 — To protect Rocklin residents from the harmful and annoying effects of exposure to excessive noise.

Goal 5: — To prevent noise-sensitive land uses from being adversely affected by transportation noise sources.

Note: For the purposes of the Noise Element, transportation noise sources are defined as traffic on public roadways and railroad line operations.

Policy N-7 — To restrict development of noise-sensitive land uses in areas exposed to existing or projected levels of noise from transportation noise sources that exceed the noise level standards contained within the Noise Element, unless the project design includes effective mitigation that results in noise exposure which meets standards.

Policy N-8 — To mitigate noise created by new roadway noise sources (e.g., truck routes, roadway improvement projects and new roadways) not contained within the General Plan, so as not exceed the noise level standards of the Noise Element.

Policy N-9 To provide an analysis for noise impacts to existing noise-sensitive uses that may be exposed to increased noise levels due to required General Plan roadways and roadway improvement projects. The following criteria may be used as a test of significance for roadway improvement projects and new roadways contained within the General Plan:

- Where existing traffic noise levels are less than 60 dB Ldn at the outdoor activity areas of noise-sensitive uses, a + 5 dB Ldn increase in noise levels due to roadway improvement projects will be considered significant ;and

- Where existing traffic noise levels range between 60 and 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +3 dB Ldn increase in noise levels due to roadway improvement projects will be considered significant; and

- Where existing traffic noise levels are greater are greater than 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a + 1.5. dB Ldn increase in noise levels due to roadway improvement projects will be considered significant.

N-10 To apply the noise level design criteria contained within Table 4-14 of the Noise Element to Policies N-7 and N-8 of the Noise Element.

TABLE 4.5-2
MAXIMUM ALLOWABLE NOISE EXPOSURE
Transportation Noise Sources

Land Use	Outdoor Activity Areas[1] L_{dn} /CNEL, dB	Interior Spaces	
		L_{dn} /CNEL, dB	L_{eq}, dB[2]
Residential	60[3]	45	--
Transient Lodging	60[3]	45	--
Hospitals, Nursing Homes	60[3]	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Non-Commercial Places of Public Assembly	60[3]	--	40
Office Buildings	--	--	45
Schools, Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

1. The outdoor activity area is generally considered to be the location where individuals may generally congregate for relaxation, or where individuals may require adequate speech intelligibility. Such places may include patios of residences, picnic facilities, or instructional areas.

   Where it is not practical to mitigate exterior noise levels at patio or balconies of apartment complexes, a common area such as a pool or recreation area may be designed as the outdoor

   At the discretion of the City, where no outdoor activity areas are provided or known, only the Interior noise level criteria can be applied to the project.

2. As determined for a typical worst-case hour during periods of use

3. Where it is not possible to reduce noise in the outdoor activity area to 60 dB Ldn/CNEL or less using a practical application of the best-available noise reductions measures, an exterior noise level of up to 65 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Source: Rocklin Noise Element, 1996

City of Rocklin Noise Ordinance

The City of Rocklin has adopted a Noise Ordinance to regulate loud, unnecessary and disturbing noises within the City, on the basis of commonly known noise sources. The Noise Ordinance does not contain specific noise standards. Instead, it primarily limits the hours and conditions under which the above listed activities can occur, as well as those activities, which are prohibited.

IMPACTS AND MITIGATION MEASURES

Method of Analysis

The project proposes 33 large residential lots ranging in size from 1.1 to 20 acres. In addition, a 5.3 acre parcel is designated for a neighborhood park, a 5 acre parcel is designated for neighborhood commercial uses, and a fire station site is identified on a one-acre parcel. Noise impacts due to and upon the development of these uses are evaluated based on noise level measurements conducted by BAC and others for similar uses. Traffic noise levels are based on the FHWA Highway Traffic Noise Prediction Model and traffic data prepared by the project traffic engineer. The FHWA Model, approved by the FHWA and Caltrans, is the standard methodology for predicting traffic noise levels.

Standards of Significance

Generally, a project may have a significant effect on the environment if it would substantially increase the ambient noise levels for adjoining areas or expose people to severe noise levels. In practice, more specific professional standards have been developed. These standards state that a noise impact may be considered significant if it would generate noise that would conflict with local planning criteria or ordinances, or substantially increase noise levels at noise-sensitive land uses.

Significance of Change in Ambient Noise Levels

Policy N-9 of the City's General Plan Noise Element is used to assess the significance of project-related traffic noise increases associated with roadway improvement projects. These standards mirror the recommendations made in August 1992 by the Federal Interagency Committee on Noise (FICON) to provide guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been asserted that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the L_{dn}. The rational for the Table 4.5-4 criteria is that, as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause significant annoyance.

TABLE 4.5-3 CUMULATIVE NOISE EXPOSURE LIMITS	
Ambient Noise Level Without Project (L_{dn})	**Increase Required for Significant Impact**
<60 dB	+5.0 dB or more
60-65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more
Source: Federal Interagency Committee on Noise (FICON)	

The City of Rocklin General Plan Noise Element has been used to establish impact standards for this section. For the purposed of this EIR, impacts are considered significant if implementation of the proposed project would:

- Fail to achieve consistency with applicable City of Rocklin General Plan Noise Element policies, Noise Ordinance policies, or other applicable State and/or Federal noise policies.
- Cause changes in ambient noise levels with increases of more than the levels shown in Table 4.5-3.

Project Impacts and Mitigation Measures

4.5-1 Increase in traffic noise levels at existing noise sensitive land uses.

Table 4.5-4 shows existing roadway noise levels, existing plus project noise levels, and the change in traffic noise levels along roadways attributable to the proposed project. The reference distance is 100 feet from road centerlines.

Table 4.5-4 indicates that the increase in traffic noise levels at existing noise sensitive land uses located along Park Drive, both north and south of Valley View Parkway will exceed 5 dB. According to Table 4.5-3, traffic noise level increases in excess of 5 dB may be considered significant. However, the City of Rocklin considers such increases significant if they cause the City's noise standards to be exceeded or if the City's noise standards are already exceeded. Because the residences located along Park Drive are shielded from that roadway by existing noise barriers, the predicted existing plus project traffic noise levels in the nearest backyards to that roadway will be approximately 5 dB lower than those shown by in Table 4.5-4. As a result, the existing plus project traffic noise levels would be less than the City's 60 dB ldn exterior noise level standard, so the project related increase would not be considered significant.

Mitigation Measures

None Required

TABLE 4.5-4
EXISTING & PROJECT TRAFFIC NOISE LEVELS, dB[1]
Day/Night Average Level (Ldn)

Roadway	Segment Description	Existing	Existing + Project	Change, dB
Sierra College Blvd.	Hwy 193 to English Colony Wy.	64.8	65.0	0.2
	English Colony Wy. To King Rd.	65.7	66.4	0.6
	King Rd. to Taylor Rd.	63.9	64.7	0.8
	Taylor Rd. to Granite Dr.	64.3	64.6	0.3
	Granite Dr. to Interstate 80	63.9	64.1	0.2
	South of Interstate 80	65.9	66.0	0.1
English Colony Wy.	East of Sierra College Blvd.	51.0	54.6	3.6
Park Dr.	North of Valley View Pkwy.	52.9	58.5	5.6
	South of Valley View Pkwy.	52.9	60.9	8.0
	East of Sunset Blvd.	65.5	65.5	0.0
King Rd.	East of Sierra College Blvd.	57.4	59.2	1.7
Del Mar Ave.	South of King Rd.	51.6	51.6	0.0
	North of Pacific St.	58.4	58.4	0.0
Pacific St./Taylor Rd.	West of Sierra Collge Blvd.	63.9	63.7	-0.2
	East of Sierra College Blvd.	63.9	63.8	-0.1
Valey View Parkway	Sierra College to Park Drive	N/A	60.0	N/A
Internal Roadways	Both major loop roadways	N/A	51	N/A

[1]Calculated at 100' from road centers.
The computed levels do not account for shielding of traffic noise by existing noise barriers or intervening topography, where present. Where such shielding exists, actual noise levels would be approximately 5 dB or more lower.
Source: Bollard Acoustical Consultants, Inc.

4.5-2 Impacts of existing plus project traffic noise at proposed residences within the Clover Valley Lakes Development.

The only roadways which currently abut the project area are Park Drive and Sierra College Boulevard. Following construction of the project, Valley View Parkway is anticipated to carry appreciable traffic volumes. Part of this traffic will be generated by project residences, and part will result from the connection between Sierra College Boulevard and the Whitney Oaks area. As a result, impacts associated with traffic on these three roadways are considered in this assessment.

As noted in Table 4.5-4, traffic noise from Park Drive will be approximately 61 dB Ldn south of Valley View Parkway, and 65 dB Ldn adjacent to Sierra College boulevard north and south of Valley View Parkway.

According to Table 4.5-4, traffic noise levels from Valey View Parkway and the major internal loop roadways are predicted to be 60 dB Ldn or less at a distance of 100 feet from the roadway centerlines.

At residences proposed adjacent to Park Drive and Sierra College Boulevard, 6-foot tall masonry noise walls have been proposed, as indicated on the project fencing plans. Given an existing plus project traffic noise exposure of 65 dB Ldn along Sierra College Boulevard, the proposed noise barriers would reduce outdoor activity area noise exposure to 60 dB Ldn or less at those locations. Given an existing plus project traffic noise exposure of 61 dB Ldn along Park Drive, the proposed noise barriers would reduce outdoor activity area noise exposure to approximately 56 dB Ldn or less at those locations.

Because existing plus project traffic noise levels are predicted to be 60 dB Ldn or less at the outdoor activity areas of the residences located adjacent to the major project vicinity roadways (with proposed noise barriers), this impact is considerd *Less than* ***significant.***

Mitigation Measures: None Required

4.5-3 Impacts of existing and future railroad noise on proposed residences within the development.

Due to the substantial setbacks and shielding of the UPRR tracks from view of the proposed residential lots by intervening topography, railroad noise levels are predicted to be well below the City of Rocklin 60 dB Ldn noise level standard applied to new residential uses affected by transportation noise sources. Specifically, railroad noise levels are predicted to range from 50-60 dB Ldn at the nearest proposed residential areas to the railroad tracks. As a result, this impact is considered **less-than-significant.**

Mitigation Measures: *None Required*

4.5-4 Impacts of noise generated by proposed neighborhood commercial use on proposed residences within the development.

A 5 acre parcel located at the corner of Sierra College Boulevard and Valley View Parkway (Lot 34) is proposed for neighborhood commercial uses as part of this development. Although the specific nature of the use(s) which will ultimately be developed on this property is not known at this time, noise associated with commercial activities (on-site circulation, truck deliveries, mechanical equipment, etc.) poses the potential for exceedance of the City's noise standards at nearby residential lots (Lots 6, 7 & 8). As a result, this impact is considered **potentially significant.**

Mitigation Measures

MM 4.5-4A *A site specific acoustical review of the proposed neighborhood commercial use(s) should be conducted when plans for the development of Lot 34 are submitted to ensure adequate noise attenuation features are included in the project design to mitigate potential impacts at nearby residential uses. It should be noted that the development of this commercial property will require discretionary entitlement from the City which will trigger further CEQA review.*

Significance After Mitigation: *Less Than Significant*

4.5-5 Impacts of noise generated by proposed fire station on existing residences to the west and proposed residences within the development.

A 1-acre parcel located on the south side of Valley View Parkway, just east of Park Drive (Lot 35), is proposed for a fire station. The most significant noise source associated with fire station uses is the use of emergency sirens on the station vehicles while responding to a call. Although noise generated by these sirens is exempt from the provisions of the City Noise Ordinance, and although emergency vehicle siren noise is a near everyday part of the acoustic environment in developed areas, the existing residences along Park Drive will be exposed to higher frequency of exposure to siren noise than they are currently. Because this higher frequency of siren exposure could result in annoyance at these residences, **this impact is considered potentially significant.**

Mitigation Measures
Mitigation measures are not available to reduce the magnitude of the above impact to a less-than-significant level, as relocation of the fire station to another location within the project area would not reduce the frequency of exposure to the Park Drive (and beyond) residences during emergency responses. Therefore, the impact would be *significant and unavoidable.*

4.5-6 Project construction noise impacts.

Construction activities that could generate potentially significant noise levels include use of engine-powered equipment, power tools, impact sounds and vehicles. Project construction is not expected to require the use of exceptionally annoying equipment such as pile drivers, or blasting. Therefore, the concern for construction noise effects is primarily related to the use of powered equipment.

All construction activities must adhere to the City's Construction Noise Guidelines, which limits hours of operation for construction activities. While adherence to the Construction Noise Guidelines would not ensure that ambient noise levels would not increase substantially, it would ensure that construction activities would not occur during the most-noise sensitive periods of the day. Therefore, the noise levels generated by typical project construction would have a ***less-than-significant*** impact. If, however, blasting is required at the project site as part of project construction, such activities could result in significant adverse noise impacts at existing residences. As a result, this impact is considered potentially significant.

Mitigation Measures

MM 4.5-6A *If blasting activities are to occur as part of project construction, a blasting plan should be submitted to the City which details the steps to be taken to minimize the intrusion from such activities at nearby existing residences. Such a plan could include such measures as always blasting during the same time of day and same day of the week, with public notification of blasting days and times, minimizing shot sizing, utilizing delays, etc.*

Significance After Mitigation: *Less Than Significant*

4.5-7 Impacts of noise generated by proposed neighborhood park on proposed residences within the development.

A 5.3 acre parcel located an the north side of Valley View Parkway (Lot 36) is proposed for a neighborhood park. Although the specific plans for this park have not yet been developed, active recreation aspects of park uses (climbing structures, basketball courts, soccer fields, baseball diamonds, etc.) can generate substantial noise levels. Depending on the proximity of such areas (if proposed within this park site), noise levels could exceed City of Rocklin exterior noise level limits at the adjacent residential property (Lot 4). As a result, this impact is considered **potentially significant.**

Mitigation Measures

MM 4.5-7A *A site specific acoustical review of the proposed neighborhood park should be conducted when plans for the development of that park are submitted to ensure adequate noise attenuation features are included in the project design to mitigate potential impacts at nearby residential uses.*

Significance After Mitigation: *Less Than Significant*

Cumulative Impacts and Mitigation Measures

4.5-5 Cumulative increase in traffic noise levels.

Table 4.5-5 shows cumulative roadway noise levels with and without the project, and the change in traffic noise levels along roadways attributable to the proposed project. The reference distance is 100 feet from road centerlines.

Table 4.5-5 indicates that the increase in traffic noise levels at existing noise sensitive land uses located along Park Drive will exceed 5 dB. According to Table 4.5-3, any traffic noise level increase in excess of 5 dB may be considered significant. However, the City of Rocklin considers such increases significant if they cause the City's noise standards to be exceeded or if the City's noise standards are already exceeded. Because the residences located along Park Drive are shielded from that roadway by existing noise barriers, the predicted cumulative plus project traffic noise levels in the nearest backyards to that roadway will be approximately 5 dB lower than those shown by in Table 4.5-5. As a result, the existing plus project traffic noise levels would be less than the City's 60 dB ldn exterior noise level standard, so the project related increase would not be considered significant.

<u>Mitigation Measures</u>
None Required

TABLE 4.5-5
CUMULATIVE TRAFFIC NOISE LEVELS

		Day/Night Average Level, dB[1]				
Roadway	**Segment Description**	**2025 Current GP No Project**	**2025 Current GP Plus Project**	**ΔdB**	**2025 Proposed GP Plus Project**	**ΔdB**
Sierra College Bl.	Hwy 193 to English Colony Wy.	67.9	68.0	0.1	68.0	0.1
	English Colony Wy. To King Rd.	69.4	69.9	0.5	69.9	0.5
	King Rd. to Taylor Rd.	67.0	67.2	0.2	67.3	0.3
	Taylor Rd. to Granite Dr.	66.9	66.8	0.0	66.9	0.1
	Granite Dr. to Interstate 80	66.8	66.8	-0.1	66.8	0.0
	South of Interstate 80	69.1	69.1	0.0	69.2	0.0
English Colony Wy.	East of Sierra College Blvd.	60.1	61.1	1.0	61.3	1.2
Park Dr.	North of Valley View Pkwy.	56.8	63.2	6.4	63.3	6.5
	South of Valley View Pkwy.	56.8	61.5	4.6	61.8	5.0
	East of Sunset Blvd.	65.3	65.6	0.3	65.7	0.4
King Rd.	East of Sierra College Blvd.	59.9	61.5	1.5	61.2	1.3
Del Mar Ave.	South of King Rd.	58.0	55.8	-2.2	54.8	-3.1
	North of Pacific St.	61.9	61.8	-0.1	61.8	-0.1
Pacific St./Taylor Rd.	West of Sierra Collge Blvd.	66.8	66.4	-0.3	66.4	-0.4
	East	65.7	65.6	-0.1	65.6	-0.1

[1]Calculated at 100′ from the road center.	Source: Bollard Acoustical Consultants, Inc.

4.5-6 Impacts of Cumulative plus project traffic noise at proposed residences within the Clover Valley Lakes Development.

As noted in Table 4.5-5, traffic noise from Park Drive will be approximately 62 dB Ldn south of Valley View Parkway, and 70 dB Ldn adjacent to Sierra College boulevard north and south of Valley View Parkway.

According to Table 4.5-4, traffic noise levels from Valey View Parkway and the major internal loop roadways are predicted to be 60 dB Ldn or less at a distance of 100 feet from the roadway centerlines.

At residences proposed adjacent to Park Drive and Sierra College Boulevard, 6-foot tall masonry noise walls have been proposed, as indicated on the project fencing plans. Given a cumulative plus project traffic noise exposure of 70 dB Ldn along Sierra College Boulevard, the proposed 6-foot tall noise barriers would be insufficient to reduce outdoor activity area noise exposure to 60 dB Ldn or less at those locations, despite the advantage of being elevated relative to Sierra College Boulevard.

Given a cumulative plus project traffic noise exposure of 62 dB Ldn along Park Drive, the proposed noise barriers would reduce outdoor activity area noise exposure to approximately 57 dB Ldn or less at those locations.

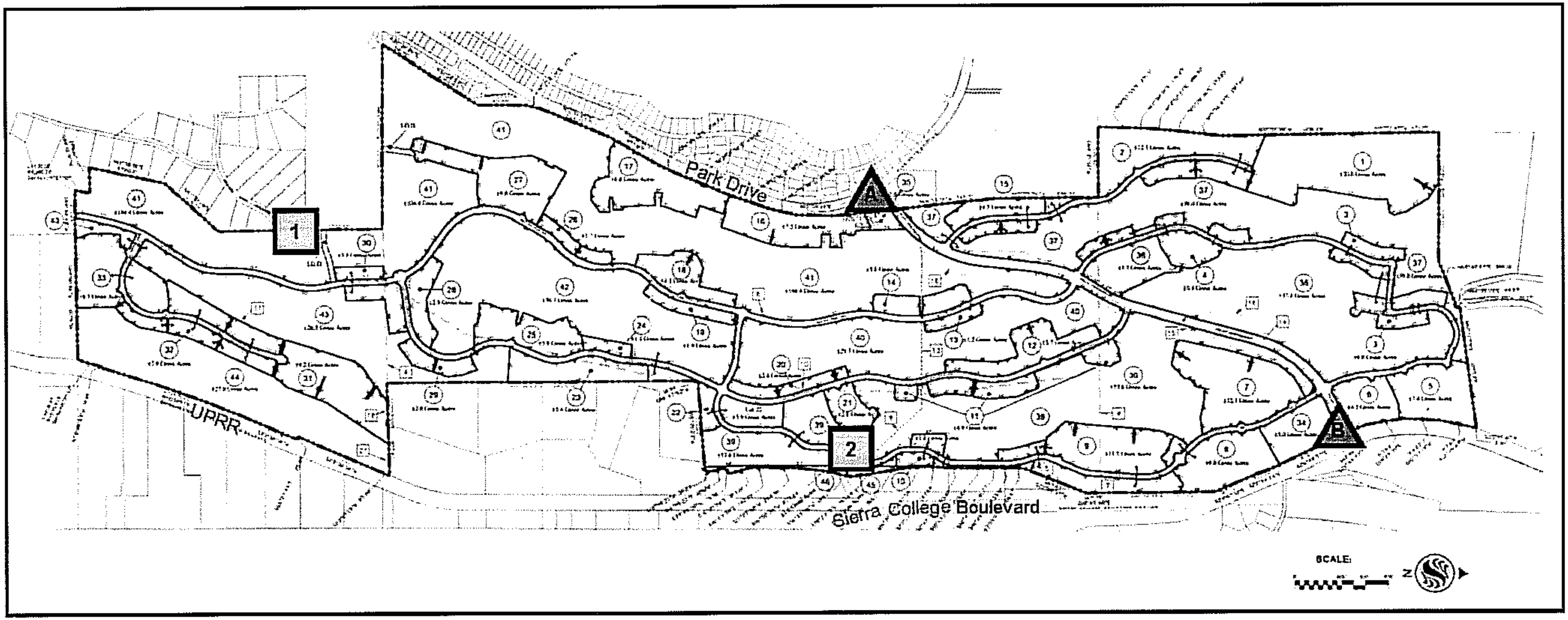
Because cumulative plus project traffic noise levels are predicted to exceed 60 dB Ldn at the outdoor activity areas of the residences located adjacent to Sierra College Boulevard even with proposed 6-foo tall barriers, this impact is considered ***significant***.

<u>Mitigation Measures:</u>

MM 4.5-6a The proposed 6-foot tall barriers along Sierra College Boulevard extending from lots 137-115 should be increased in height to 8 feet relative to backyard elevation.

MM 4.5-6b The proposed fences located along lots 191-208 should be replaced with 8-foot tall solid noise barriers relative to backyard elevation.

MM 4.5-6b The proposed fences located along lots 209-214 should be replaced with 6-foot tall solid noise barriers relative to backyard elevation.



: Short-Term Monitoring Locations

: 24-hour Monitoring Locations

Appendix A
Acoustical Terminology

Acoustics The science of sound.

Ambient Noise The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.

Attenuation The reduction of an acoustic signal.

A-Weighting A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.

Decibel or dB Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.

CNEL Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.

Frequency The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.

Ldn Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.

Leq Equivalent or energy-averaged sound level.

Lmax The highest root-mean-square (RMS) sound level measured over a given period of time.

Loudness A subjective term for the sensation of the magnitude of sound.

Masking The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.

Noise Unwanted sound.

Peak Noise The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.

RT_{60} The time it takes reverberant sound to decay by 60 dB once the source has been removed.

Sabin The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 sabin.

SEL A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy of the event into a 1-s time period.

Threshold of Hearing The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.

Threshold of Pain Approximately 120 dB above the threshold of hearing.

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Appendix B-1

Clover Valley Lakes REIR

24hr Continuous Noise Monitoring - Site #1

Thursday, December 08, 2005

Hour	Leq	Lmax	L50	L90
0:00	29.5	45.1	28.9	27.0
1:00	29.3	42.6	29.0	28.1
2:00	32.5	51.9	28.7	27.1
3:00	34.8	53.7	31.7	29.6
4:00	34.4	50.4	33.1	31.2
5:00	36.7	49.8	34.5	31.7
6:00	42.0	52.4	39.9	35.3
7:00	43.0	61.3	40.5	37.5
8:00	45.1	67.2	41.2	38.5
9:00	42.3	62.0	41.0	38.3
10:00	43.6	67.8	39.8	37.2
11:00	46.3	70.4	40.7	37.3
12:00	42.4	58.6	38.4	35.9
13:00	47.7	59.5	44.2	36.0
14:00	46.2	57.5	44.2	40.1
15:00	49.9	68.6	46.9	41.8
16:00	42.4	54.3	40.3	37.3
17:00	42.3	58.1	38.4	35.5
18:00	37.5	56.5	35.8	32.5
19:00	35.3	49.5	32.8	30.4
20:00	45.4	69.0	33.4	31.1
21:00	41.0	58.7	36.9	34.4
22:00	42.6	67.7	36.0	33.3
23:00	40.5	61.9	32.3	30.1

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	49.9	35.3	44.7	42.6	29.3	38.2
Lmax (Maximum)	70.4	49.5	61.3	67.7	42.6	52.8
L50 (Median)	46.9	32.8	39.6	39.9	28.7	32.7
L90 (Background)	41.8	30.4	36.2	35.3	27.0	30.4

Computed Ldn, dB	46.3
% Daytime Energy	88%
% Nighttime Energy	12%

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Appendix B-2

Clover Valley Lakes REIR

24hr Continuous Noise Monitoring - Site #2

Thursday, December 08, 2005

Hour	Leq	Lmax	L50	L90
0:00	33.2	41.8	32.5	31.3
1:00	33.1	43.7	32.2	31.2
2:00	33.7	45.0	31.9	31.1
3:00	42.8	66.8	34.6	33.1
4:00	45.2	74.4	35.7	33.4
5:00	36.4	44.8	35.4	33.3
6:00	41.8	61.3	40.1	36.9
7:00	43.4	56.6	42.6	40.6
8:00	45.6	70.0	42.1	40.3
9:00	45.2	66.8	41.4	37.8
10:00	38.6	46.9	37.9	36.1
11:00	44.8	67.4	38.5	35.8
12:00	41.5	57.7	37.7	35.1
13:00	39.1	53.9	37.8	35.3
14:00	40.0	51.7	38.8	36.2
15:00	45.9	65.8	40.6	38.0
16:00	45.7	69.7	40.6	38.7
17:00	47.0	69.7	40.8	38.4
18:00	41.4	65.2	38.9	35.6
19:00	38.2	51.0	36.7	33.7
20:00	45.2	69.7	36.4	33.6
21:00	40.5	56.1	37.0	34.4
22:00	45.6	68.6	36.4	34.0
23:00	36.1	53.7	33.7	32.3

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	47.0	38.2	43.7	45.6	33.1	41.2
Lmax (Maximum)	70.0	46.9	61.2	74.4	41.8	55.6
L50 (Median)	42.6	36.4	39.2	40.1	31.9	34.7
L90 (Background)	40.6	33.6	36.6	36.9	31.1	33.0

Computed Ldn, dB	48.0
% Daytime Energy	75%
% Nighttime Energy	25%

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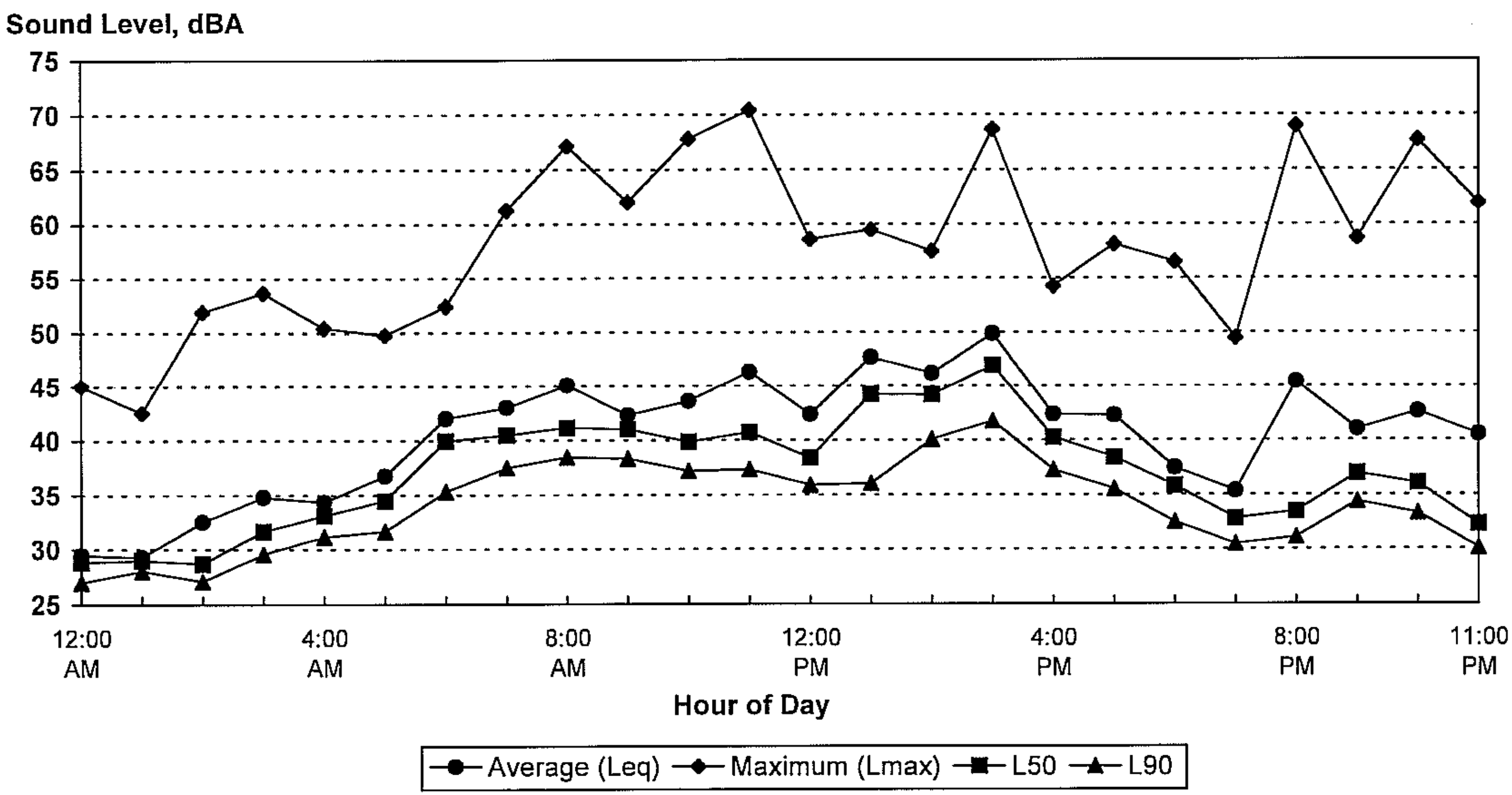
Appendix C-1
Clover Valley Lakes REIR
24hr Continuous Noise Monitoring - Site #1
Thursday, December 08, 2005



Ldn: 46 dB

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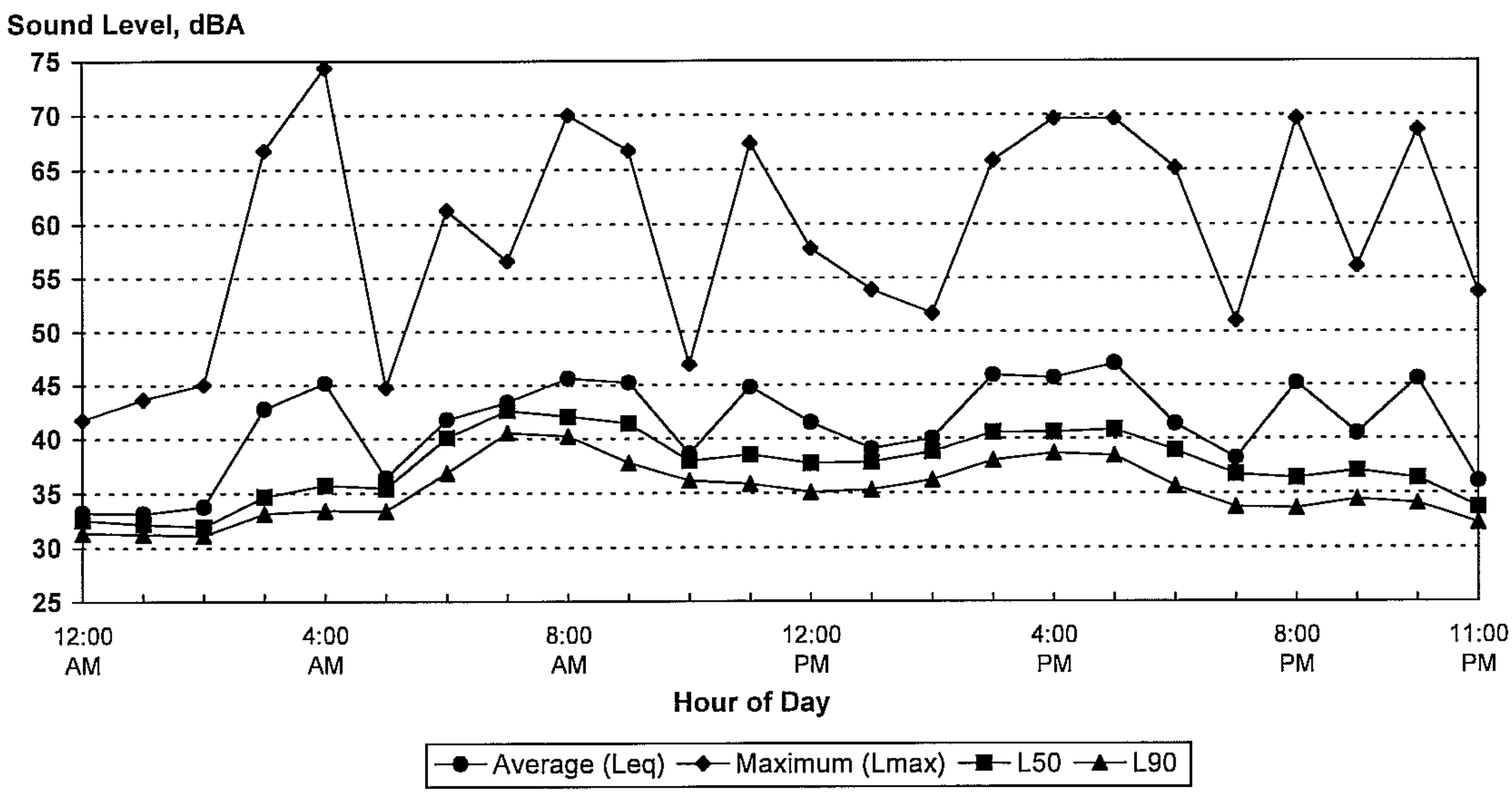
Appendix C-2
Clover Valley Lakes REIR
24hr Continuous Noise Monitoring - Site #2
Thursday, December 08, 2005



Ldn: 48 dB

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Appendix D-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 2005-628 Clover Valley Lakes REIR
Description: Existing Conditions
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Sierra College Blvd.	Hwy 193 to English Colony Wy.	8800	85		15	2	2	55	100	
2		English Colony Wy. To King Rd.	11000	85		15	2	2	55	100	
3		King Rd. to Taylor Rd.	11400	85		15	2	2	45	100	
4		Taylor Rd. to Granite Dr.	21700	85		15	2	2	35	100	
5		Granite Dr. to Interstate 80	19800	85		15	2	2	35	100	
6		South of Interstate 80	18100	85		15	2	2	45	100	
7	English Colony Wy.	East of Sierra College Blvd.	700	85		15	1	1	45	100	
8	Park Dr.	North of Valley View Pkwy.	1100	85		15	1	1	45	100	
9		South of Valley View Pkwy.	1100	85		15	1	1	45	100	
10		East of Sunset Blvd.	19700	85		15	1	1	45	100	
11	King Rd.	East of Sierra College Blvd.	3100	85		15	1	1	45	100	
12	Del Mar Ave.	South of King Rd.	800	85		15	1	1	45	100	
13		North of Pacific St.	3900	85		15	1	1	45	100	
14	Pacific St.	West of Sierra Collge Blvd.	11600	85		15	2	2	45	100	
15		East of Sierra College Blvd.	11500	85		15	2	2	45	100	

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Appendix D-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Predicted Levels

Project #: 2005-628 Clover Valley Lakes REIR
Description: Existing Conditions
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	Autos	Medium Trucks	Heavy Trucks	Total
1	Sierra College Blvd.	Hwy 193 to English Colony Wy.	63.4	53.7	57.6	65
2		English Colony Wy. To King Rd.	64.4	54.6	58.6	66
3		King Rd. to Taylor Rd.	62.0	53.4	57.9	64
4		Taylor Rd. to Granite Dr.	61.7	54.5	59.7	64
5		Granite Dr. to Interstate 80	61.3	54.1	59.3	64
6		South of Interstate 80	64.0	55.4	59.9	66
7	English Colony Wy.	East of Sierra College Blvd.	50.0	38.3	42.8	51
8		North of Valley View Pkwy.	51.9	40.3	44.8	53
9		South of Valley View Pkwy.	51.9	40.3	44.8	53
10		East of Sunset Blvd.	64.5	52.8	57.3	65
11		East of Sierra College Blvd.	56.4	44.8	49.3	57
12		South of King Rd.	50.6	38.9	43.4	52
13		North of Pacific St.	57.4	45.8	50.3	58
14	Pacific St.	West of Sierra Collge Blvd.	62.1	53.5	58.0	64
15		East of Sierra College Blvd.	62.0	53.5	58.0	64

Appendix D-3

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project #: 2005-628 Clover Valley Lakes REIR
Description: Existing Conditions
Ldn/CNEL: Ldn
Hard/Soft: Soft

			-------- Distances to Traffic Noise Contours --------				
Segment	Roadway Name	Segment Description	75	70	65	60	55
1	Sierra College Blvd.	Hwy 193 to English Colony Wy.	21	45	96	208	447
2		English Colony Wy. To King Rd.	24	52	112	241	519
3		King Rd. to Taylor Rd.	18	39	84	181	389
4		Taylor Rd. to Granite Dr.	19	42	90	193	417
5		Granite Dr. to Interstate 80	18	39	84	182	392
6		South of Interstate 80	25	53	114	246	530
7	English Colony Wy.	East of Sierra College Blvd.	3	5	12	25	54
8		North of Valley View Pkwy.	3	7	16	34	73
9		South of Valley View Pkwy.	3	7	16	34	73
10		East of Sunset Blvd.	23	50	108	232	499
11		East of Sierra College Blvd.	7	15	31	68	145
12		South of King Rd.	3	6	13	27	59
13		North of Pacific St.	8	17	37	79	170
14	Pacific St.	West of Sierra Collge Blvd.	18	39	85	183	394
15		East of Sierra College Blvd.	18	39	84	182	392

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Appendix E-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 2005-628 Clover Valley Lakes REIR
Description: Existing Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Sierra College Blvd.	Hwy 193 to English Colony Wy.	9300	85		15	2	2	55	100	
2		English Colony Wy. To King Rd.	12700	85		15	2	2	55	100	
3		King Rd. to Taylor Rd.	13700	85		15	2	2	45	100	
4		Taylor Rd. to Granite Dr.	23100	85		15	2	2	35	100	
5		Granite Dr. to Interstate 80	20900	85		15	2	2	35	100	
6		South of Interstate 80	18600	85		15	2	2	45	100	
7	English Colony Wy.	East of Sierra College Blvd.	1600	85		15	1	1	45	100	
8	Park Dr.	North of Valley View Pkwy.	4000	85		15	1	1	45	100	
9		South of Valley View Pkwy.	6900	85		15	1	1	45	100	
10		East of Sunset Blvd.	19900	85		15	1	1	45	100	
11	King Rd.	East of Sierra College Blvd.	4600	85		15	1	1	45	100	
12	Del Mar Ave.	South of King Rd.	800	85		15	1	1	45	100	
13		North of Pacific St.	3900	85		15	1	1	45	100	
14	Pacific St.	West of Sierra Collge Blvd.	11100	85		15	2	2	45	100	
15		East of Sierra College Blvd.	11200	85		15	2	2	45	100	

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Appendix E-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Predicted Levels

Project #: 2005-628 Clover Valley Lakes REIR
Description: Existing Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	Autos	Medium Trucks	Heavy Trucks	Total
1	Sierra College Blvd.	Hwy 193 to English Colony Wy.	63.6	53.9	57.9	65
2		English Colony Wy. To King Rd.	65.0	55.3	59.2	66
3		King Rd. to Taylor Rd.	62.8	54.2	58.7	65
4		Taylor Rd. to Granite Dr.	61.9	54.8	60.0	65
5		Granite Dr. to Interstate 80	61.5	54.4	59.6	64
6		South of Interstate 80	64.1	55.6	60.1	66
7	English Colony Wy.	East of Sierra College Blvd.	53.6	41.9	46.4	55
8		North of Valley View Pkwy.	57.5	45.9	50.4	59
9		South of Valley View Pkwy.	59.9	48.3	52.7	61
10		East of Sunset Blvd.	64.5	52.9	57.3	66
11		East of Sierra College Blvd.	58.2	46.5	51.0	59
12		South of King Rd.	50.6	38.9	43.4	52
13		North of Pacific St.	57.4	45.8	50.3	58
14	Pacific St.	West of Sierra Collge Blvd.	61.9	53.3	57.8	64
15		East of Sierra College Blvd.	61.9	53.4	57.9	64

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Appendix E-3

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project #: 2005-628 Clover Valley Lakes REIR
Description: Existing Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	Distances to Traffic Noise Contours 75	70	65	60	55
1	Sierra College Blvd.	Hwy 193 to English Colony Wy.	22	46	100	215	464
2		English Colony Wy. To King Rd.	27	57	123	265	571
3		King Rd. to Taylor Rd.	20	44	95	204	440
4		Taylor Rd. to Granite Dr.	20	43	94	202	434
5		Granite Dr. to Interstate 80	19	41	88	189	406
6		South of Interstate 80	25	54	116	250	540
7	English Colony Wy.	East of Sierra College Blvd.	4	9	20	43	94
8		North of Valley View Pkwy.	8	17	37	80	172
9		South of Valley View Pkwy.	12	25	53	115	248
10		East of Sunset Blvd.	23	50	108	233	503
11		East of Sierra College Blvd.	9	19	41	88	189
12		South of King Rd.	3	6	13	27	59
13		North of Pacific St.	8	17	37	79	170
14	Pacific St.	West of Sierra Collge Blvd.	18	38	82	178	382
15		East of Sierra College Blvd.	18	38	83	179	385

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Appendix F-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 2005-628 Clover Valley Lakes REIR
Description: 2025 Current General Plan No Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Sierra College Blvd.	Hwy 193 to English Colony Wy.	18100	85		15	2	2	55	100	
2		English Colony Wy. To King Rd.	25600	85		15	2	2	55	100	
3		King Rd. to Taylor Rd.	23400	85		15	2	2	45	100	
4		Taylor Rd. to Granite Dr.	39100	85		15	2	2	35	100	
5		Granite Dr. to Interstate 80	39000	85		15	2	2	35	100	
6		South of Interstate 80	38400	85		15	2	2	45	100	
7	English Colony Wy.	East of Sierra College Blvd.	5700	85		15	1	1	45	100	
8	Park Dr.	North of Valley View Pkwy.	2700	85		15	1	1	45	100	
9		South of Valley View Pkwy.	2700	85		15	1	1	45	100	
10		East of Sunset Blvd.	19000	85		15	1	1	45	100	
11	King Rd.	East of Sierra College Blvd.	5500	85		15	1	1	45	100	
12	Del Mar Ave.	South of King Rd.	3500	85		15	1	1	45	100	
13		North of Pacific St.	8600	85		15	1	1	45	100	
14	Pacific St.	West of Sierra Collge Blvd.	22300	85		15	2	2	45	100	
15		East of Sierra College Blvd.	17500	85		15	2	2	45	100	

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Appendix F-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Predicted Levels

Project #: 2005-628 Clover Valley Lakes REIR
Description: 2025 Current General Plan No Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	Autos	Medium Trucks	Heavy Trucks	Total
1	Sierra College Blvd.	Hwy 193 to English Colony Wy.	66.5	56.8	60.7	68
2		English Colony Wy. To King Rd.	68.0	58.3	62.3	69
3		King Rd. to Taylor Rd.	65.1	56.6	61.1	67
4		Taylor Rd. to Granite Dr.	64.2	57.1	62.3	67
5		Granite Dr. to Interstate 80	64.2	57.1	62.3	67
6		South of Interstate 80	67.3	58.7	63.2	69
7	English Colony Wy.	East of Sierra College Blvd.	59.1	47.4	51.9	60
8		North of Valley View Pkwy.	55.8	44.2	48.7	57
9		South of Valley View Pkwy.	55.8	44.2	48.7	57
10		East of Sunset Blvd.	64.3	52.6	57.1	65
11		East of Sierra College Blvd.	58.9	47.3	51.8	60
12		South of King Rd.	57.0	45.3	49.8	58
13		North of Pacific St.	60.9	49.2	53.7	62
14	Pacific St.	West of Sierra Collge Blvd.	64.9	56.4	60.9	67
15		East of Sierra College Blvd.	63.9	55.3	59.8	66

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Appendix F-3

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project #: 2005-628 Clover Valley Lakes REIR
Description: 2025 Current General Plan No Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	-------- Distances to Traffic Noise Contours -------- 75	70	65	60	55
1	Sierra College Blvd.	Hwy 193 to English Colony Wy.	34	72	156	336	724
2		English Colony Wy. To King Rd.	42	91	196	423	912
3		King Rd. to Taylor Rd.	29	63	135	292	629
4		Taylor Rd. to Granite Dr.	29	62	133	286	617
5		Granite Dr. to Interstate 80	29	62	133	286	616
6		South of Interstate 80	41	87	188	406	875
7	English Colony Wy.	East of Sierra College Blvd.	10	22	47	101	218
8		North of Valley View Pkwy.	6	13	29	62	133
9		South of Valley View Pkwy.	6	13	29	62	133
10		East of Sunset Blvd.	23	49	105	226	487
11		East of Sierra College Blvd.	10	21	46	99	213
12		South of King Rd.	7	16	34	73	158
13		North of Pacific St.	13	29	62	133	287
14	Pacific St.	West of Sierra Collge Blvd.	28	61	131	283	609
15		East of Sierra College Blvd.	24	52	112	240	518

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Appendix G-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 2005-628 Clover Valley Lakes REIR
Description: 2025 Current General Plan Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Sierra College Blvd.	Hwy 193 to English Colony Wy.	18400	85		15	2	2	55	100	
2		English Colony Wy. To King Rd.	28900	85		15	2	2	55	100	
3		King Rd. to Taylor Rd.	24400	85		15	2	2	45	100	
4		Taylor Rd. to Granite Dr.	38800	85		15	2	2	35	100	
5		Granite Dr. to Interstate 80	38500	85		15	2	2	35	100	
6		South of Interstate 80	38200	85		15	2	2	45	100	
7	English Colony Wy.	East of Sierra College Blvd.	7200	85		15	1	1	45	100	
8	Park Dr.	North of Valley View Pkwy.	11700	85		15	1	1	45	100	
9		South of Valley View Pkwy.	7800	85		15	1	1	45	100	
10		East of Sunset Blvd.	20500	85		15	1	1	45	100	
11	King Rd.	East of Sierra College Blvd.	7800	85		15	1	1	45	100	
12	Del Mar Ave.	South of King Rd.	2100	85		15	1	1	45	100	
13		North of Pacific St.	8400	85		15	1	1	45	100	
14	Pacific St.	West of Sierra Collge Blvd.	20700	85		15	2	2	45	100	
15		East of Sierra College Blvd.	17200	85		15	2	2	45	100	

Appendix G-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Predicted Levels

Project #: 2005-628 Clover Valley Lakes REIR
Description: 2025 Current General Plan Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	Autos	Medium Trucks	Heavy Trucks	Total
1	Sierra College Blvd.	Hwy 193 to English Colony Wy.	66.6	56.9	60.8	68
2		English Colony Wy. To King Rd.	68.6	58.8	62.8	70
3		King Rd. to Taylor Rd.	65.3	56.7	61.2	67
4		Taylor Rd. to Granite Dr.	64.2	57.1	62.3	67
5		Granite Dr. to Interstate 80	64.1	57.0	62.2	67
6		South of Interstate 80	67.3	58.7	63.2	69
7	English Colony Wy.	East of Sierra College Blvd.	60.1	48.4	52.9	61
8		North of Valley View Pkwy.	62.2	50.5	55.0	63
9		South of Valley View Pkwy.	60.4	48.8	53.3	61
10		East of Sunset Blvd.	64.6	53.0	57.5	66
11		East of Sierra College Blvd.	60.4	48.8	53.3	61
12		South of King Rd.	54.7	43.1	47.6	56
13		North of Pacific St.	60.8	49.1	53.6	62
14	Pacific St.	West of Sierra Collge Blvd.	64.6	56.0	60.5	66
15		East of Sierra College Blvd.	63.8	55.2	59.7	66

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Appendix G-3

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project #: 2005-628 Clover Valley Lakes REIR
Description: 2025 Current General Plan Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

			-------- Distances to Traffic Noise Contours --------				
Segment	Roadway Name	Segment Description	75	70	65	60	55
1	Sierra College Blvd.	Hwy 193 to English Colony Wy.	34	73	158	340	732
2		English Colony Wy. To King Rd.	46	99	213	459	989
3		King Rd. to Taylor Rd.	30	65	139	300	647
4		Taylor Rd. to Granite Dr.	28	61	132	285	614
5		Granite Dr. to Interstate 80	28	61	132	283	610
6		South of Interstate 80	40	87	188	405	872
7	English Colony Wy.	East of Sierra College Blvd.	12	26	55	118	255
8		North of Valley View Pkwy.	16	35	76	164	353
9		South of Valley View Pkwy.	12	27	58	125	269
10		East of Sunset Blvd.	24	51	110	238	513
11		East of Sierra College Blvd.	12	27	58	125	269
12		South of King Rd.	5	11	24	52	112
13		North of Pacific St.	13	28	61	131	283
14	Pacific St.	West of Sierra Collge Blvd.	27	58	125	269	579
15		East of Sierra College Blvd.	24	51	110	238	512

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Appendix H-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Data Input Sheet

Project #: 2005-628 Clover Valley Lakes REIR
Description: 2025 Proposed General Plan Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Sierra College Blvd.	Hwy 193 to English Colony Wy.	18400	85		15	2	2	55	100	
2		English Colony Wy. To King Rd.	28500	85		15	2	2	55	100	
3		King Rd. to Taylor Rd.	25100	85		15	2	2	45	100	
4		Taylor Rd. to Granite Dr.	39600	85		15	2	2	35	100	
5		Granite Dr. to Interstate 80	39000	85		15	2	2	35	100	
6		South of Interstate 80	38600	85		15	2	2	45	100	
7	English Colony Wy.	East of Sierra College Blvd.	7500	85		15	1	1	45	100	
8	Park Dr.	North of Valley View Pkwy.	12000	85		15	1	1	45	100	
9		South of Valley View Pkwy.	8500	85		15	1	1	45	100	
10		East of Sunset Blvd.	20700	85		15	1	1	45	100	
11	King Rd.	East of Sierra College Blvd.	7400	85		15	1	1	45	100	
12	Del Mar Ave.	South of King Rd.	1700	85		15	1	1	45	100	
13		North of Pacific St.	8500	85		15	1	1	45	100	
14	Pacific St.	West of Sierra Collge Blvd.	20500	85		15	2	2	45	100	
15		East of Sierra College Blvd.	17200	85		15	2	2	45	100	

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Appendix H-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Predicted Levels

Project #: 2005-628 Clover Valley Lakes REIR
Description: 2025 Proposed General Plan Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	Autos	Medium Trucks	Heavy Trucks	Total
1	Sierra College Blvd.	Hwy 193 to English Colony Wy.	66.6	56.9	60.8	68
2		English Colony Wy. To King Rd.	68.5	58.8	62.7	70
3		King Rd. to Taylor Rd.	65.4	56.9	61.4	67
4		Taylor Rd. to Granite Dr.	64.3	57.1	62.3	67
5		Granite Dr. to Interstate 80	64.2	57.1	62.3	67
6		South of Interstate 80	67.3	58.7	63.2	69
7	English Colony Wy.	East of Sierra College Blvd.	60.3	48.6	53.1	61
8		North of Valley View Pkwy.	62.3	50.7	55.2	63
9		South of Valley View Pkwy.	60.8	49.2	53.7	62
10		East of Sunset Blvd.	64.7	53.0	57.5	66
11		East of Sierra College Blvd.	60.2	48.6	53.1	61
12		South of King Rd.	53.8	42.2	46.7	55
13		North of Pacific St.	60.8	49.2	53.7	62
14	Pacific St.	West of Sierra Collge Blvd.	64.6	56.0	60.5	66
15		East of Sierra College Blvd.	63.8	55.2	59.7	66

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Appendix H-3

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project #: 2005-628 Clover Valley Lakes REIR
Description: 2025 Proposed General Plan Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	Distances to Traffic Noise Contours 75	70	65	60	55
1	Sierra College Blvd.	Hwy 193 to English Colony Wy.	34	73	158	340	732
2		English Colony Wy. To King Rd.	45	98	211	455	980
3		King Rd. to Taylor Rd.	31	66	142	306	659
4		Taylor Rd. to Granite Dr.	29	62	134	289	622
5		Granite Dr. to Interstate 80	29	62	133	286	616
6		South of Interstate 80	41	88	189	407	878
7	English Colony Wy.	East of Sierra College Blvd.	12	26	56	122	262
8		North of Valley View Pkwy.	17	36	77	166	359
9		South of Valley View Pkwy.	13	29	61	132	285
10		East of Sunset Blvd.	24	52	111	239	516
11		East of Sierra College Blvd.	12	26	56	121	260
12		South of King Rd.	5	10	21	45	97
13		North of Pacific St.	13	29	61	132	285
14	Pacific St.	West of Sierra Collge Blvd.	27	58	124	267	576
15		East of Sierra College Blvd.	24	51	110	238	512

APPENDIX G

4.7 CULTURAL RESOURCES

INTRODUCTION

This section of the EIR describes cultural (prehistoric and historic and paleontological) resources known to be located on the project site. Prehistoric resources are those sites and artifacts associated with indigenous, non-Euroamerican population, generally prior to contact with people of European descent. Historical resources include structures, features, artifacts and sites that date from Euroamerican settlement of the region. The extent to which development of the proposed project could remove, damage, or destroy existing historic, prehistoric, or paleontological resources is herein evaluated.

This section is based on information in the Rocklin General Plan EIR, Rocklin General Plan, Determination of Eligibility and Effect on Cultural Resources within the Clover Valley Lakes Project Area (Peak & Associates, January 2002)[1], and the draft Historic Properties Management Plan (December 2005).[2]

ENVIRONMENTAL SETTING

Cultural Resources

Prehistoric Period Background

As the prehistoric period resources located within the Project are situated near the interface between the adjacent foothills and mountains of the Sierra Nevada and floor of the Sacramento Valley, the applicability of use of either the Sierra Nevada or Central Valley cultural sequences is one of the important research issues. As the material remains unearthed from these resources may relate more closely to either the Sierra Nevada highlands or Central Valley lowlands, the archeological background sections for each region is presented.

As more data becomes available from excavated sites in the Sierra Nevada foothill region, the correlation, or lack thereof, between this region and bordering cultural areas will be better understood.

Sierra Nevada Region

High Sierran archeology, in particular, can be compared to a framework. The broad cultural chronological outlines are known. The interrelationships that must have existed between the various archeological cultures are still relatively undefined, a condition applying even for the ethnographic present. Interest in Sierran archeology has grown considerably since Heizer and Elsasser (1953) and Elsasser (1960) presented the first effective synthetic overview of prehistoric settlement of the

[1] Document contains confidential data on site locations; on file with U.S. Army Corps of Engineers.
[2] Provided by project proponent to the City of Rocklin.

region. The investigations of areas impacted by various water projects in the foothills have produced several regional cultural chronologies (Moratto 1972; Johnson 1967; Ritter 1970). Other management-based surveys, such as Bennyhoff's (1956) for Yosemite Valley, have produced regional cultural chronologies that are still generally accepted.

There appears to be some occupation of the east slopes during the Anathermal period by representatives of the Western Pluvial Lake Tradition (Bedwell 1973). Elston et al. (1977) termed this Tahoe Reach Phase. Elston (1979:44) reports several Parman points were found near Truckee. Lower down the western slopes of the Sierra, Crew (1980) reported a Parman point was found at Camp Nine during the excavation of CA-CAL-S347. Bedwell suggested the Western Pluvial Lake Tradition was essentially a lacustrine-based Late Pleistocene and Anathermal occupation, but these finds indicate it was more broadly based.

The results of excavations by Peak & Associates, Inc. at CA-CAL-S342 on Clarks Flat and at sites in Alpine County near the headwaters of the North Fork Stanislaus River have provided documentation of the early occupation of the western slopes of the Sierra Nevada (Peak and Crew 1990; Peak and Neuenschwander 1991). The radiocarbon age determinations from both localities indicate that human occupation had been established by 10,000 B.P. by a distinct cultural entity that used Stemmed Series projectile points. At about 6500 B.P., there is an introduction of a broad-stemmed, concave-based projectile point that is markedly similar to the Pinto Series projectile points of the Mojave Desert. The forms from CA-CAL-S342 have been designated the Stanislaus Broad Stemmed type.

The culture of the next phase of this region is very poorly known. Elston (1971:92-93) assigned the designation "Spooner Complex" to a still unsubstantiated early occupation phase at the Spooner Lake Site (26DO38), located east of Lake Tahoe. This complex was tentatively characterized by the presence of Humboldt Concave Base and Pinto Series projectile points, along with metates, basalt cores and waste flakes. Radiometric determinations indicate that the site may have been occupied as early as 5000 B.C., was certainly in use by 3000 B.C., and was abandoned at about 1000 B.C.

Elston originally saw the Spooner Phase as a manifestation of a migration of groups out of the Great Basin during a local Altithermal, but he recently suggested it was a local cultural phase, not migration-based (Elston et al. 1977). At Spooner Lake, this complex gives way to the Martis Complex, with no distinct break in occupation. This would, perhaps, suggest that succeeding populations, if not genetically related, at least exploited the same resource base.

The Martis Complex is characterized by a heavy emphasis on basalt as the raw material for tools, in contrast to other cultures in the surrounding regions that preferred obsidian. The projectile points are generally large and thick and display several different shapes. Elsasser (1960), in correlating information from 150 Martis sites on either side of the Sierra crest, organized the projectile points into a morphological typology. This typology has 10 types and several subtypes within these styles. Elston (1971) has objected to this typology as having little meaning in terms of chronology and cultural development and would recognize only three characteristically Martis types: Martis Triangular, Martis Stemmed Leaf, and Martis Corner Notched. Types that have a much wider distribution in space and time are Humboldt Concave Base and the Pinto Series (early Martis only) and Elko Eared, Elko Corner Notched and Sierra Stemmed Triangular. This, along with the occurrence of atlatl weights ("boat stones") at several Martis sites, indicates that the culture flourished prior to the introduction of the bow into this area. This is supported by the dates obtained by Elsasser (1960:74) by cross-dating of various Martis artifacts -- 1500 B.C. to A.D. 600.

Elston et al. (1977) have suggested that the Martis Complex was characterized by a fair degree of sedentism, large villages, comparatively elaborate social structures, and role specialization. He notes, as evidence, that the sites are larger than later occupations in the area, and the artifact density is usually higher than in the succeeding Kings Beach Complex. Other Martis sites demonstrate specialized manufacture centers (Singer and Ericson 1977; Elston and Davis 1972). The Martis Complex peoples were also hypothesized as being involved in exchange systems with the groups in the Valley, where bifaces from Sierra sources have been found in the archeological remains from contemporary archeological cultures (Jackson 1975). Elston (1979) believes the Martis Complex is characterized by large pit houses while the later Kings Beach is characterized by smaller, saucer-shaped structures. He notes, the larger structures disappear from the record about A.D. 500, which is the customary assumed end of the Martis Complex.

The Martis Complex, as presently defined, is a Sierran crest occupation. Its expression further down-slope to the west, while widely attested in the lower reaches of the Sierra (Ritter 1970; Moratto and Riley 1976), has not been firmly tested. In the high Sierran region, Elston et al. (1977:166) suggested a "land use and subsistence strategy of transhumance, which allowed the occupation of the same base camp and winter villages on a regular basis." Logically, the manifestations of the Martis Complex on the lower zones of the west slope can thus either be: 1) specialized procurement sites (deer hunting, for example); 2) a generalized base camp (groups residing in the area); and 3) nodes in an exchange system (trading stations). The archeological manifestations can be expected to vary.

As a cautionary note, Rondeau (1980:96-97) recently has called attention to the common practice of equating all basalt-based industries earlier than the late period with "Martis." He notes the increasingly available data suggests variation, which he seems to believe suggests the Martis Complex may be more than one archeological entity. He suggests they, like the late occupants, utilized local materials and did not solely confine their production to basalt. Moreover, he believes the late period occupations used basalt much more frequently than generally believed.

The Kings Beach Complex, on the crest of the Sierra, appears about A.D. 1000 and continues to the Euro-American period. Elston et al. (1977;1981:19) suggests the appearance of Early Kings Beach materials at A.D. 500, with the Washoe Lake Kings Beach succeeding at about A.D. 1200. Results from the Truckee Reach sites suggest the Kings Beach Complex assemblages often occur at the same locations as the earlier Martis Complex sites. Elsasser (1960) considered the Kings Beach to be locationally exclusive from the earlier Martis Complex, but Elston's (Elston et al. 1977) investigations on the Truckee Reach indicate a thin occupation of Kings Beach often overlies Martis sites. The environmental requisites and economic decisions by which groups chose suitable camps were often similar, although the activities practiced may have been considerably changed.

The Kings Beach Complex is characterized by small projectile points, made primarily of obsidian, suitable for use on arrows. The Desert Side Notched type is particularly characteristic, along with points of the Rose Springs and Eastgate Series. The sites are located primarily along small tributaries, rather than major watercourses. Even when sites occur on the shore of Lake Tahoe, or on the banks of major rivers, they are located where tributary streams enter these waterways. The pestle with bedrock mortar, which appears in Late Martis, became the favored means of preparing foods, as opposed to the mano and metate of the preceding period.

In all archeological respects, it appears that the Late Kings Beach Complex can be identified with the Washoe inhabitants of the Tahoe Basin and surrounding areas at the onset of the Euro-American period. In this case cultural succession in this area is well understood.

The archeological entities elsewhere on the west slopes that are contemporary with the Kings Beach include (the Sweetwater, Bidwell, Oroville, and the proto-historic phases from the Oroville region, Ritter 1970; Markley 1978). Ritter (1970) accepted the Kings Beach Complex at the time, especially for the higher elevation (4000 feet), but the number of Gunther Barbed points found in later surveys (Crew, personal communication) indicates it may not be an appropriate term. How these archeological entities correspond to linguistic entities has been a debated topic for years, although the only really agreed upon correspondence was between Washoe and the Kings Beach Complex.

Ritter (1970) was careful to distinguish between archeological and ethnographic entities, but most interested researchers will agree that the late components of the prehistoric record correspond to the physical remains of the ethnographic people or peoples who resided in the region.

The above are the known (or not so known) cultural/historic entities for the central Sierra Nevada. However, it is just a framework, and the factors that produced these obvious changes in the cultural record are a matter of considerable debate.

Moratto and Riley (1980) presented a linguistic prehistory for California, which is obviously based upon Whistler's (1977) earlier model. Its relevance to the Sierra Nevada foothills revolves around two of its major hypotheses, i.e., the extent of the Hokan territory within the Sierra Nevada prior to A.D. 500, and the movement of several of the Penutian-speaking groups in and around the Sierra.

Of particular relevance to the Sierra, Moratto and Riley postulate the Western Pluvial Lake Tradition (or Parman) corresponds to the Hokan speakers. Proto-Yanans may have visited the foothills from the valley on a sporadic basis (the burial caves?) after 7000 B.P. They see the ancestral Washoe entering the northern and central Sierra after 4000 B.C., and extending from Plumas down to Mono County. They also see a Yokutsan expansion into the foothills from the valley by 2000 B.P., although the corresponding archeological entity is not defined. Ritter's (1970) Mesilla and Bennyhoff's (1956) Crane Flat would appear to be the archeological entities. Moratto may not agree that his Chowchilla Phase is part of this Yokutsan expansion, but other archeologists would.

The ancestors of the Sierra Miwok diverged from the Plains Miwok about 2000 B.P., and began to move into and settle the foothills and mountains between the Calaveras and American rivers. After 200 B.P., the Miwok advanced quickly south, displacing the earlier Yokuts. Moratto and Riley (1980) view the archeological manifestations of this Miwokian expansion as the Mariposa Phase in Yosemite and the Madera in the southern foothills. The entrance of the Maidu is not discussed by Moratto and Riley, nor were they fully discussed by Whistler.

Perhaps related to the above movement of the Penutian peoples into the area is Moratto's earlier (1972) postulation that the extensive settlement on the west slopes of the Sierra was not possible until the advent of an efficient acorn-processing technology. Certainly, elsewhere on the west slopes, the most extensive occupations begin after A.D. 500 and, in fact, most occur after A.D. 1200. As further elaboration or development of the above, Moratto et al. (1978) have postulated the presence of an arid interval between A.D. 500 and 1200, which precluded extensive settlement, and they cite widely-drawn palynological evidence to support their contention.

In complete contrast to the above studies, Matson's (1970) investigation at 4-PLA-101 indicates the only significant change between A.D. 1550 to within the last 100 years took place less than 500 years ago, when a lightly-wooded oak grassland changed to a pine-oak woodland, a change he attributed to differing practices of human fire control. Although this site is located at a higher elevation than the Project sites, certain research implications may still be applicable.

In summary, while the broad chronological framework may be accepted by most investigators, its details are still unclear and the archeological focus diffuse. The need for more investigations, structured by research designs with local and regional orientation, is paramount to further our knowledge of the cultural phenomena that occurred on the west slopes of the Sierra.

Central Valley Region

The Central Valley region was among the first in the state to attract intensive fieldwork, and research has continued to the present day. This has resulted in a substantial accumulation of data. In the early decades of the 1900s, E.J. Dawson explored numerous sites near Stockton and Lodi, later collaborating with W.E. Schenck (Schenck and Dawson 1929). By 1933, the focus of work was directed to the Cosumnes locality, where survey and excavation were conducted by the Sacramento Junior College (Lillard and Purves 1936). Excavation data, in particular from the stratified Windmiller site (CA-SAC-107), suggested two temporally distinct cultural traditions. Later work at other mounds by Sacramento Junior College and the University of California, Berkeley, enabled the investigators to identify a third cultural tradition, intermediate between the previously postulated Early and Late Horizons. The three-horizon sequence, based on discrete changes in ornamental artifacts and mortuary practices, as well as on observed differences in soils within sites (Lillard, Heizer and Fenenga 1939), was later refined by Beardsley (1954). An expanded definition of artifacts diagnostic of each time period was developed, and its application extended to parts of the central California coast. Traits held in common allow the application of this system within certain limits of time and space to other areas of prehistoric central California.

The Windmiller Culture (Early Horizon) is characterized by ventrally-extended burials (some dorsal extensions are known), with westerly orientation of heads; a high percentage of burials with grave goods; frequent presence of red ocher in graves; large projectile points, of which 60 percent are of materials other than obsidian; rectangular *Haliotis* beads; *Olivella* shell beads (types A1a and L); rare use of bone; some use of baked clay objects; and well-fashioned charmstones, usually perforated.

The Cosumnes Culture (Middle Horizon) displays considerable changes from the preceding cultural expression. The burial mode is predominately flexed, with variable cardinal orientation and some cremations present. There is a lower percentage of burials with grave goods, and ocher staining is common in graves. *Olivella* beads of types C1, F and G predominate, and there is abundant use of green *Haliotis sp.* rather than red *Haliotis sp.* Other characteristic artifacts include perforated and canid teeth; asymmetrical and "fishtail" charmstones, usually unperforated; cobble mortars and evidence of wooden mortars; extensive sue of bone for tools and ornaments; large projectile points, with considerable use of rock other than obsidian; and use of baked clay.

The burial pattern of the Hotchkiss Culture (Late Horizon) retains the use of the flexed mode, and there is wide spread evidence of cremation, lesser use of red ocher, heavy use of baked clay, *Olivella* beads of Types E and M, extensive use of *Haliotis* ornaments of many elaborate shapes and forms, shaped mortars and cylindrical pestles, bird-bone tubes with elaborate geometric designs, clam shell disc beads, small projectile points indicative of the introduction of the bow and arrow, flanged tubular pipes of steatite and schist, and use of magnesite. (The above adapted from Moratto 1984:181-183). The characteristics noted are not all-inclusive, but cover the more important traits.

Schulz (1981), in an extensive examination of the central California evidence for the use of acorns, used the terms Early, Middle and Late Complexes, but the traits attributed to them remain generally the same. While it is not altogether clear, Schulz seemingly uses the term "Complex" to refer to the particular archeological entities (above called "Horizons") as defined in this region. Ragir's (1972) cultures are the same as Schulz's complexes.

Bennyhoff and Hughes (1984) have presented alternative dating schemes for the Central California Archeological Sequence. The primary emphasis is a more elaborate division of the horizons to reflect what is seen as cultural/temporal changes within the three horizons and a compression of the temporal span.

There have been other chronologies proposed, including Fredrickson (1973), and since it is correlated with Bennyhoff's (1977) work, it does merit discussion. The particular archeological cultural entities Fredrickson has defined, based upon the work of Bennyhoff, are patterns, phases and aspects. Bennyhoff's (1977) work in the Plains Miwok area is the best definition of the Cosumnes District, which likely conforms to Fredrickson's pattern. Fredrickson also proposed periods of time associated heavily with economic modes, which provides a temporal term for comparing contemporary cultural entities. It corresponds with Willey and Phillips' (1958) earlier "tradition," although it is tied more specifically to the archeological record in California.

PERIOD AND DATING

Fredrickson	Bennyhoff, Heizer and Schulz
Emergent Period – A.D. 500 to 1800	Historic, post-A.D. 1850
Upper Archaic – 1000 B.C. to A.D. 500	Phase 2, Late Horizon -- A.D. 1500 to 1850
Middle Archaic – 3000 to 1000 B.C.	Phase 1, Late Horizon -- A.D. 500 to 1500
Paleo Indian 00 10,000 to 6000 B.C.	Middle Horizon -- 1000 B.C. to A.D. 500
Early Lithic 10,000 B.C. to ?	Early Horizon -- 3000 B.C. to 1000 B.C.
(Fredrickson 1973)	(Bennyhoff and Heizer 1958; Schulz 1981)

The project is located in an interesting area for archeological research because it is between three areas with defined archeological sequences: the Oroville locality to the north, the Central Sierra area to the east and the Central Valley/Delta area to the west. These sequences include many similar artifact types and dates for major cultural changes, but there are also significant differences between them. It is an important goal of archeology to determine how these differences relate to different cultural traditions, cultural adaptation to differing environmental conditions or other natural or cultural influences. It is not clear at present which of these sequences best reflects the prehistory of the project vicinity or if a separate local sequence is necessary to adequately describe the area.

During the mid-1960s, two extensive research programs were undertaken by students from California State University, Sacramento. Both of these investigations concentrated on particular drainage systems located in western Placer County, relatively close to the proposed nature preserve. The first of these studies involved the Dry Creek drainage from the town of Roseville west to the edge of the American Basin near Rio Linda. During this investigation, 32 archeological sites were visited with collections made of all visible surface artifacts. Six of the larger sites were investigated through controlled archeological excavations. The purpose of this study, according to the author, was to, "provide a corpus of data against which new finds may be compared, and a sequence of materials in which additional evidence may be placed in context (Palumbo 1966:2)." Numerous examples of chipped and ground stone artifacts were recovered as were a tremendous number of temporally diagnostic shell beads that provided Palumbo with cross-comparisons to other well-dated archeological assemblages. Based on the recovery of this material, Palumbo concluded:

> The beads and ornaments recovered from the Dry Creek area are typically of the Central California Late Horizon period...Indications of any earlier occupation are limited to isolated artifacts such as "fishtail" charmstones and the bone spatulas from Site 31-63, or the "pseudo" harpoon from site 31-86. In fact, the greatest evidence for a Middle Horizon component is found only at Site 31-63, where the "fishtail" charmstone, the bone spatulas, and the frequency, in general, of bone artifacts, give the impression of a terminating Middle Horizon occupation [Palumbo 1966:186]

Two different types of sites were identified during this study; temporary campsites and village sites. The twenty-eight temporary campsites and four village sites both contained a similar assemblage of cultural material leading Palumbo to suggest that both were used contemporaneously. The four village sites were discovered in the upper (eastern) portion of the Dry Creek drainage and even the distribution of temporary campsites showed a lower frequency of occurrence near the western portion of the study area. This distribution of sites led Palumbo (1966:188) to conclude, "...if this pattern is representative, it suggests a westward movement into the valley periodically, possibly seasonally, with the major part of the time being spent in the lower foothills." The composition of artifacts discovered at the Dry Creek sites, primarily grinding implements with some chipped stone tools, led Palumbo (1966:188) to suggest, "If acorns and grass seeds were important items in the diet, as they were in the historic period, then the inhabitants were probably shifting about to move closer to the food sources. One of the assumptions here is that metates and mortars were both used during the same time period."

The second large scale investigation conducted during the middle 1960s was by Roger Robinson who focused on the Auburn Ravine area from near the city of Lincoln east to Ophir in western Placer County, California. When Robinson began a survey of a portion of Auburn Ravine, only one site was recorded in the project vicinity; CA-PLA-14, recorded by Elsasser in 1953. Robinson surveyed a narrow corridor between Gold Hill and Lincoln and recorded an additional 18 sites, but CA-PLA-14 remained the most productive of the group, returning more than 90 percent of the artifacts analyzed by Robinson (1967:31), including several types that did not occur elsewhere in his project area.

CA-PLA-14 displayed two spatially distinct zones, described by Robinson as the cemetery area and the midden area, although the soil in both areas was the same midden, described as "very dark and fine textured, rich in organic material." (Robinson 1967:101). Although the site had been severely disturbed by excavation and agricultural activities, Robinson was still able to discern some vertical stratigraphy. The late occupation was characterized by Desert Side Notched projectile points and clam shell disc beads. The earlier occupation included projectile points described as "Martis-like" and type 3a1 and 3b1 *Olivella* beads. The Martis Complex was originally defined as a high-Sierra culture (Heizer and Elsasser 1953), but work since that time has revealed that artifact types and whole cultural components that are Martis in character are found at much lower elevations on the west slope than the Martis Valley type sites.

Still earlier occupation was suggested by *Olivella* beads of an interesting type, Robinson's Type VII, which were primarily found at the base of a single excavation unit. This type was similar to types associated with the Middle Horizon in the traditional Central California Taxonomic System, but not quite identical to any of the previously defined types. Robinson suggested that this could represent a vestige of an earlier occupation, an earlier cultural trait held over into a later occupation or a local stylistic development (Robinson 1967:122).

Other general observations offered by Robinson (1967:95-96) include the presence of numerous bedrock outcrops near the site areas that had not been utilized for bedrock mortars. In his words, "As in the case of all of the sites recorded for this portion of the Auburn ravine, a large percentage of the exposed bedrock appears ideally suited for bedrock mortars; but, for some reason, it has remained unused."

A great deal of archeological study was conducted in the Auburn vicinity, related to the proposed Auburn Reservoir. Sites that have been excavated include a chert quarry and five midden sites, all reported during Phases II and III of the Auburn Reservoir Project (Ritter, ed. 1970a). The most informative of these is the Spring Garden Ravine site (CA-PLA-101), which contained three well-defined strata (Ritter 1970b). The lowest stratum (C) has been radiocarbon dated at about 1400 B.C., and contains an assemblage similar to the Martis Complex. The artifacts include large projectile points (mostly of basalt and slate), atlatl (dart-thrower) weights, numerous core tools, and several varieties of grinding implements. The next stratum (B) was less easily defined, and may have represented a transition between cultures (or at least cultural material) represented by the upper and lower strata. Some of this transitional appearance may be attributable to simple physical mixing of deposits, but the basic stratigraphic integrity of the site is indicated by consistency of the two radiocarbon dates from stratum B (A.D. 1039 " 80 and 976 " 90). The upper stratum at Spring Garden Ravine contains small projectile points (arrowheads), hopper mortars, and other artifacts comparable to recent archeological collections elsewhere in the northern foothills. Stratum A is, therefore, probably a manifestation of the ancestral Nisenan, the Indian group inhabiting the area at the time of Euro-American contact.

CA-PLA-329, the Tofanelli Ranch Site, is located north of Auburn and west of the Auburn Ravine project area, but still essentially within the foothill zone. The site was first excavated by Dondero (1980) and later by Peak & Associates, Inc. (Oglesby 1990). There are distinct similarities between this site and CA-PLA-14, including an extensive midden with horizontal stratigraphy, in particular, a distinct cemetery area. In the case of CA-PLA-329 this is a later cemetery--protohistoric to early historic, in fact--characterized by beads of European manufacture, a high burned bone and ash content, and dark colored soil.

Both excavations at CA-PLA-329 were directed toward establishing the significance of the site and defining boundaries so that the site could be protected during development in the area. As a result, the volume of excavation was quite small in both cases and the recovery of artifacts, other than debitage, was relatively scanty. Dondero (1980:12-17) recovered only late prehistoric projectile points, but Oglesby (1990:26-28) reported that Martis Corner Notched and Martis Triangular (per Elston et al. 1977) and Elko Series points were more common than later types. This is probably an example of horizontal stratigraphy, since the four units excavated in 1990 were concentrated in a single locus within the site area.

Both reports on excavations at CA-PLA-329 included analysis of the lithic debitage that was common at the site. In both cases the analysis indicated that locally available materials were by far the most common. Obsidian formed less than three percent of the debitage and there was little evidence of on-site manufacture of obsidian tools. There was some primary reduction of local materials, but the main activity was reducing bifaces to projectile points and other tools.

Excavations by Chavez (1982) at sites on Linda Creek and Strap Ravine corroborated the findings of earlier work that indicated that the strong Central Valley association during the prehistoric period might not extend to earlier periods. In the Linda Creek area, only site CA-PLA-210 produced artifacts from excavation units. There was evidence of two components at the site, although they were not distinctly separated by stratigraphy. The more recent component, characterized by Desert Side Notched points and emphasis on the use of chert and other silicates, probably dates to Phase II of the Late Horizon -- about A.D. 1500 to the time of European contact. The older component is represented by one Gunther Barbed-like projectile point and an emphasis on basalt as well as silicates. This component probably dates to Phase I of the Late Horizon, about A.D. 500 to 1500.

The Strap Ravine sites appear to have been occupied earlier than the Linda Creek sites, and, although times of occupation overlapped, they were probably abandoned earlier as well. The excavations at CA-PLA-38 recovered enough obsidian flakes to permit sourcing by X-ray fluorescence and dating by obsidian hydration. This dating technique indicated occupation of the site from about 500 B.C. to A.D. 500. Chavez, on the basis of projectile point types recovered from the site, suggests that occupation continued later than this, through Phase I and possibly into Phase II (Chavez 1982:51).

Artifacts that suggest occupation earlier than A.D. 500--into the transitional period between the Middle and Late Horizons--include a Type C3 *Olivella* shell bead and two slate projectile points bearing distinct morphological similarities to Martis Complex styles. The slate points, both recovered from CA-PLA-87, resemble a Type 4c point as defined at CA-NEV-15 (Elsasser 1960) and a Martis Contracting Stem (Elston et al. 1977) according to Chavez (1982:47). Point types suggesting Phase I occupation were also recovered from Strap Ravine sites.

Chavez (1982), dealing with a limited artifact collection, did not go so far as to suggest occupation of the area by a population bearing the Martis Culture. He noted the position of the project vicinity between three areas of differing cultural sequences (as mentioned above) and suggested that the wide variety of artifact types indicated that the area "...could have served as a culture contact and exchange 'hub'..." (Chavez 1982:52). A test excavation performed by Peak & Associates (1988b) on a very small midden site, CA-PLA-176, on the Linda Creek watershed, also recovered a slate point similar in style to those associated with the Martis Culture.

The presence of Martis-like (Middle Archaic) artifacts was also noted at site CA-PLA-633 (Locus C) and CA-PLA-636 (Davy 1989) located in the Stanford Oaks Project area, several miles to the south of the current project area. Of the 27 projectile points recovered during the excavation of the sites within the Stanford Oaks Project area, six (22 percent) weighed more than two grams, and "...may or may not have been atlatl...dart points" (Davy 1989:163).

Features consisting of ash deposits and/or ash deposits with significant amounts of charcoal were discovered by Davy in nine different units at five sites or site loci. Three of these features were dated through radiometric analysis and provided dates of 46 " 48 B.P. (A.D. 1904), 491 " 74 B.P. (A.D. 1459), and 543 " 47 B.P. (A.D. 1407). The later two dates of A.D. 1407 and 1459 probably accurately reflect the age of these features and period of site occupation. The presence of clamshell disc beads and Desert Side Notched Series projectile points at these sites is consistent with these radiometric dates.

Other "Martis-like" projectile points were discovered at sites in the Rocklin area tested by Peak & Associates, Inc. Testing at CA-PLA-674, -675 and -676 produced projectile points of the Martis Corner Notched, Cottonwood Triangular and Gunther Barbed types (Gerry and Oglesby 1991:37). The same types were recovered from CA-PLA-668 and -671, with the addition of a still older type, the Stanislaus Broad Stemmed (Oglesby 1991:33-34). The latter type was defined from work at

Clarks Flat in Stanislaus County and is considered diagnostic of the period from about 6000 B.P. to (tentatively) 4000 B.P. (Peak and Crew 1990:229-231).

Ethnographic Background

The project area lies in the territory attributed to the Nisenan -- a branch of the Maidu group of the Penutian language family. Groups belonging to this language family dominated the Central Valley, San Francisco Bay areas, and western Sierra Nevada foothills before Euro-American settlement. The Nisenan controlled the drainages of the Yuba, Bear, and American rivers, along with the lower portion of the Feather River. The Indians of this whole region referred to themselves as Nisenan, meaning "people," in contrast to the surrounding tribes, in spite of close linguistic and cultural similarities. For this reason, they are usually named by this term rather than the more generic "Southern Maidu." In any event, the local main village was of more importance to the people than the tribal designation, and groups identified themselves by the name of the central village.

The northern boundary of the Nisenan has not been clearly established due to similarity in language and culture to neighboring groups. Their eastern boundary was the crest of the Sierra Nevada. Probably a few miles south to the confluence of the American and Sacramento rivers on the valley floor was their southern boundary. Their western boundary extended from this point upstream to the mouth of the Feather River.

At the time of the gold rush, the Auburn/Newcastle/Lincoln/Rocklin area was occupied by the Nisenan Indians, identified by the language they spoke. There have been several general treatments of the Nisenan culture by Beals, 1933; Kroeber 1929, 1953; Littlejohn 1928; and Wilson and Towne 1978, Wilson 1982. There are also several more specific articles on various aspects of their culture as reported in the bibliography and elsewhere. The following text by Norman Wilson, where not cited, is derived from Wilson and Towne 1978 and Wilson 1982.

The Nisenan peoples occupied the drainages of the Yuba, Bear, and the American Rivers from the Sacramento River on the west to the summit of the Sierra in the east. The Foothill and Hill Nisenan peoples were distinctive from the Valley Nisenan and were loosely organized into triblets or districts with large central villages, surrounded by smaller villages. These are often referred to as winter villages by older Indians. These central villages and their leaders seemed to have had power or control over the surrounding smaller villages and camps and specific surrounding territory (Beals 1933; Littlejohn 1928; Wilson and Towne 1978). These districts were oriented to the natural resources and the landforms. In the foothills and mountains the major drainages became formal or informal boundaries with the land in between forming the district. Thus, the Placerville District is between the Cosumnes River and the Middle Fork of the American River, the Auburn District between the Middle Fork of the American River and the Bear River and the Nevada City District between the Bear River and the Yuba River. There were other villages and headmen in these districts that also held significant power and at the present time it is not clear where most of these were.

In the valley there is also the pattern of major villages controlling land and local groups of Indians. Different than the hills, the land between drainages becomes the separation between districts with the controlling villages situated along the major rivers. *Pujuni* at the mouth of the American River is a good example. There also seems to be a separation of the Valley Nisenan and the Foothill Nisenan near the edge of the valley where the foothills start. The valley peoples were more oriented to the Sacramento, American, Yuba, Feather and the Bear rivers on the valley floor. Their large villages with their complex and rich culture are usually found along these watercourses. It is believed that they occupied both sides of the rivers and used the river courses for communication and major resource exploitation. Smaller stream courses were often occupied with permanent villages and seasonal campsites. They were not large villages and some may reflect a budding-off of valley peoples as populations expanded in late times.

All the Nisenan depended on activities attuned to the seasonal ripening of plant foods and the seasonal movements and migration of the animals and the runs of fish. With the flooding of the valley in the winter and spring a great number of animals such as elk, antelope and bears moved to the natural levees along the rivers and up into the lower foothills. Along the foothill margins they joined the resident and migratory deer herds. Huge flocks of waterfowl visited the flooded areas between the rivers and the foothills, coveys of quail gathered in the fall, and pigeons were common in the fall and spring. Steelhead and salmon ran up most of the major streams including Secret Ravine and Auburn Ravine in the fall, winter and spring. The hunting of these plentiful resources was part of the foothill lifeway. This same bounty was available to the river-oriented valley peoples out on the valley floor and along the natural levees of the rivers. There was probably not a great deal of competition for resources at this time except in lean years. Both the valley and foothill peoples lived at the edges of rich ecotones: the rivers and the valley floor; and the valley floor and the foothills.

The valley floors between the rivers were not permanently occupied and became seasonal resource bases. In many places the areas between the rivers were shallow overflow basins that flooded in the winter and spring creating great tule forests, ponds and swampy areas, in some areas there were oxbow lakes and other permanent ponds. These were hard to cross until summer and became a major resource base for the valley groups. Often access was made possible by the burning of the tule. These areas were rich with plant and animal resources including herds of deer, elk and grizzly bears, and were exploited by the surrounding Indian people.

There were major north-south Indian trails along the margin of the foothills that were usable year around as well as other trails east and west along the natural levees of the stream courses. Smaller streams and oxbow lakes on the valley floor were sometimes occupied with permanent villages but in most cases were used as seasonal camping sites. The hunting of game, gathering of seeds, tule roots, acorns and other plant products and fishing on the valley floor and watercourses provided the major food resource needs for these valley peoples. Social and religious ties in the valley were stronger to the north and west along the rivers than to the east. Trading, territory disputes and resource competition were common activities between the valley peoples and the foothill peoples. The foothill peoples did not trust and often had disagreement and conflict with the valley peoples.

While the Hill Nisenan to the east in the foothills carried on trade with the valley peoples and shared some of the cultural traits, they lacked the complexity or richness of the Valley Nisenan. They had a different resource base to work with which required greater mobility and a more intense use of the available resources (Matson 1972). They developed a local culture that was more oriented to the gathering, storage and year round use of the acorn, continual foraging of resources by everyone in the village group, specialized hunting strategies and availability of different plants to gather and process (Erskian and Ritter 1972). They depended on activities attuned to the seasonal ripening of plant foods and the seasonal migrations and increased populations of animals and insects. The foothill resource quest of foraging for food, or the immediate use of resources, as much as gathering, for future needs, meant they had to be much more mobile in their use of the land and its resources. Population densities and the large number of campsites reflect the more limited ability to acquire and utilize the fewer available resources: they had to work harder for less.

This continual movement annually of small groups east up slopes in the spring, summer and fall and the return to the west in the winter and early spring meant that they did not have the time or ability to accumulate elaborate wealth or develop complicated social organizations as did Valley Nisenan. The valley people were living in permanent large villages with rich local food resources, specialization, elaborate religious and social activities, trade and idea sharing with neighboring groups. The valley peoples were well supplied from the river environment. Tule roots and oak groves, birds and fish along the rivers were important and they could also take advantage of seasonal gathering trips outward from their villages to the valley floor for additional resources. They had the ability to accumulate surplus resources for trade, and population expansion.

The continual movement further meant the foothill people did not have large year-round villages. There are no known major villages in the foothills or mountains that can compare with the valley permanent village sites or population densities. However, there are hundreds of small campsites and villages scattered across the foothills and mountains with certain localities as the centers for these hill peoples. There was no area in the resource range that was over two days travel from the winter village or camp and much surplus food was carried back to the home village during the year for winter use. It was not uncommon for the older people to stay at the home village year round and sometimes very young children were also left behind.

These centers or winter villages provided both a home base for the storage of foods and the opportunity for social intercourse during the part of the year when the foraging and gathering of plants was limited and the weather required the shelter of more substantial winter houses.

These winter villages and camps were larger and are often represented today by their size and depth of midden. Often there was a semi-subterranean excavated dance house, a permanent water source and a cemetery at or near these sites. The foothill people often left these winter villages and went down slope to the valley edge to take advantage of the fish runs, waterfowl, and herds of large game. The fact that there is nowhere in their territory that is more than one or two days away from the winter village meant that it was possible to have some winter movement to the valley floor or up into the mountains by small groups of hunters, families or those who wanted to visit or trade. Winter ceremonies were well attended by the local peoples. For the Auburn/Newcastle group it was not over 10 miles or a day's trip to the valley floor or any other area or village in their district.

It appears that the hill people were more socially organized around the extended family than to the village and would often camp in informal family groups around the central village. Since they did some foraging and extensive fishing and hunting in the winter they needed to have some access to a resource base at all times. However due to the ability to store acorns and other dried foods and take advantage of the winter concentrations of game, birds and fish they could pull together in closer living areas in the wintertime. There is some evidence that these winter villages were moved at times if the local resources were to badly depleted. Over a long period of time a center village may have been abandoned and moved and then reoccupied at a later time. Many place names refer to these old or unoccupied sites.

At the centers there was the need to build and maintain more substantial houses for winter living. Larger family houses, a dance house and acorn granaries were part of these winter quarters. The availability of firewood may also have been a factor for a preference for living up in the oak woodlands of the foothills. Winter was the time of ceremonies, social gatherings and marriages. Shamans had contests, children were trained, and trade items, tools, baskets and equipment were made and repaired.

Trails were permanent and well used. Winter villages of the Foothill Nisenan were often between the 1000 and 2000-foot level and usually on flats or ridge tops with a southern exposure. It is believed that the people liked to be above the fog and in the sun in the wintertime. The top of the winter fog cover over the Sacramento Valley rarely goes above the 1000-foot level. The Auburn/Newcastle area was one of these central areas where the peoples gathered in the winter. What is not clear is how many of the families moved to the center villages in the winter. Since the distances were short to almost any area in the triblet territory, it is possible that many small groups settled in good campsites along the foothill fringe. These people would come to the major ceremonies at the center villages and go home afterwards.

With the Auburn group, there was considerable visiting and trade with the peoples of the south side of the Middle Fork of the American River who looked to the local villages of the Pilot Hill area and the Coloma area for their leadership. The same activities occurred to the north with the Bear River villages above the valley floor. Also, these people traded and visited with the Indians of the Forest Hill Ridge and used this ridge route to cross the Sierra to trade with the Washoe. There was some intermarriage with the Washoe, and Foothill Nisenan preferred the Washoe seed beater baskets. They seemed to be quite friendly and cooperative with these adjoining groups of hill people. One battle at the forks of the American River is recorded between the Pilot Hill groups and the Auburn group. Fishing for eels and salmon on the creeks and the upper American River was also done in the prehistoric period. Indian peoples from this area traveled as far as Salmon Falls on the south fork of the American River to gather eels in the nineteenth century.

The Auburn center's influence is up the Forest Hill Ridge to the east, north to the Bear River, south to the Middle Fork of the American River and down Secret Ravine (*Hoyok sayo*) and the Auburn Ravine (*Wishmin sayo*) to near Lincoln. In this area there were several smaller villages and extended family groups who remained independent but did pull together in the Auburn area for Big Times, ceremonies and dances.

In the nineteenth century, the Auburn headman, Captain Tom, and Auburn triblet center villages (*Wen ne a, Molma, Hu'ul and Bisian*) were very influential with these foothill groups. Most informants indicate that in historic times the Lincoln salt spring (*Ba mu ma*) was under the control of the Auburn group; also the villages at Rocklin (*Ba ka cha*), Loomis (*Odayan*), and (*Opule*) near Horseshoe Bar (*Piu hu and Kotomyan*) near Newcastle and (*Pit chi cu*), which was near Roseville. When the hill peoples moved west in the late winter, or early spring, there was always the possibility of trouble with the valley peoples who also would be out on the valley edge and the lower foothills for early spring resources.

In the mid-nineteenth century Captain Tom would say when the people would go to the west towards Lincoln and would announce the rabbit drive and the collection of salt. Quite often the westward movement would be the joining of several groups. Auburn, Colfax and Newcastle people would go down to the edge of the valley and camp together or close to each other for mutual protection and would also join together for large rabbit drives, fishing and the gathering of early spring plant foods (Wilson n.d.). In the spring the grizzly bears were a constant threat especially at fishing sites along the streams and rivers.

Villages at Newcastle would join with the Auburn villages for trips to the valley to hunt rabbits. There are stories of villages and families combining their rabbit nets to make barriers several hundred yards long for use in the lower foothills and the valley floor for major rabbit drives (Hudson 1982; Littlejohn 1928; Wilson 1982). One net at Auburn was so big that it took two horses to move it down to the valley. It was on these spring trips that they would also get their salt from the springs near Lincoln, and carry on trade with valley groups (Beals 1933; Wilson 1972).

Both Auburn and Newcastle had dance houses and it was said that some ceremonies could not be held outside the dance house (*kum*). Other smaller villages in the region also had dance houses but they were quite small and were used for local ceremonies and by the village men as a sweat or club house. Often visitors would be put up in the dance house (Beals 1933).

Two kinds of family houses were made. One was a more permanent winter house (*hu*) with a strong frame and covered with brush, mud or cedar or pine bark. It was partially excavated with an inside hearth and in some cases a portable mortar set into the ground. Sleeping was done around the edges on mats and skins, with benches or shelves to hold equipment and foods (Beals 1933, Wilson n.d.). It was often up to 15 feet in diameter and provided shelter for several persons. These are often associated with the dance house (*kum*), sweat houses, and acorn granaries, and were part of the permanent villages.

The other was a house used when away from the main village and was made quite quickly of a frame covered with brush, boughs and tules. It also was excavated slightly with the removed earth piled on the outside at the base to block the wind. It often did not have a hearth and was used for sleeping and storage only. These camp shelters would be taken down when the group moved on so that animals would not live in them. When rebuilding them they were cleaned out and fresh earth was used for the floor. Hearths were usually outside at these temporary houses and often there was a common firepit for several families associated with the temporary shelters. For a quick shelter in the summer, a low circular brush wall was built in a sheltered or shaded location. Sometimes an old housepit was used for this (Wilson n.d.).

The cemetery sites were usually associated with the permanent villages but could be in a separate location nearby. Villages would be moved occasionally, but the cemetery site traditionally remained in the same location.

Sometimes large flats away from the village were traditional gathering places for Big Times, "crys" or second burnings, trade and major ceremonies. This site was often used when peoples were invited from outside the local group's area. This meeting place could be near a shrine or major landmark. Size of crowds, mistrust of strangers, availability of campsites, firewood and water and a central location also influenced where this might be. Several hundred persons could attend one of these gatherings.

At the contact time there was a loose consortium of extended families and small villages that looked to the large Auburn area village and its chiefs as the center of their social-political life. The headman (Captain Tom) at the Auburn village (*Wen ne a*) had considerable power over the people from Rocklin to Colfax and up the northern and western side of the Middle and North Forks of the American River. It is believed that he also had power to the north to the Bear River from the Colfax area to where the river joins the valley floor. This connection is not clear. This Auburn influence also may be the result of both the epidemic of 1833 and a major shift in the Indian populations after the gold rush. This could develop a concentration of Indian political power associated with the white population centers and the availability of areas that Indians could occupy without persecution. Indians were an important labor source in the early gold rush. The Nisenan headman very often contracted with the miners to provide labor from his village. After 1850, however, the Indians were not welcome at the mines and there was severe treatment of visible "wild" Indians.

After the initial rush, the disrupted Indians were able to find areas to maintain some of their traditional ways. Some ranchers, such as Joel Parker Whitney, the developer of the English Colony and Spring Valley Ranch where the Project is located, allowed local Indians to return to his ranch.

The relationship of the Roseville and Lincoln districts is not understood. Large village sites with extensive middens are recorded in the Lincoln area along or near the Auburn Ravine and the Roseville area along Secret Ravine and Dry Creek. These large village occupations of the lower Auburn Ravine and Secret Ravine indicates that at some time there was more intensive permanent occupation of the lower edges of the foothills where they meet the valley. It may have been as recent as the 1833 epidemic.

The introduction of malaria to central California *circa* 1831 occurred as a result of expeditions of several fur brigades of the Hudson's Bay Company with infected individuals. The introduction of the disease led to the tremendous epidemic of 1833 that decimated the Indian population of the region. An estimated three-quarters of the total Indian population of the region died from the disease in that year.

It is part of the Nisenan lore that the Roseville peoples were killed during the 1833 plague, and are not well represented in the ethnographic record. It may well be that the Auburn group replaced the Roseville center and perhaps the Lincoln villages after the 1833 epidemic. It also may be that these large villages were more oriented to the west and the Valley peoples at one time.

Historic Background

The project area also lies in the territory controlled by the Nisenan at the time of contact. The project area also may span the dividing line between two of the subgroups of the Nisenan--the Valley Nisenan and the Hill Nisenan. The Valley people lived in large villages along major drainages, but seasonally ventured out to exploit the vegetal food sources available at certain times of the year. After the time of contact, it is known that the Lincoln area was controlled by Captain John, a major chief based at Auburn who controlled the chiefs of several other smaller tribelet groupings of Hill Nisenan (Littlejohn 1928).

The same Captain John who was known to be a major leader may be the same Indian man who led his people onto the lands of Joel Parker Whitney. Much of the project area is a portion of the vast Spring Valley Ranch of over 20,000 acres accumulated and held by the Whitney family, from the late 1850s until 1949. Most of the land in the project served as seasonal range for cattle and sheep, with some of the flatter lands used for growing hay (Miller 1969).

The rancher or farmer with a land holding of 160 or 320 acres in the region, might be living on the edge, just eking out an existence. The Native Americans would have been seen as economic competition, and access to their former lands would have been denied. The vast acreage held by Whitney, coupled with the tremendous wealth he accumulated, apparently allowed Whitney to readily accept the Native American use of his land.

Whitney describes in a 1906 reminiscence the Native American use of Spring Valley Ranch for the collection of clover and acorns, major communal grasshopper drives, as well as the traditional use of a mineral spring for medicinal purposes by the band of Indians led by Captain John. A number of bands had been allowed to use the lands of Spring Valley Ranch over the years, but eventually the number of groups dwindled to just the group led by Captain John. Captain John returned annually to the ranch, and would greet Whitney at his home. Whitney considered Captain John to be a friend, and spent time with the man during his visits. At their initial meeting upon the group's return, Whitney would give the Indians meat, bread and canned goods, with parcels of clothing and hats. The band evidently stayed for some time, as Whitney reported that Captain John would come weekly during the stay for a personal interview, during which time he would give Whitney a dollar in exchange for powder and balls to kill wild cats. The visits continued until Captain John died, about 1890. Whitney apparently had a great feeling and sympathy toward the Native American people, and he belonged to the Northern California Indian Association, who bought land for various Indian groups (Miller 1969:189-193).

In 1839 John Sutter became the first permanent Euro-American settler in the Sacramento Valley. Other white settlers arrived in the 1840s, but the population overall remained scattered, with the Central Valley sparsely settled. For the 15 years from the 1833 epidemic up to the gold rush, there are few written records, but it can be concluded that malaria remained well established in both the Sacramento and San Joaquin valleys, afflicting both the remnant native populations and the early settlers (Gray and Fontaine 1951).

After the discovery of gold in 1848 and the subsequent influx of thousands to California, one of the earliest military posts was established to protect the settlers was Camp Far West, on the Bear River in 1849. The post was abandoned in 1852 because, "In common with the whole Sacramento Valley, this post is very sickly from June till October" (Gray and Fontaine 1951:25). The site of the post is about 15 miles north-northwest of the proposed nature preserve, at an elevation of about 150 feet. The illness, apparently malaria, led to the relocation of the troops to a new post at the northern end of the Sacramento Valley, Fort Reading, abandoned similarly in 1856 due to malaria.

Malaria was epidemic in the mining camps of the Sierra foothill region, and remained endemic, with frequent sharp local outbreaks throughout the Central Valley until about 1880. The Sacramento Valley had a higher intensity of cases than did the San Joaquin (Gray and Fontaine 1951).

The Third Biennial Report of the State Board of Health published in 1875, referenced an undated article from *The Placer Press* [published 1855 to 1858] that reported, "Almost everybody living west of Gold Hill is either down with fever, or chills and fever, or more or less affected by the miasmatic poison generated and floating around in that locale" (Gray and Fontaine 1951:27). Gold Hill lies several miles northeast of the proposed nature preserve at an elevation of 400 feet.

Two important papers on malaria in Placer County were prepared in the 1940s by Harry E. Butler of Penryn. Mr. Butler, born about 1870, spent most of his life in the Penryn area, working as a fruit grower. He recalled visiting some of the shaft mines in the region in the 1880s, where he observed miners laying in rows at the bunkhouses, stricken with malaria. There was a heavy turnover in the labor force in part due to the prevalence of malaria, and the mines shut down before 1890. The granite quarries of the region, worked primarily in the 1875 to 1895 period, reported a large number of men laid off alternating days with chills.

The commercial fruit industry expanded rapidly in western Placer County in the late 1870s and early 1880s. Chinese laborers were reportedly used because they seemed to endure the malaria, while the white laborers could not or would not. In 1894, Japanese laborers began to move into the region, eventually providing virtually all of the fruit orchard labor for the region.

J. Parker Whitney initiated the development of an agricultural area named "English Colony" at Loomis in 1889 to the east of the project area, with 2,000 to 3,000 acres subdivided for colonists from England. Whitney and others tried to establish an English countryside in the Placer County foothills between Loomis and Newcastle, building fine homes and establishing a country club. Malaria, combined with the financial depression of 1893 to 1897, ruined the colony. The wealth of many of the colonists might have weathered the depression, but they could not withstand the disease. After the demise of the colony, the orchards became full bearing and very profitable, worked by Asian labor forces.

In 1909, several men in California joined forces to resolve the malaria problem through an attack on the disease vector, the mosquito. Harry Butler had discussed the malaria problem with a minister of one of the churches in Penryn, Frederick Morgan. After confirming the vector theory with a Sacramento physician, Morgan wrote to College of Agriculture of the University of California; subsequently Professor William Herms undertook a planning study for control operations in 1910.

The campaign conducted at Penryn in 1910 was only the third malaria control campaign in the United States, but it was the first selective attack upon the vector species focusing specifically on the *Anopheles* mosquito. The 1910 campaign proved to be a success, with a 45 percent reduction in malaria that year. Follow-up work the following year resulted in the elimination of the disease in the Penryn area.

The development of the English Colony and nearby regions as a fruit-growing region was facilitated by the installation of the Central Pacific Railroad line linking Sacramento and Newcastle in 1864, and the final completion of this line into a transcontinental system. The nearby community of Loomis, for example, was named in honor of Jim Loomis, a local railroad agent and saloonkeeper, in 1884. The area had previously been known as Pino, but confusion with the larger community of Reno forced the name change (Gudde 1969:182).

The project area is now a portion of the City of Rocklin. The importance of granite quarrying in the region is attested by the place names of Rocklin and Penryn. Rocklin was applied to a railroad stop on the Central Pacific line with the name derived from the Celtic word *lin* meaning spring or pool. Penryn was established in 1864 by Griffith Griffith who had began the quarrying of granite in the area. Penryn was originally spelled Penrhyn, after Griffith's hometown in Wales, but the "h" was dropped by the railroad when they built a station there (Gudde 1969:242, 271). The Griffith Quarry employed as many as 250 individuals at one time and continued in operation until 1918 (Kyle 1990:263).

<u>On-site Cultural Resources</u>

From previous studies, there are nine prehistoric period sites reported within the property. Additional surveys by Peak & Associates revealed the presence of an additional 25 sites, for a total of 34 prehistoric period resources and one historic period site within the project. Each of the sites is identified in Table 1. The prehistoric sites were reviewed as the Clover Valley Lakes archeological district, with the Corps of Engineers submitting this determination for review to the Office of Historic Preservation. On October 3, 2002, the State Historic Preservation Officer concurred that the sites form a district, eligible for the National Register of Historic Places.

Paleontological Resources

TABLE 1: CLOVER VALLEY LAKES CULTURAL RESOURCES

Prehistoric Period								
Resource	BRM	Midden	CDs	Human Remains	Projectile Points	Ground Stone	Lithic Tools	Obsidian Debitage
CVL-2	X	X	X	X	X	X	X	X
CVL-3	X	X			X	X	X	X
CVL-4	X	X			X	X	X	X
CVL-5	X	X			X	X	X	X
CVL-6A	X					X		
CVL-6B	X							
CVL-7	X	X			X	X	X	X
CVL-8	X	X			X	X	X	X
CVL-9	X	X		X	X	X	X	X
PA-98-100		X	X	X	X	X	X	X
PA-98-101	X	X			X	X	X	X
PA-98-102	X							
PA-98-103	X	X						
PA-98-104	X							
PA-98-105	X							X

TABLE 1: CLOVER VALLEY LAKES CULTURAL RESOURCES (continued)

Prehistoric Period								
Resource	**BRM**	**Midden**	**CDs**	**Human Remains**	**Projectile Points**	**Ground Stone**	**Lithic Tools**	**Obsidian Debitage**
PA-98-106	X	X		X	X	X	X	X
PA-98-108	X							
PA-98-109			X		X	X		X
PA-98-110	X					X		
PA-98-111	X							
PA-98-112			X					
PA-98-113	X							
PA-98-114	X							
PA-98-115	X				X	X	X	X
PA-98-116			X			X	X	X
PA-98-117	X							
PA-98-118	X		X					
PA-98-119					X	X	X	X
PA-98-120	X					X		
PA-98-121		X	X		X	X	X	X

TABLE 1: CLOVER VALLEY LAKES CULTURAL RESOURCES (continued)

Prehistoric Period								
PA-98-122	X		X					
PA-98-123	X							
PA-98-124	X				X	X	X	X
Historic Period								
Resource	**Structural Remains**	**Standing Structures**	**Artifacts**	**Human Remains**	**Associated Features**	**Ownership Data**	**Temporal Material**	
PA-98-107	X							

Regulatory Context

Federal and State Regulations

Cultural Resources

Federal, state, and local governments have developed laws and regulations designed to protect significant cultural resources that could be affected by actions that they undertake or regulate. The National Environmental Policy Act (NEPA), the National History Preservation Act of 1966 (NHPA), the Antiquities Act, and the California Environmental Quality Act (CEQA) are the principal federal and state laws governing preservation of historic and archaeological resources of national, regional, state, and local significance.

Federal Regulations

Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and affords the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The Council's implementation regulations, "Protection of Historic Properties," are found in 36 Code of Federal Regulations (CFR) Part 800. The goal of the Section 106 review process is to offer a measure of protection to sites that are determined eligible for listing on the National Register of Historic Places. The criteria for determining National Register eligibility are found in 36 CFR Part 60. Amendments to the Act (1986 and 1992) and subsequent revisions to the implementing regulations have, among other things, strengthened the provision for Native American consultation and participation in the Section 106 review process. Although federal agencies must follow federal regulations, most projects of private developers and landowners do not require this level of compliance. Federal regulations only apply in the private sector if a project requires a federal permit or if it uses federal money.

Under NHPA, the quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, material, handiwork, feeling, and association. Additionally, the National Register of Historic Places requires consideration of significance of any structure over 45 years old.

State Regulations

State historic preservation regulations affecting this project include the statutes and guidelines contained in the California Environmental Quality Act (CEQA; Public Resources Code sections 21083.2 and 21084.1 and sections 15064.5 and 15126.4 (b) of the CEQA Guidelines). CEQA requires lead agencies to carefully consider the potential effects of a project on historical resources. An "historical resource" includes, but is not limited to, any object, building, structure, site, area, place, record or manuscript that is historically or archaeologically significant (Public Resources Code section 5020.1).

Advice on procedures to identify such resources, evaluate their importance, and estimate potential effects is given in several agency publications such as the series produced by the Governor's Office of Planning and Research (OPR), *CEQA and Archaeological Resources*, 1994. The technical advice series produced by OPR strongly recommends that Native American concerns and the concerns of other interested persons and corporate entities, including, but not limited to, museums, historical commissions, associations and societies be solicited as part of the process of cultural resources inventory. In addition, California law protects Native American burials, skeletal remains, and associated grave goods regardless of the antiquity and provides for the sensitive treatment and disposition of those remains (California Health and Safety Code Section 7050.5, California Public Resources Codes Sections 5097.94 et al).

California Historic Register

The State Historic Preservation Office (SHPO) also maintains the California State Register of Historic Resources (CRHR). Properties that are listed on the National Register of Historic Properties (NRHP) are automatically listed on the CRHR, along with State Landmarks and Points of Interest. The CRHR can also include properties designated under local ordinances or identified through local historical resource surveys.

Senate Bill (SB) 18/922

Senate Bill 18, signed into law by Governor Schwarzenegger in September 2004, requires cities and counties to notify and consult with California Native American Tribes about proposed adoption of, or changes to, general plans and specific plans for the purpose of protecting Traditional Tribal Cultural Places ("cultural places"). Interim tribal consultation guidelines were published by OPR on March 1, 2005. The proposed project falls under the SB 18 requirements as defined by OPR, and the City of Rocklin will therefore be required to contact the Native American Heritage Commission and request consultation. SB 922 provides additional guidance to the agencies.

Paleontological Resources

Paleontological resources on federal lands are protected under various laws relating to the protection of public properties; these laws are enforced through the issuance of permits by the appropriate agencies. However, paleontological resources existing on private property within California are generally unprotected under State law. Although such resources may be protected under local laws or regulations, the Rocklin General Plan does not specifically address paleontological resources.

General Plan Policies

The following General Plan policies, laws, and regulations are applicable to the cultural and paleontological resources of the proposed project:

Open Space, Conservation, and Recreation Goals and Policies:

Policy #1	To encourage the protection of natural resource areas, scenic areas, hilltops, open space areas, and parks from encroachment or destruction by incompatible development through the use of conservation easements, buffers, set-backs or other measures. Developments shall be required to provide usable yard areas outside of conservation easements or established natural resource buffers.
Policy #3	To encourage the protection of historically significant and geologically unique areas and encourage their preservation.
Policy #16	To encourage developments to incorporate resources such as creeks, steep hillsides, and quarries in private, but restricted, ownership.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

Cultural Resources

For the purposes of CEQA, an historical resource is a resource listed in, or determined eligible for listing in the California Register of Historical Resources (CRHR). When a project will impact an archeological site or other cultural resource, it needs to be determined whether the site is an historical resource, which is defined as:

Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political or cultural annals of California may be considered an historical resource. Generally, the resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Public Resources Code SS5024.1., Title 14 CCR, Section 4852), including if the project:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Is associated with the lives of persons important in our past;
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- Has yielded, or may be likely to yield, information important in prehistory or history.

A project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.

Sites determined eligible for the National Register of Historic Places are considered eligible also for the CRHR. Since the sites in the project have been determined NRHP-eligible, they are also considered significant as a district under the CRHR.

Paleontology

The proposed project would be considered to have a significant effect on paleontological resources if it were to cause a substantial adverse change to one or more scientifically significant fossil deposits on the project site, as determined by a qualified paleontologist.

Methods of Analysis

Cultural Resources

Prefield Research

A records search was conducted at the North Central Information Center of the California Archaeological Inventory (now known as the California Historical Resources Information System) at California State University, Sacramento. Two surveys had been previously conducted within the Project (Claytor 1980; Foothill Archaeological Services 1990). Nine cultural resources were identified within or adjacent to the project area, according to the results of the two previous investigations.

Field Methods

The 1998/1999 field survey consisted initially of a brief cursory examination of the Project which identified three previously unidentified resources, designated PA-98-100, -101, and -102. Based on the results of this inspection, a complete pedestrian survey of the valley and adjoining foothill area was authorized. A team of Peak & Associates personnel inspected additional portions of the project area between November 2 and 7, 1998 by means of transects with spacing that did not exceed 15 meters in width. Twenty-two additional cultural resources were identified (PA-98-103 through PA-98-124).

Shovel test pit excavations were conducted at the nine previously identified and 25 newly identified resources. Test excavations were conducted at 19 of the resources.

Consultations

After completing additional surveys of the Clover Valley project area, it became clear that the numerous prehistoric sites present required boundary definition and test excavations to determine significance. In 1999, Peak & Associates undertook test excavations at a number of the sites.

Very early on in the excavations, Peak & Associates encountered Native American remains on July 23, 1999. Following the State law, Melinda Peak called the Placer County Coroner and the Native American Heritage Commission (NAHC). The NAHC appointed Sam Starkey, representing the United Auburn Indian Community of the Auburn Rancheria ("Tribe"), as the Most Likely Descendant (MLD) for the project.

During the 1999 test, Marvin Marine, a California Indian of Maiduan descent, was present during the entire excavation process. He served as the Assistant Field Director for the archeological studies and also as representative of the Tribe, at the request of Sam Starkey and Rose Enos. After completion of the fieldwork, based on the field results and the measures suggested by Mr. Starkey, work began on the management plan for the project.

In summer and fall of 2005, Tribe Representatives began meetings with Clover Valley Partners regarding specific measures to reduce substantive project effects and to increase protection for cultural resources. The Tribe has been involved in the drafting of the Historical Properties Management Plan. These discussions are ongoing.

<u>Paleontological Resources</u>

Research Methods

Field Surveys and Sampling Methods

Project-Specific Impacts and Mitigation Measures

4.10I-1 Impacts to known cultural resources as a result of construction activities.

Although project site design has been revised a number of times to avoid and protect resources, not all of the resources can be avoided through project design. A program of mitigation has been designed to satisfy the federal requirements for this undertaking in the Historic Properties Management Plan that will be approved by the US Army Corps of Engineers and the State Office of Historic Preservation. Measures for sites include installation of temporary construction fencing to avoid short-term impacts, as well as the use of monitors during construction to ensure that sites are not damaged or disturbed during construction. For some cultural sites, data recovery excavations may occur prior to the initiation of construction. Therefore, the proposed project would result in a ***potentially significant*** impact.

<u>Mitigation Measure(s)</u>
Implementation of the following mitigation measures would reduce project impacts to a *less-than-significant* level.

4-xxx *Cultural resource sensitivity training will be provided to all construction personnel. Monitors will be utilized as necessary throughout all earth-moving activities at the project site.*

4-xxxx *To ensure that no impact occurs during construction, sites to be preserved shall be fenced with protective orange temporary fencing. The fencing shall remain in place until any or all of the following* *conditions have been satisfied: construction near the site is complete, permanent fencing is installed, or data recovery has been completed. Sites requiring this fencing are identified in the Historic Properties Management Plan.*

4-xxxx	*Due to unavoidable impacts, eight sites will require data recovery excavations within portions of the sites, as detailed in the Historic Properties Management Plan. Data recovery excavations involving a percentage of the proposed impact area will be undertaken at each of the sites to be impacted.*

4.10I-2 Impacts to potential paleontological resources as a result of construction activities.

From Bruce Hanson

4.10I-3 Increases in vandalism and artifact collecting as a result of additional residences in the immediate vicinity of valuable cultural resources.

The proposed project is a tentative subdivision map to divide the project site into a number of residential lots, increasing greatly access to the cultural sites. Therefore, the proposed project would result in ***potentially significant*** impacts to cultural resources.

Mitigation Measure(s)
Implementation of Mitigation Measures 4.xxx and 4.xxx would reduce impacts to a *less-than-significant* level.

4-xxxx	*Many of the sites will be permanently preserved, in whole or part, related to the Open Space Managment Plan Permanent fencing, designed to minimize access to sites will be installed some of the sites or portions of sites. The fencing should extend to permanent barriers to access such as the blackberries along the creek, or otherwise be designed to prevent vehicular and limit foot access. Sites requiring this fencing are identified in the Historic Properties Management Plan.*
4-xxxx	*Annual monitoring by an archeologist will occur relative to the Open Space Management Plan. Additional reviews of the sites will occur through checks by the Open Space manager throughout the year.*

4.10I-4 Inadvertent discovery of unknown prehistoric or historic cultural resources, or the discovery of human remains, due to construction activity.

A number of culturally significant cultural sites have been discovered on the project site and have been recorded. However, the potential exists that other artifacts and cultural resource sites exist on the project site, which have not yet been discovered. In addition, the potential exists that unknown human remains exist on the project site. Ground-related construction activities could result in the uncovering of either undiscovered cultural resources or unknown human remains. Therefore, the proposed project could result in a ***potentially significant*** impact.

Mitigation Measure(s)

Implementation of the following mitigation measures, specified within the Historic Properties Management Plan, would reduce project impacts to a *less-than-significant* level.

4-10MM-4a	*Cultural resource sensitivity training will be provided to all construction personnel. Monitors will be utilized as necessary throughout all earth-moving activities at the project site.*
4-10MM-4b	*If during construction, the project applicant, any successor in interest, or any agents or contractors of the applicant or successor discovers a cultural resource that could qualify as either an historical resource or a unique archaeological resource, work shall immediately stop within 100 feet of the find, and both the City of Rocklin and an appropriate Native American representative shall be immediately notified. Work within the area surrounding the find (i.e., an area created by a 100-foot radius emanating from the location of the find) shall remain suspended while a qualified archaeologist, retained at the applicant's expense, conducts an onsite evaluation, develops an opinion as to whether the resource qualifies as either an historical resource or a unique archaeological resource, and makes recommendations regarding the possible implementation of avoidance measures or other appropriate mitigation measures. Based on such recommendations, as well as any input obtain from the Indian Community within 72 hours (excluding weekends and State and federal holidays) or its receipt of notice regarding the find, the City shall determine what mitigation is appropriate. At a minimum, any Native American artifacts shall be respectfully treated and offered to the Indian Community for permanent storage or donation, at the Indian Community's discretion, and any Native American sites, such as grinding rocks, shall be respectfully treated and preserved intact. In considering whether to impose any more stringent mitigation measures, the City shall consider the potential cost to the applicant and any implications that additional mitigation may have for project design and feasibility. Where a discovered cultural resource is neither a Native American artifact, a Native American site, an historical resource, nor a unique archaeological resource, the City shall not require any additional mitigation, consistent with the policies set*

forth in Public Resources Code sections 21083.2 and 21084.1. (Note: this is way too wordy, but is taken from the sample—do we want to reduce it down to be in line with other recommendations?)

4-10MM-4b *Should human remains be found, then the Coroner's office shall be immediately contacted and all work halted until final disposition is made by the Coroner. Should the remains be determined to be of Native American descent, then the Native American Heritage Commission shall be consulted to determine the appropriate disposition of such remains.*

Cumulative Impacts

The cumulative context for cultural resources is the portion of Clover Valley Creek in the project area, due to the degree of development surrounding the site of other segments of the Creek.

4.10I-5 Regional loss of cultural resources in Placer County due to cumulative development in the Clover Valley Creek watershed in conjunction with development of the proposed project.

Cultural resources are unique and non-renewable resources, and development activities continue to damage and destroy both prehistoric and historic sites and features, in many cases, before the information inherent in them can be reviewed, recorded, and interpreted.

However, the Rocklin General Plan EIR did not find cumulative impacts to cultural resources as significant and unavoidable, and project impacts to cultural resources are mitigated to a less-than-significant level with implementation of the mitigation identified in this chapter. Therefore, the incremental loss of cultural resources resulting from the proposed project would be considered a ***less-than-significant*** impact.

Mitigation Measure(s)
None required.

[P. 1, par. 3:]
Known paleontological locality information relevant to rock units located on the site was derived from the University of California Museum of Paleontology (UCMP) locality records (http://elib.cs.berkeley.edu/ucmp/loc.shtml). Information concerning fossil localities in the region of the project site and recorded in the collections at Sierra College appears in the Sierra College paleontological collection records and in *Vista Oaks and Highland Parcel A Subdivision Projects Draft EIR* (Raney Planning and Management. 2005) in sections authored by Dr. R.P. Hilton, Professor of Geology at Sierra College. Dr. Howard Schorn, retired Curator of Paleobotany, University of California Museum of Paleontology, provided personal communications regarding the geologic context in which fossil plants occur at known localities within the Mehrten Formation.

[P. 7, Mehrten Formation, par. 2:]

While the Mehrten Formation consists entirely of rock fragments and small clasts that were produced by now-extinct Sierra volcanoes, details of clast size and modes of transport and deposition vary widely within the formation. Paleontological potential varies accordingly. Extensively exposed along the western flank of the Sierras and extending far up many mountain valleys, the Mehrten Formation has yielded both fossil plants (UCMP records; Raney Planning and Management, 2005) and vertebrates (H.M. Wagner, 1981). Both have been found only in relatively fine-grained sedimentary deposits. Dr. Howard Schorn (personal communication, 2006) indicates that the known fossil plant localities in the Mehrten Formation all occur in thinly bedded deposits formed in ancient lakes and ponds. Within Placer County, known fossil plant localities exist high in the Sierras to the east (Bowens Claim, UCMP locality PA 989; H. Schorn, personal communication, 2006) and at localities in the Rocklin-Roseville area (Sierra College paleontological collection records and R. Hilton in Raney Planning and Management, 2005). H.M. Wagner (1981) documents the geologic context of many vertebrate fossil localities about 75 miles southeast of Clover Valley: All occur within sandstone or siltstone units, sometimes with occasional gravel-sized particles, deposited in stream channels, natural levees, and floodplains. In its section on paleontological resources, the City of Rocklin 2005 General Plan Document indicates the presence of vertebrate fossils in the Mehrten Formation in the Roseville area, but no specific information or documentation is provided.

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APPENDIX H

PALEONTOLOGICAL RESOURCES

INTRODUCTION

This section of the EIR addresses paleontological resources which may be located on the project site. The extent to which development of the proposed project could remove, damage, or destroy existing paleontological resources is herein evaluated.

Paleontological resources comprise fossils — the remains or traces of once-living organisms preserved in sedimentary deposits (unconsolidated to consolidated "soils" or sedimentary rocks) — together with the geologic context in which they occur. Most fossil remains are the preserved hard parts of plants or animals, and include bones and/or teeth of once-living vertebrate animals, shells or body impressions of invertebrate animals, and impressions or carbonized or mineralized parts of plants (e.g. leaf impressions or "petrified wood"). Trace fossils include preserved footprints, trackways, and burrows of prehistoric animals and root marks created by plants. The geologic context in which fossils occur can provide important information regarding the age of the fossils and physical and biological features of the local ancient environment in which the represented plants and animals existed. Paleontologic resources are non-renewable (Society of Vertebrate Paleontology 1995).

Geologic information which contributed to the summary and conclusions presented in this section was drawn from the *Geologic Map of the Sacramento Quadrangle, California, 1:250,000* (Wagner, Jennings, Bedrossian and Bortugno, 1981); *Preliminary geologic map of Cenozoic deposits of the Lincoln quadrangle, California* (Helley, 1979); *Location of rock samples dated by radiometric methods, Sacramento Quadrangle, California* (Bedrossian, T.L. & Saucedo, G.J., 1981, *in* Wagner, *et al.,* 1981); *Geotechnical Engineering Report – Clover Valley Lakes Roads* (Wallace – Kuhl & Associates, Inc., 2001); and *Preliminary Geologic and Geotechnical Investigation Report – Proposed Clover Valley Lakes Village, Rocklin, California* (Kleinfelder, Inc., 1998).

Known paleontological locality information relevant to rock units located on the site was derived from the University of California Museum of Paleontology (UCMP) locality records (http://elib.cs.berkeley.edu/ucmp/loc.shtml). Information concerning fossil localities in the region of the project site and recorded in the collections at Sierra College appears in *Vista Oaks and Highland Parcel A Subdivision Projects Draft EIR* (Raney Planning and Management. 2005) in sections authored by Dr. R.P. Hilton, Professor of Geology at Sierra College. Dr. Howard Schorn, retired Curator of Paleobotany, University of California Museum of Paleontology, provided personal communications regarding the geologic context in which fossil plants occur at known localities within the Mehrten Formation.

ENVIRONMENTAL SETTING - EXISTING CONDITIONS

GEOLOGIC HISTORY

Geologic units now present within and near the Clover Valley project area document local events which occurred during three brief periods of the geologic history of the region.

Rocklin pluton (granodiorite)

The oldest unit, the granitic rocks (granodiorite) of the Rocklin Pluton, formed about 128 million years ago (Bedrossian and Saucedo, 1981), as magma from deep within the earth forced its way into the earth's crust where it cooled and solidified. Rocks which formerly capped this granodiorite, or were subsequently deposited at the surface, were later removed through the combined effects of uplift of the Sierras and erosion.

Mehrten Formation

Approximately 5 to 10 million years ago, during the late Miocene Epoch, volcanic activity in the Sierras generated large volumes of tuffs (volcanic ash and coarse debris) and mudflows which again buried the granodiorite. The sequence of volcanic sedimentary rocks formed by deposition of these tuffs and mudflows are now termed the Mehrten Formation. Wallace-Kuhl Associates (1998) recognized two subdivisions of the Mehrten Formation within the project site: a lower rounded-cobble conglomerate and an upper mudflow breccia (angular rock fragments with sand-silt matrix). Though later deposition of non-volcanic rocks may, in turn, have buried the Mehrten Formation locally, renewed erosion in the Pleistocene Epoch (about 1.8 million to 10,000 years ago) removed these younger deposits and carved drainages, including Clover Valley, through the Mehrten Formation and into the underlying granodiorite, though remnants of the Mehrten remain on the upper valley flanks and ridge tops within the project area.

Pleistocene deposits

As sea levels fluctuated during the glacial cycles of the Pleistocene Epoch ("ice age", about 1.8 million to 10,000 years BP), the ancestral Sacramento River rose and fell in response, creating a series of channel and floodplain deposits which now form subtle terraces on the valley floor. The oldest of these, termed the Turlock Lake Formation, extended eastward to the Rocklin–Clover Valley area, where it is now restricted to the floors of small tributary valleys (Wagner, et al., 1981). The Turlock Lake Formation occupies a valley less than 1 mile west of the project site, and appears in Rocklin in the lower part of the Clover Valley itself, less than 2 miles downstream from the project site. Though geologic maps do not indicate the presence of the Turlock Lake Formation within the Clover Valley Lakes project site, remnants of this unit may exist within the site, below the cover of Recent deposits.

Recent deposits

Probably in response to the last rise in sea level near the end of the Pleistocene, stream-lain sediments (alluvium) accumulated to depths locally exceeding 14 feet in the lower parts of Clover Valley within the project area to form its relatively level modern floor. Near the lateral margins of the valley floor and lapping onto the adjacent slopes, sand, gravel, and coarser clasts derived from the valley slopes accumulated directly (with little or no stream transport) to form wedge-shaped deposits termed colluvium.

A more detailed and comprehensive geologic history of the broader Rocklin area is provided by R. Hilton in Raney Planning and Management (2005).

REGULATORY CONTEXT

FEDERAL STATUTORY PROTECTION

Certain federal laws may apply to paleontologic resources located on lands subject to federal regulation.

Federal Land Policy and Management Act

The Federal Land Policy and Management Act authorizes inventories of paleontological resources on federal land managed by the Bureau of Land Management which now issues permits for collecting of fossils on those lands only for scientific purposes by recognized paleontologic institutions.

Antiquities Act of 1906

The Antiquities Act of 1906 has been cited in past efforts to protect paleontological resources on federal lands, and is currently recognized as the authorizing legislation for regulation of the collecting of vertebrate fossils on land managed by the National Park Service and Department of Energy.

National Environmental Policy Act of 1969 (NEPA) (42 United States Code [USC] 4321)

The National Environmental Policy Act directs Federal agencies to "Preserve important historic, cultural, and natural aspects of our national heritage…" (Section 101(b) (4)). Regulations for implementing the procedural provisions of NEPA are found in 40 CFR 1500 1508.

The Paleontological Resources Preservation Act

The Paleontological Resources Preservation Act (S.263) has been passed by the US Senate and is currently before the US House of Representatives. The act provides further protection for significant fossils on federal lands.

CALIFORNIA STATUTORY PROTECTION

Legal protection of paleontologic resources in California is mandated by the California Environmental Quality Act and by the Archeological, Paleontological, and Historic Sites sections of the Public Resources Code. Relevant portions of these statutes are included below. **Bold type** has been added for emphasis in this report and is not part of the cited statutes.

California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) and its guidelines include references to paleontology in the appendices. Appendix G, section V. (Cultural resources) asks "Would the project:…c) Directly or indirectly destroy a unique **paleontological** resource or site or unique geological feature ?"

California Public Resources Code

More explicit is the California Public Resources Code, Division 5, Parks and Monument, Chapter 1.7 entitled "Archeological, **Paleontological,** and Historic Sites". Section 5097 to 5097.6. states:

> "As used in this chapter, 'state lands' include lands owned by, or under the jurisdiction of, the state or any state agency".

Subsequent chapters address pre-construction plans, surveys, and excavations relating to paleontological as well as archeological and historic sites threatened by proposed projects. Section 5097.5 details sanctions:

> "Unauthorized excavation, removal, destruction, etc., of archaeological, **paleontological,** or historical features on **'public lands'** as misdemeanor..."
>
> "No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or **vertebrate paleontological** site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, **paleontological**, or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor."
>
> "As used in this section, **'public lands'** means lands owned by, or under the jurisdiction of, the state, or any **city, county,** district, authority, or public corporation, or any agency thereof".

GENERAL PLAN POLICIES

Paleontological resources are not specifically addressed under the General Plan policies, laws, and regulations, but fall under the following:

Open Space, Conservation, and Recreation Goals and Policies:

Policy #3 To encourage the protection of historically significant and geologically unique areas and encourage their preservation.

IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The California Environental Quality Act (CEQA) Checklist (Appendix G, section V. Cultural resources) asks "Would the project:...c) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature ?" CEQA does not provide further definitions or guidelines with respect to paleontological resources. As virtually any fossil (except a trace fossil) could be considered unique in that it represents the only available evidence of the former existence of an individual plant or animal at the place and time represented, the scope of this question is here narrowed to refer to *scientifically important* paleontological resources, including both potentially significant fossils and their geologic settings. A *potentially significant* impact will occur if the project affects *sensitive*, previously undisturbed sediment or sedimentary rock unless mitigation measures reduce this impact to less-than-significant level. The term *sensitive*, as used here, is discussed and defined below.

METHODS OF PALEONTOLOGIC SENSITIVITY ASSESSMENT

Data assembly

Information relevant to the assessment of paleontological sensitivity is assembled and organized within a framework of the geology of the target site and geologically comparable areas in the surrounding region. Following identification of the geologic units (usually "formations" or their subunits) within the subject area, research proceeds to investigation of published technical literature addressing the geology and paleontology of comparable units nearby, consultations with experts knowledgeable of the geology and /or paleontology of the affected geologic units, and searches of unpublished locality records at museums and other institutions which hold research collections of fossils. (There exists no common statewide repository of paleontological locality data such as exists for archeological sites). The existence (or absence) of known fossil localities in the same geologic units as those in the target area, supplemented by site-specific details of local geology from geotechnical reports and paleontologically-directed field surveys, provides the basis for assessment of paleontological sensitivity of subareas within the target site.

Analysis

Significance

Different categories of fossils vary widely in their relative abundance and distribution, and not all are generally regarded as significant. Because of their rarity, vertebrate fossils, whether preserved remains or trackways, are classed as significant by virtually all state and federal agencies and professional groups that have addressed the question (California Public Resources Code Section 5097.5, US Bureau of Land Management, 1969; Society of Vertebrate Paleontology, 1995). Fossil plants are similarly uncommon, and the Bureau of Land Management considers "noteworthy occurrences of … plant fossils" to be significant as well.

Fossils regarded as scientifically important often have been arbitrarily restricted to those dating to periods of time prior to the end of the Pleistocene, about 10,000 years ago, when a substantial percentage of the North American large-mammal fauna became extinct. However, younger prehistoric fossils may contribute to a refined understanding of the subsequent ecological adjustments that followed this major event.

The actual significance of an individual fossil cannot usually be fully assessed until it is collected, freed of surrounding rock matrix in the laboratory, and compared with other fossils in collections, perhaps at many museums. The significance of fossils not yet found is necessarily even more elusive. However, for practical purposes of *a priori* assessment, fossils falling in the above categories must be assumed significant until proven otherwise.

Potential

A separate issue is the potential of a given area or body of sediment to include fossils. While it is rarely possible to predict the location of buried fossils, information that can contribute to assessment of this potential includes:

1) *Basic rock type*. Of the three major categories of rocks (igneous, sedimentary, and metamorphic), only sedimentary rocks commonly carry a potential to include fossils. Some surface-deposited igneous rocks and low-grade metamorphic rocks may include fossils under rare circumstances, but intrusive igneous rocks (those formed at depth through cooling and crystallization of molten magma) have never been found to include fossils.

1) *Direct observation of fossils exposed at the site*. The utility of this method depends on the extent of unobscured bedrock or native sediment deposits exposed at outcrops or man-made excavations existing at the site at the time of the field survey. Even if fossils are abundant in the bedrock, soil and/or vegetation cover often obscures evidence of their presence. Failure to observe fossils during a surface survey does not assure that fossils will not be found in the subsurface.

2) *Existence of known fossil localities or documented absence of fossils nearby and in the same geologic unit* (e.g. "Formation" or one of its subunits). Sedimentary geologic formations are typically defined on the basis of details of the composition and arrangement of their component rock and mineral particles. Individual formations are approximately constrained within a specific geologic range of time throughout their extent. As some of the environmental factors which influence the defining features also influence the favorability to fossil preservation, the abundance and types of fossils tend to exhibit some consistency throughout a given formation. However, some formations exhibit a broad range of compositional features and fossil content, and assessments of potential must then be made for each definable subunit.

3) *Details of the nature of sedimentary deposits* (such as size of included particles or clasts, color, and bedding type) in the area of interest compared with those of similar deposits known elsewhere to favor or disfavor inclusion of fossils. Information about these details is derived from published geologic information including geologic maps, site-specific geotechnical data, and paleontological field surveys. Interpretation of sediment details and known geologic history of the sedimentary body of interest in terms of the ancient environments in which they were deposited leads to an assessment of the favorability of those environments for the preservation of fossils.

Sensitivity

The *sensitivity* of a given area or body of sediment with respect to paleontological resources is a function of both the *potential* for the existence of fossils and the predicted *significance* (as defined above) of any fossils which may be found there. It is a measure of the likelihood that scientifically important information will be lost or diminished as a result of project activities, hence relates most directly to project impacts.

Assessment

The goal of the assessment is to determine the paleontological sensitivity of each definable geologic unit (geologic formation or any of its distinct subunits) identified within the project site. In conjunction with construction plans, this leads to a determination of the probability that the project will (or will not) result in significant impacts to paleontological resources in the absence of mitigative measures.

PROJECT-SPECIFIC SENSITIVITY

Data assembly and information sources

Information which has contributed to assessment of the probability of occurence and significance of fossils within the Clover Valley Lakes project area has been assembled from five categories of sources: 1) published geologic and paleontologic literature, including geologic maps, 2) museum records of known published and unpublished vertebrate and plant fossil localities in the region, 3) two project-specific geotechnical reports, 4) consultation with an expert in a relevant field of paleontology and 5) a one-day field survey of selected rock units on the site. Specific sources and references for items 1 through 4 are listed in the Introduction.
In addition to the information obtained from the sources listed in the Introduction, a one-day field survey of the accessible and potentially fossiliferous geologic units within the project area was conducted by C. Bruce Hanson on January 5, 2006, during which data was assembled on the characteristics of the rock units on the site relevant to likelihood of fossil preservation.

Assessment

Rocklin pluton (granodiorite)

This intrusive igneous rock appears along both sides of Clover Valley, and is either exposed or thinly covered with vegetation and/or modern soils on the steeper slopes between the relatively level valley floor and the shoulders of the upper valley walls (Wagner, et al., 1981; Wallace-Kuhl, 1998; Kleinfelder, 2001).
Due to the very high temperatures and depth associated with the origin of this rock type, there exists no possibility that it includes fossils.
With no potential, this unit is not paleontologically sensitive.

Mehrten Formation

This sedimentary geologic formation presently caps the ridge tops and plateaus flanking both sides of Clover Valley (Wagner, et al., 1981; Wallace-Kuhl, 1998; Kleinfelder, 2001), reaching thicknesses of more than 120 feet at the higher hills within the project area.
While the Mehrten Formation consists entirely of rock fragments and small clasts that were produced by now-extinct Sierra volcanoes, details of clast size and modes of transport and deposition vary widely within the formation. Paleontological potential varies accordingly. Extensively exposed along the western flank of the Sierras and extending far up many mountain valleys, the Mehrten Formation has yielded both fossil plants (UCMP records; Raney Planning and Management, 2005) and vertebrates (H.M. Wagner, 1981). Both have been found only in relatively fine-grained sedimentary deposits. Dr. Howard Schorn (personal communication, 2006) indicates that the known

fossil plant localities in the Mehrten Formation all occur in thinly bedded deposits formed in ancient lakes and ponds. Within Placer County, known fossil plant localities exist high in the Sierras to the east (Bowens Claim, UCMP locality PA 989; H. Schorn, personal communication, 2006) and at localities in the Rocklin-Roseville area (R. Hilton in Raney Planning and Management, 2005). H.M. Wagner (1981) documents the geologic context of many vertebrate fossil localities about 75 miles southeast of Clover Valley: All occur within sandstone or siltstone units, sometimes with occasional gravel-sized particles, deposited in stream channels, natural levees, and floodplains. In its section on paleontological resources, the City of Rocklin 2005 General Plan Document indicates the presence of vertebrate fossils in the Mehrten Formation in the Roseville area, but no specific information or documentation is provided.

Wallace-Kuhl (1998) recognized two subunits of this formation within the project area: a lower conglomerate ("rounded gravel and cobbles in a partially cemented matrix of sand and silt") and an upper mudflow breccia ("angular volcanic rock in a well cemented matrix of sand and silt") which caps the hills adjacent to Clover Valley. The field survey conducted on January 5, 2006 confirmed the general characteristics and extent of these subunits as mapped by Wallace-Kuhl (1998), and furthermore revealed that both subunits include very large boulders of andesite, some of which exceed six feet in maximum diameter. The lower conglomerate appears to have been deposited during very high-energy floods or possibly as drier runout deposits in advance of the main pulse of the subsequent mudflow. The upper breccia unit may have been deposited as a single, very massive and high-energy mudflow; the deposit presents no apparent bedding or observed interruption of the upward-coarsening mixture of silt, sand, pebbles, cobbles, and boulders whose maximum diameters increase from about one foot near the base to six feet in the highest exposures. An upward increase in size of the largest clasts is often observed in volcanic mudflow deposits.

The presence of very large boulders in both of the Mehrten Formation subunits within the project area would almost certainly preclude preservation of either plant or animal fossils: the milling action during high-energy transport preceding deposition would have reduced virtually any pre-existing plant or animal remains to unidentifiable fragments. These deposits fall at the opposite end of the depositional energy spectrum from those portions of the Mehrten Formation which are known to include fossils.

With virtually no paleontological potential, the Mehrten Formation within the project area is not paleontologically sensitive.

Quaternary (Pleistocene and Holocene) deposits

Although the early Pleistocene Turlock Lake Formation has been mapped in the lower reaches of Clover Valley within two miles of the Clover Valley Lakes project area (Helley, 1979; Wagner, *et al.*, 1981), it has not been identified within the portion of the valley included in the project area itself. The possibility remains, however, that remnants of the Turlock Lake or possibly younger Pleistocene deposits could exist at depth between the present valley floor and the underlying granodiorite. Fluvial (stream-deposited) sediments, predominantly sand and silt, along Clover Valley Creek within the project area reach depths of at least 14 feet (Kleinfelder, 2001), and the deeper of these may be of Pleistocene or early Holocene (Recent) age (less than about 10,000 years).

These deeper deposits were not accessible for direct examination during the January 5, 2006 field survey, as the test pits excavated during the earlier geotechnical surveys had been backfilled, and recent rains left Clover Creek at a high level.

Fluvial sands and silts typically favor preservation of vertebrate remains as floods and shifting channels can rapidly bury remains, protecting them from scavengers and weathering. The Turlock Lake and younger fluvial Pleistocene formations elsewhere in the southern Sacramento Valley have yielded numerous vertebrate fossil localities (UCMP records; R. Hilton in Raney Planning and Management, 2005; Hilton *et al*, 2000) despite limitations of access due to vegetation, deep soils, and agriculture.

As the available evidence suggests conditions favorable to the preservation of vertebrate fossils of sufficient age to be scientifically important, in the deeper portions of the Quaternary stream valley deposits, these portions are considered to be paleontologically sensitive. These portions are bounded below by the highest occurrences of the granodiorite (Rocklin pluton), including its altered upper part. The upper boundary of the sensitive zone cannot be determined with certainty on the basis of currently available evidence: It is estimated that sediments deeper than five feet below the existing natural sediment surface may include significant paleontological resources.

PROJECT-SPECIFIC IMPACTS AND MITIGATION MEASURES

Impacts to potential paleontological resources as a result of construction activities.

A potentially significant impact will occur if the project affects sensitive, previously undisturbed sediment or sedimentary rock unless mitigation measures reduce this impact to less-than-significant level. The following conclusions summarize discussions in the "Project-specific Sensitivity" section above.

Geologic unit

Rocklin pluton (granodiorite)

The granodiorite rock of the Rocklin Pluton formed under conditions of very high temperature and deep burial, precluding the incorporation of fossils. The granodiorite is therefore not paleontologically sensitive. *No impacts* to paleontological resources will occur as a result of project activities affecting this geologic unit.

Mehrten Formation

Although the Mehrten Formation has yielded both vertebrate and plant fossils at other locations in the eastern Great Valley, the very coarse composition and implied high-energy depositional environment of the portions of the Mehrten Formation represented within the project area lead to the conclusion that this formation in this area is not paleontologically sensitive. *No impacts* to paleontological resources will occur as a result of project activities affecting this geologic unit.

Quaternary deposits

Fine sediments below the Clover Valley floor and above the underlying granodiorite of the Rocklin Pluton, locally exceeding 14 feet in thickness, were deposited under conditions favorable for the burial and preservation of vertebrate fossils, some of which may date to the Pleistocene Epoch. Prehistoric portions of these deposits are therefore considered paleontologically sensitive. Project-related excavations extending deeper than five feet below the present natural surface of the floodplain area of the valley, in areas where the upper boundary of the granodiorite is deeper than five feet, will cause *potentially significant impacts* to paleontological resources in the absence of mitigative measures.

Conclusion

Most of the area considered for development of the Clover Valley Lakes project is immediately underlain by rocks which have little or no potential for inclusion of significant paleontological resources and are therefore not paleontologically sensitive. These rock units are the granodiorite of the Rocklin Pluton and both the conglomerate and volcanic mudflow subunits of the Mehrten Formation. In combination, these non-sensitive units underlie all of the project area except portions of the valley floor and floodplain. The project will have no impact on paleontological resources in these areas.

Sensitive sedimentary deposits carrying a potential to yield significant vertebrate fossils do exist at depth below the valley floor. Project-related excavations deeper than five feet below the valley floor will cause *potentially significant impacts* to paleontological resources.

Impact PI-1

Project-related excavations deeper than five feet below the valley floor will cause *potentially significant impacts* to paleontological resources

Mitigation Measures

Implementation of the following mitigation measures would reduce project impacts to a *less-than-significant* impact:

PMM-1a — *Heavy equipment operators shall be briefed by the project paleontologist to gain awareness of visual identification techniques in order to identify potential paleontological resources.*

PMM -1b — *Should final development plans require any excavation in excess of five feet below the pre-existing surface within the area identified as Quaternary alluvium (Qal) in the project geotechnical report maps (Wallace-Kuhl, 2001, plate 3; or Kleinfelder, 1998, plate 2), a qualified project paleontologist shall monitor any such excavation and collect and document any potentially significant fossils encountered during the excavation activity. Monitoring shall be terminated at each excavation site if the monitor determines that the remainder of the excavation will not affect any paleontologically sensitive sediments or rocks.*

PMM-1c *If any paleontological resources are discovered during construction activities, all work shall be halted in the vicinity of the find and the project paleontologist shall be consulted and the City's Community Development Director shall be notified. Upon determining the significance of the resource, the consulting paleontologist, in coordination with the City, shall determine the appropriate actions to be taken, which may include excavation. A note requiring compliance with this measure shall be indicated on construction drawings and in construction contracts for the review and approval of the Engineering Division prior to any grading or construction activity or approval of Improvement Plans.*

Cumulative Impacts

In view of the absence of proven paleontological resources within the Clover Valley Lakes project area, no cumulative impacts have been identified.

Mitigation Measure(s)

None required.

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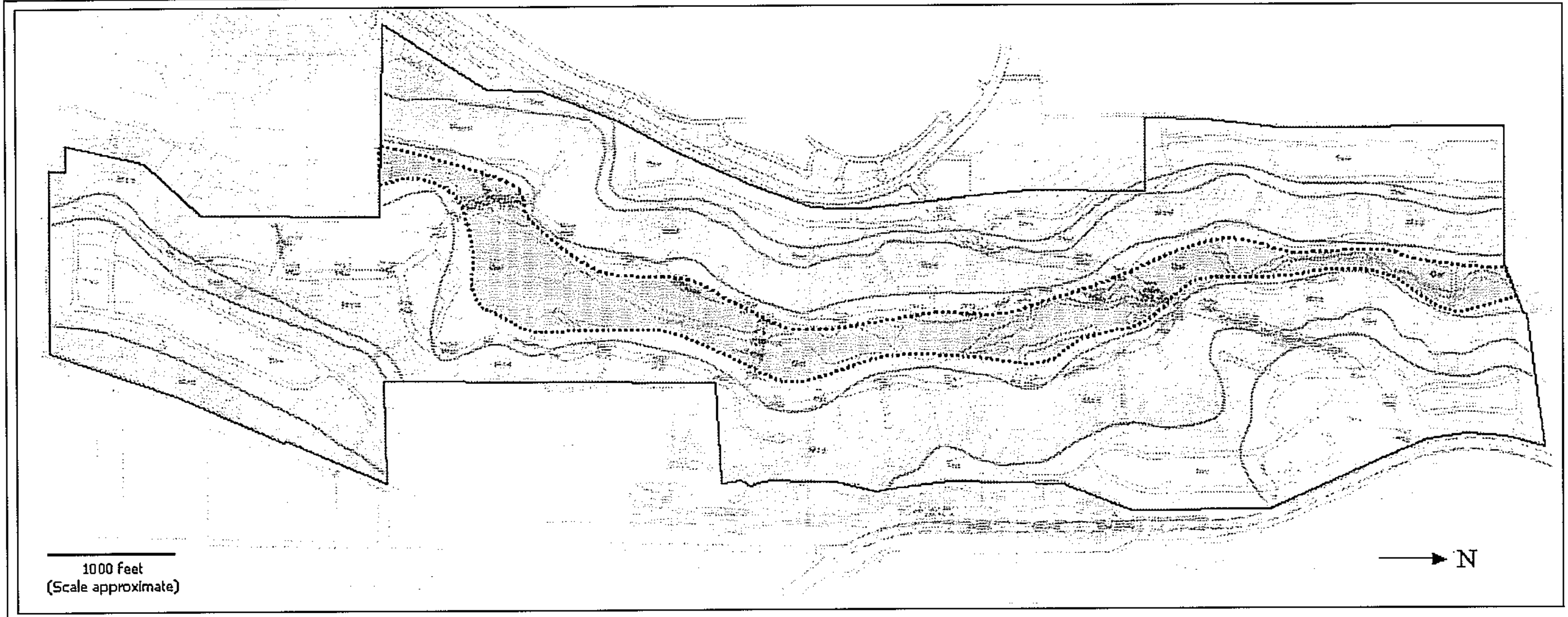

Base map and geology adapted from
Wallace-Kuhl & Associates 2001
SITE PLAN AND GEOLOGIC MAP
CLOVER VALLEY LAKES
Rocklin, California

Geologic units	
Qal	Quaternary alluvium
Tmv	Mehrten Formation volcanic mudflow deposits
Tmc	Mehrten Formation conglomerate
Mzd	Mesozoic granodiorite

Paleontologic sensitivity
Sensitive area (five feet below surface to granodiorite base)
Project boundary

Paleontological Resources

Plate 1

PALEONTOLOGICALLY SENSITIVE AREAS

Clover Valley Lakes
Rocklin, Placer County, CA

APPENDIX I

Biological Impact Evaluation

For

Clover Valley

Placer County, California

December 22, 2005

Prepared for:
Raney Planning and Management

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Biological Impact Evaluation

Clover Valley

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INTRODUCTION

The purpose of this report is to evaluate the findings of previous biological studies for the Clover Valley Lakes Project and assess the need for modifications to impacts and mitigation measures specified in the Clover Valley Lakes Large Lot Tentative Subdivision Map (LLTSM) Draft Environmental Impact Report, Biological Resources section (August 2002).

Although previous biological surveys assessed impacts to wetlands and/or waters of the U.S., various habitat types, and potential special-status species, this evaluation discusses some impacts to habitat and/or special-status species that were not previously evaluated or that would merit more in-depth assessment and discussion.

METHODOLOGY

ECORP Consulting, Inc. prepared the following evaluation of the Clover Valley Draft Environmental Impact Report (2002) and previously conducted biological surveys (listed below) to identify deficiencies within the documents. In addition to review of project-related documents and the California Department of Fish and Game (CDFG) Natural Diversity Data Base (CNDDB) data for portions of the Sheridan, Lincoln, Gold Hill, Auburn, Pleasant Grove, Roseville, Rocklin, Pilot Hill, Rio Linda, Citrus Heights, Folsom, and Clarksville Quadrangles, a reconnaissance-level field survey was conducted on November 16, 2005.

PREVIOUS BIOLOGICAL SURVEYS

The following is a list of previous biological studies.

Acorn Environmental. 1991. *Clover Valley Ranch Botanic Survey.* Georgetown, CA.

Davis[2] Consulting Earth Scientists. 1990. *Wetlands Delineation for Clover Valley Ranch.* Georgetown, CA.

Davis[2] Consulting Earth Scientists. 2001. *Clover Valley Plant and Animal Impact Analysis.* Georgetown, CA.

ECORP Consulting, Inc. 2001. *Clover Valley Creek Stream Channel and Fish Passage Investigation.* Roseville, CA.

Holland, R. 1992. Vegetation Survey Report (letter).

Sanders, S. 1992. Wildlife Survey Report (not available for review).

Sierra Nevada Arborists. 2001. *Clover Valley Lakes Oak Tree Impact/Removal Inventory.* Truckee, CA.

Foothill Associates. 2004. *Valley Elderberry Longhorn Beetle Mitigation Monitoring Plan, 622-acre Clover Valley Project, Placer County, CA.* Roseville, CA.

Stantec Consulting, Inc. 2005. *Clover Valley Tree Removal Summary.* Sacramento, CA.

SPECIAL-STATUS SPECIES ASSESSMENT

On behalf of Raney Planning and Management, ECORP Consulting, Inc. conducted a Special-Status Species Assessment of the Clover Valley site located in Placer County, California (Figure 1 – *Project Site and Vicinity Map*). The special-status species assessment included a taxa-specific literature review, a California Department of Fish and Game Natural Diversity Data Base (CNDDB) (CDFG, 2002) query, and a reconnaissance-level field survey.

For the purposes of this assessment, "special-status" refers to those species that:

- Have been designated by the California Department of Fish and Game (CDFG) or the U.S. Fish and Wildlife Services (USFWS) as either *rare, threatened,* or *endangered*; and are legally protected under the California or federal endangered species acts;

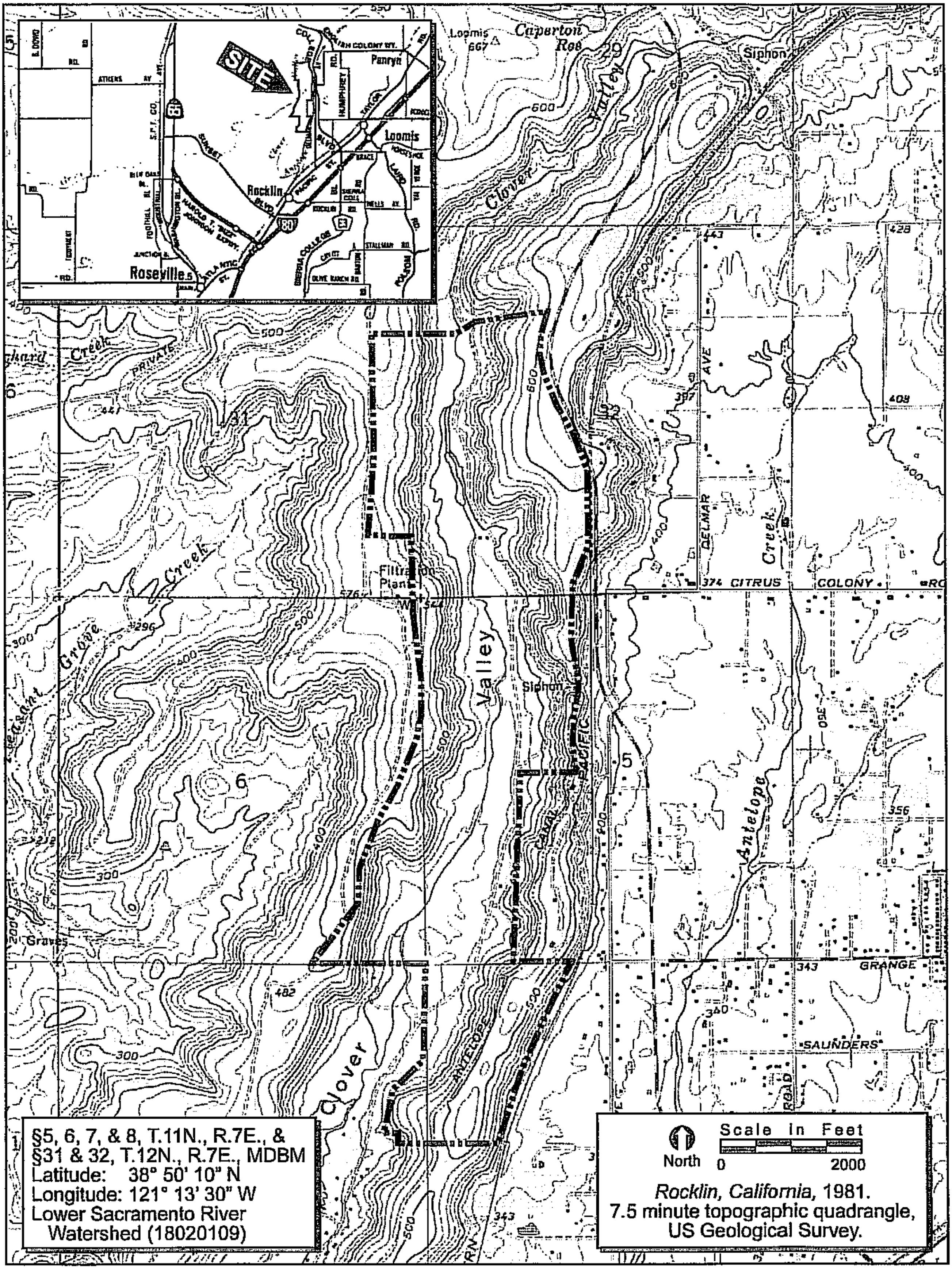
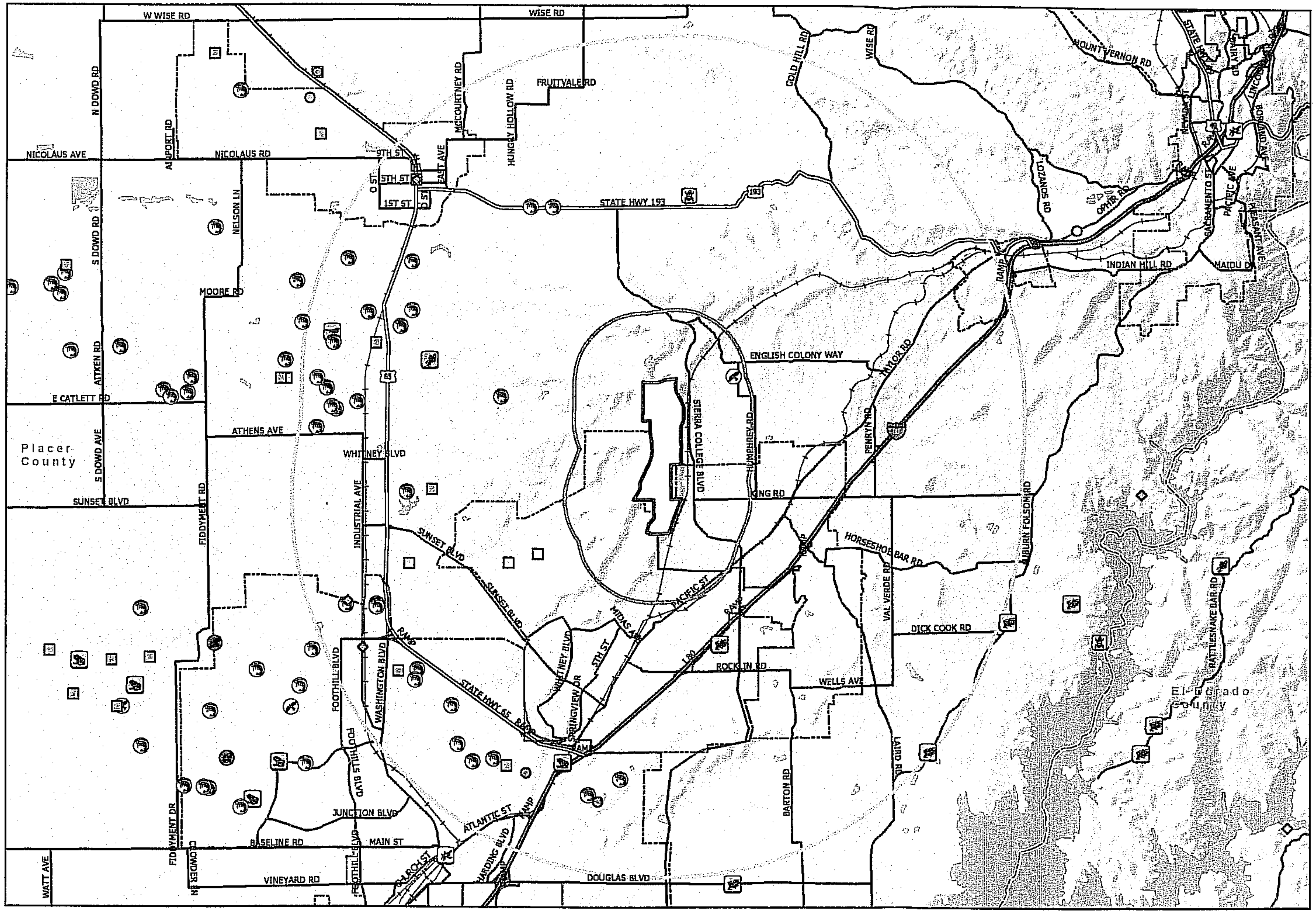


FIGURE 1. Project Site and Vicinity Map

- Are proposed or candidate species being considered for listing under either federal or California Endangered Species Acts; or

- Are of expressly stated interest to resource regulatory agencies, or local jurisdictions, such as CDFG species of special concern, USFWS species of concern, or California Native Plant Society (CNPS) List species.



Map Features

Administrative Boundaries

- City Boundary
- County Boundary
- [1] Project Boundary

Buffers

- 1 mile
- 5 mile

Transportation Network

- Interstate
- State Highway
- Roads
- Railroads

Hydrologic Features

- Lakes and Reservoirs
- Rivers

[2] CNDDB Occurrences

Plants

- Ahart's dwarf rush
- Boggs Lake hedge-hyssop
- Brandegee's clarkia
- El Dorado bedstraw
- Red Bluff dwarf rush
- big-scale balsamroot
- dwarf downingia
- hispid bird's-beak
- legenere
- pincushion navarretia

Invertebrates

- Ricksecker's water scavenger beetle
- Banksula californica
- Andrena subapasta
- California linderiella
- vernal pool tadpole shrimp
- vernal pool fairy shrimp
- valley elderberry longhorn beetle

Reptiles / Amphibians

- western spadefoot toad
- northwestern pond turtle

Birds

- Swainson's hawk
- white-tailed kite
- burrowing owl
- tricolored blackbird

NOTES

[1] Project Boundary: Selected from Placer County Assessor's GIS Parcel Database

[2] CDFG California Natural Diversity Database (CNDDB), July 2005 Update (GIS Shapefile)

Map Projection: California State Plane Zone II (NAD83) feet

N

SCALE IN FEET

5,000 2,500 0 5,000

1 " equals 9,000 '

VICINITY MAP

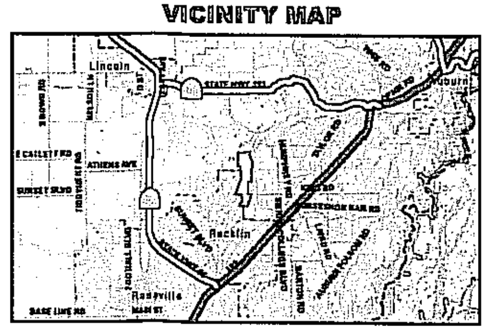


FIGURE 2. CNDDB SPECIAL-STATUS SPECIES MAP

2005-427 Clover Valley EIR

Location: J:\GIS_Maps\2005-427_Clover_Valley_EIR\	Map Name: CloverValley_CNDDB.mxd	Project Manager: HERZOGC
Original Production Date: 11/22/05	Revision:	GIS Specalist: JDS
Printing Date: 11/22/05	Scale: 1 " equals 9,000 '	

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This assessment of potentially occurring special-status plant and wildlife species is based upon available resources, as described above, and a reconnaissance-level field survey conducted on November 16, 2005. A map depicting CNDDB occurrences within the greater project region is provided as Figure 2.

Plants

There are five potentially occurring special-status plants within the Clover Valley site, Big-scale balsamroot (*Balsamorhiza macrolepis var. macrolepis*), Brandegee's clarkia (*Clarkia biloba* ssp. *Brandegee*), Stinkbells (*Fritillaria agrestis*), and Sanford's arrowhead (*Sagittaria sanfordii*). None of these species are listed as threatened or endangered species pursuant to State or federal Endangered Species Acts. All of these species are considered by the California Native Plant Society (CNPS) to be of special status. Sanford' arrowhead is a federal species of concern; however, this species was not mentioned in the USFWS's Biological Opinion, dated October 27, 2005.

The probability of special-status plant species occurring on-site is considered low. Of the species listed above, the plant considered most likely to occur is Brandegee's clarkia. This species has no federal or state listing, but is listed as a List 1b species by the CNPS. Past surveys of the property conducted by highly qualified botanists (e.g., Dr. Robert Holland) failed to identify this or any other special-status species. As the past botanical work is somewhat dated (circa 1992), follow-up surveys targeting the above species may be warranted.

Invertebrates

There is one potentially occurring special-status invertebrate on the Clover Valley site, the Valley elderberry longhorn beetle. Foothill Associates prepared a Valley Elderberry Longhorn Beetle Mitigation Monitoring Plan in 2004. Due to the absence of vernal pools or similar seasonal wetlands the presence of listed branchiopod crustaceans (i.e., vernal pool fairy shrimp and tadpole shrimp) is not expected.

A Biological Opinion (BO) from USFWS was received on October 27, 2005, regarding potential impacts to Valley Elderberry Longhorn Beetle (VELB), and mitigation was established regarding transplanting of affected habitat and the establishment of conservation areas.

Fish

A stream channel and fish passage investigation was performed (ECORP 2001) to assess the suitability of the Clover Valley Creek stream channel as a migratory corridor for state and federal listed anadromous fish species, such as steelhead (*Oncorhynchus mykiss*) or species of concern, such as fall-run Chinook salmon (*O. tshawytscha*). It was determined that, given the presence of significant downstream barriers, upstream passage of adult salmonids, including steelhead and Chinook salmon, adjacent to the proposed project site was not possible.

The National Marine Fisheries Service (NMFS) issued a BO on May 9, 2002, which concluded that the proposed project is not likely to jeopardize the continued existence of Central Valley steelhead on-sit due to downstream impediments, which could potentially prohibit migratory salmonid passage. However, NMFS included reasonable and prudent measures, terms and conditions, and conservation recommendations in the BO to minimize incidental take of Central Valley steelhead.

In addition, an Essential Fish Habitat Consultation document was provided as an attachment to the NMFS BO. This consultation concluded that the proposed project may adversely affect essential fish habitat (EFH) of fall-run Chinook in the Dry Creek watershed due to channel disturbance from construction and its associated downstream sedimentation. The EFH Conservation Recommendations in this document mirrored the conservation recommendations specified in the BO.

Amphibians

The habitats and vegetation communities on-site may provide potentially suitable habitat for two special-status amphibians, the California red-legged frog and the Foothill yellow-legged frog. The presence of these species is considered very unlikely. The Western spadefoot toad has been addressed in previous project documents as a potentially occurring species. However, due the absence of suitable breeding habitat the presence of the Western spadefoot toad is similarly not expected.

California Red-legged Frog

California red-legged frog (*Rana aurora draytonii*) is federally listed as threatened and considered to be species of special concern by CDFG. Adult California red-legged frogs prefer dense, shrubby or emergent riparian vegetation near deep (≥2.3 feet), still or slow moving water, especially where dense stands of overhanging willow and an intermixed fringe of cattail occur (Hayes and Jennings 1988). This subspecies breeds from November through April (Jennings and Hayes 1994). California red-legged frogs breed in a variety of aquatic habitats including streams, deep pools, backwater areas within streams and creeks, ponds, marshes, sag ponds, dune ponds, stock ponds, and lagoons (USFWS 2002). Upland areas provide important sheltering habitat during winter when California red-legged frogs are known to aestivate in burrows and leaf litter.

The historic range of the California red-legged frog extended along the coast from Marin County, California and inland from Shasta County, California, southward to northwestern Baja California, Mexico (Jennings and Hayes 1994, USFWS 2002). This area includes the Coast Ranges and the west slope of the Sierra Nevada Mountains at elevations below 5,000 feet. The current range is greatly reduced, with most remaining populations occurring along the coast from Marin County to Ventura County; and in isolated locations along the foothill region of the west slopes of the Sierra Nevada Mountains. The California red-legged frog has experienced a 70 percent reduction in its range in California as a result of several factors including habitat alteration, excessive harvest, and introduction of non-native predators, especially bullfrogs and introduced fish species. Current information suggests that this species has been extirpated from most of its Sierra Nevada range (Jennings 1996). It is estimated that California red-legged frogs were extirpated from the Central Valley floor prior to 1960 (USFWS 1996c).

There are currently no California red-legged frog records within project vicinity (CDFG 2005). The CNDDB currently contains two California red-legged frog records for Placer County. California red-legged frog (Occurrence No. 9) was observed prior to 1951 at Michigan Bluff, approximately four miles east-northeast of Foresthill. A single adult (Occurrence No 446) was observed in 2001, in an ephemeral pool located north of Pennsylvania Point, on the west end of Ralston Ridge, El Dorado National Forest (CDFG 2003).

The California red-legged frog is not likely to occur within the project area based on the documented extirpation of the species from the Central Valley floor and the distance of the site from documented occurrences in the Sierra Nevada foothills. While historically known to occur in the project vicinity (circa the 1940's), there have been no recent sightings, and the species is not expected to occur. A Biological Opinion recently issued by the U.S. Fish and Wildlife Service for the project did not identify the California red-legged frog as an issue.

Foothill Yellow-Legged Frog

The Foothill yellow-legged frog (*Rana boylii*) is designated as a federal species of concern, a CDFG species of special concern, and a U.S. Forest Service sensitive species. The Foothill yellow-legged frog is a small, highly aquatic frog that occurs in association with perennial streams that contain cobble and boulder-sized substrate, have shallow riffles, are partially shaded, and are at elevations below 1,830 m (6,000 ft) (Hayes and Jennings 1988, Jennings and Hayes 1994, Kupferberg 1996, Ashton et al. 1998, Stebbins 2003). They may also occupy ephemeral creeks that retain perennial pools through the end of summer. While Clover Valley Creek is considered potential habitat for this species, the presence of this frog is considered highly unlikely. Existing populations of Foothill yellow-legged frog occur at higher elevations in the foothills.

Western Spadefoot Toad

The Western spadefoot toad is not listed pursuant to either the California or federal Endangered Species Acts. It is however designated as a CDFG species of special concern and a USFWS species of concern. Within California, Western spadefoot toads are known from the vicinity of Redding, Shasta County, southward to northwestern Baja California, at elevations below 4,475 feet (Jennings and Hayes 1994). Necessary habitat components of the Western spadefoot toad include suitable underground retreats and breeding ponds. The species is mostly terrestrial, but requires temporary rain pools or pools within intermittent drainages to reproduce. Spadefoots spend most of their adult life within underground burrows, or other suitable refugia, such as rodent burrows. Suitable breeding sites include temporary rain pools, such as vernal pools and seasonal wetlands or pools within portions of intermittent drainages (Jennings and Hayes 1994). Breeding and egg laying occurs at night, typically between late February and May (Jennings and Hayes 1994). Eggs are deposited on submerged debris and vegetation. After hatching, larvae complete their development within 3 to 11 weeks, and post-metamorphic juveniles feed and immediately seek underground refugia. Upon metamorphoses, the adults are largely terrestrial in nature and will burrow into sandy or gravelly soils utilizing the "spades" on the hind feet.

Western spadefoot toads in Placer County are known to breed in relatively deep man-made features, such as ponded areas adjacent to railroad tracks, and in intermittent drainage plunge pools or similar pools that hold water through late spring. Spadefoot toads were historically known to breed in an intermittent portion of Kaseburg Creek (P. Balfour, personal observation, April 12, 1992). This and several other drainages have since become perennial and currently support an array of predatory species, such as non-native warm water fish species, bullfrogs, and crayfish. The status of spadefoot toads in these areas is unknown.

The vernal pools, seasonal wetlands, drainage swales, and intermittent drainages and adjacent grasslands in the region represent potentially suitable habitat for the Western spadefoot toad. In fact, five larvae (CNDDB Occurrence No. 172) were observed in a pool adjacent to railroad tracks, adjacent to Taylor Road, in 1994. This location is situated in an historical vernal pool landscape. There are no vernal pools on the Clover Valley property. Furthermore, Clover Valley is likely to support various introduced fishes and amphibians such as the bullfrog. The presence of predatory species within Clover Valley Creek, and the creek's perennial nature, reduces its suitability as a breeding site for Western spadefoot toads. Many indications exist that Western spadefoot toads are unable to reproduce successfully in the presence of exotic predators, primarily introduced fishes, but also bullfrogs and crayfishes (K. Baldwin, S. Morey, B. Shaffer, pers. comm., as cited in Jennings and Hayes 1994).

Reptiles

The habitats and vegetation communities on-site may provide potentially suitable habitat for two special-status reptiles, the Northwestern pond turtle and the Coast horned lizard.

Northwestern Pond Turtle

The Northwestern pond turtle (*Clemmys marmorata marmorata*) is currently not listed and protected pursuant to either the California or federal Endangered Species Act, but it is considered a California Department of Fish and Game species of special concern and U.S. Fish and Wildlife Service species of concern. Pond turtles are typically found in ponds, marshes, and still or slow moving creeks and streams. The marshes and Clover Valley Creek within the project area represent potentially suitable habitat for Northwestern pond turtles.

Coast Horned Lizard

The Coast horned lizard (*Phrynosoma coronatum*) is currently not listed and protected pursuant to either the California or federal Endangered Species Act, but it is considered a California Department of Fish and Game species of special concern. The lizard occurs in grasslands, brushlands, woodlands, open coniferous forest and other open areas with sandy or loose soil. While historically known to occur in the project region, there are been no recent sightings. Open areas associated with portions of the property's grassland represent potentially suitable habitat for this species.

Birds

Potentially nesting bird species include white-tailed kite, northern harrier, Cooper's hawk, California black rail, yellow-breasted chat, lark sparrow, loggerhead shrike, and tricolored blackbird. The winter residents, migrants, and non-nesting spring residents include sharp-shinned hawk, golden eagle, Ferruginous hawk, and Merlin.

White-Tailed Kite

White-tailed kite (*Elanus leucurus*) has no special status pursuant to either California or federal Endangered Species Acts. However, white-tailed kite are fully protected according to the Fish and Game Code of California Section 3511 and are considered species of concern by the U.S. Fish and Wildlife Service. Kites nest in trees within riparian, oak woodland, and savannah habitats of the Central Valley and Coast Range typically during March through June. White-tailed kite forage within open grassland, savannah, and agricultural cropland habitats, mainly on rodents, but may also take insects, reptiles, amphibians, and birds. The trees on-site represent potential nesting habitat and the grassland represents suitable foraging habitat for white-tailed kite. White-tailed kites have been observed foraging on-site, but no active nests were observed during the initial field survey.

Northern Harrier

Northern harrier (*Circus cyaneus*) are not formally listed and protected pursuant to either the California or federal Endangered Species Acts, but are considered by the California Department of Fish and Game as a species of special concern. They are known to nest within the Central Valley, along the Pacific Coast, and in northeastern California. Nesting season typically includes April through September. Northern harrier are ground nesters, and typical nesting substrates include emergent wetland/marsh, open grasslands, or savannah habitats. Foraging occurs within a variety of open habitats such as marshes, agricultural fields, and open grasslands. Northern harriers feed upon rodents, birds, amphibians, reptiles, crustaceans, and insects. Northern harrier were observed foraging within the grassland community on-site, but no active nests were observed during the initial field survey.

Cooper's Hawk

The Cooper's hawk (*Accipiter cooperii*) is a California Department of Fish and Game species of special concern, but is not formally listed and protected pursuant to either the California or federal Endangered Species Acts. Typical nesting and foraging habitat includes riparian woodland, dense oak woodland, and other woodlands near water. Nesting generally occurs in the Central Valley, Sierra Nevada, and Coast Range foothills during April through July. The trees on-site represent potentially suitable nesting habitat for Cooper's hawks.

Yellow-Breasted Chat

Yellow-breasted chat (*Icteria virens*) is a California Department of Fish and Game species of special concern. Yellow-breasted chats nest in North America and winter in Mexico and Guatemala. This warbler typically nests within thick riparian scrub habitat in lower to middle elevations of the Sierra Nevada and Coast Range foothills. Nesting occurs during May through August. The blackberry thickets and riparian scrub habitat on-site represent potentially suitable yellow-breasted chat nesting habitat, but none were observed during the initial field survey.

Lark Sparrow

The lark sparrow (*Chondestes grammacus*) is not listed and protected pursuant to either state or federal Endangered Species Acts. It is not considered a species of concern by either CDFG or USFWS, but it is a species that is tracked by CDFG in the CNDDB. Consequently, it is subject to review during the CEQA process. Lark sparrows can be found throughout California generally west of the Sierra Nevada. They nest within a wide variety of communities including oak woodland, chaparral, and grassland savannahs, among others. Their nests are constructed on the ground or small trees and shrubs. The nesting period ranged from April through May. The oak woodland community on-site represents potentially suitable nesting habitat for lark sparrows but none were observed during the initial field survey.

California Black Rail

California black rail (*Laterallus jamaicensis coturniculus*) is listed as a threatened species and protected pursuant to the California Endangered Species Act, is fully protected pursuant to California Fish and Game Code §3511, and is a U.S. Fish and Wildlife Service bird of conservation concern. Typical habitat for black rails includes coastal saltmarsh, delta emergent marsh, and interior freshwater emergent marsh. California black rails are a year-round resident in the San Francisco Bay region and at inland locations within Placer, Yuba, Butte, and Nevada Counties. Nesting typically occurs during March through July. The marshes on-site represent potentially suitable habitat for California black rails, but none have been observed during prior field surveys.

Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is not formally listed and protected pursuant to either the California or federal Endangered Species Acts but is considered a species of concern and bird of conservation concern by the U.S. Fish and Wildlife Service and a species of special concern by the California Department of Fish and Game. Shrikes nest within small trees and shrubs and forage upon insects and small vertebrate prey in open grassland and meadows. Nesting typically occurs during April through May. The oak woodland and grassland communities on-site represent potentially suitable nesting and foraging habitat for loggerhead shrike, but none were observed during the initial field survey.

Tricolored Blackbird

The tricolored blackbird (*Agelaius tricolor*) is not formally listed and protected pursuant to either the California or federal Endangered Species Acts, but is considered a species of concern and bird of conservation concern by the U.S. Fish and Wildlife Service and a species of special concern by the California Department of Fish and Game. This colonial nesting species is distributed widely throughout the Central Valley and Coast Range. Suitable nesting habitat includes emergent marsh, willow thickets, blackberry thickets, and tall herbs. Open grassland and agricultural fields are characteristic foraging areas. Nesting occurs during April through July. The marshes on-site and the grassland represent potentially suitable nesting and foraging habitat, respectively, for tricolored blackbirds. No tricolored blackbirds were observed on-site during the initial field survey.

Potentially occurring special-status birds that are not expected to nest on-site include sharp-shinned hawk (*Accipiter striatus*), golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), and Merlin (*Falco columbarius*). These species may rarely be found on-site or in the vicinity during migration and/or post-breeding winter visitants. None of these species are listed and protected pursuant to the California Endangered Species Act. The California Fish and Game Code §3511 specifically protects the golden eagle. The sharp-shinned hawk, ferruginous hawk, and Merlin are species of concern according to the U.S. Fish and Wildlife Service and/or California Department of Fish and Game.

Mammals

Yuma Myotis

*The Yuma myotis (*Myotis yumanensis*) is not formally listed and protected pursuant to either the California or federal Endangered Species Acts, but is considered a species of concern by the U.S. Fish and Wildlife Service. Maternity colonies and roosting habitat are typically found in caves, mines, buildings, and under bridges (CDFG 1990). The Yuma Myotis was not observed on-site; however, it has the potential to occur within the project area.* ***Townsend's Big-Eared Bat***

The Townsend's big-eared bat (*Corynorhinus townsendii*) occurs throughout California and is considered a cave obligate species. They are not formally listed and protected pursuant to either the California or federal Endangered Species Acts but are considered a species of concern by the U.S. Fish and Wildlife Service and species of special concern by the California Department of Fish and Game. Although they will occasionally use a tree as a roost, this species prefers caves, mines, bridges, or buildings for roost sites. They feed primarily on moths and prefer to forage along the edge of clumps of native vegetation. They are year-round residents in California. Although the Townsend's big-eared bat was not observed on-site, it has the potential to occur within the project area.

Pallid Bat

The pallid bat (*Antrozous pallidus*) is not formally listed and protected pursuant to either the California or federal Endangered Species Acts but is considered a species of special concern by the California Department of Fish and Game. Typical day roosts can be found in rock crevices, tree hollows, caves, mines, and buildings, and night roosts may include porches and buildings (CDFG 1990). The Pallid Bat was not observed on-site, but does have the potential to occur within the project area.

Ringtail

The ringtail (ring-tailed cat, *Bassariscus astutus*) is considered a fully protected species by the California Department of Fish and Game. The ringtail occurs in various riparian habitats, and in brush stands of most forest and shrub habitats, at low to middle elevations. Hollow trees, logs, snags, cavities in talus and other rocky areas, and other recesses are used for cover. Although not observed, the ringtail could potentially occur on the property.

American Badger

The American badger (*Taxidea taxus*) is considered a species of special concern by the California Department of Fish and Game. Badgers occupy a diversity of habitats. The principal requirements seem to be sufficient food, friable soils, and relatively open, uncultivated ground. Grasslands, savannas, and mountain meadows near timberline are preferred. Badgers prey primarily on burrowing rodents such as Gophers and Ground Squirrels. While the badgers could potentially occur on-site, their presence is considered unlikely.

IMPACT AND MITIGATION ANALYSIS

The following section addresses primary impacts and mitigation measures in the order they are presented in the August 2002 Draft EIR. A component that is notably absent from the original analysis, and should be considered, is the development of an updated vegetation community map from which more accurate impact acreage estimations can be calculated.

Impact 1. Effect On Oak Woodland

Summary

According to the August 2002 Draft EIR, approximately 28,053 trees exist on-site (approximately 30% of the project site). It is estimated that approximately 26.6-percent of the total trees on-site would be removed for project construction. The construction of the major roadways would result in the removal of approximately 2,204 trees, and the anticipated development of the minor streets and the small lots would result in the loss of an estimated additional 5,249 trees, for a total estimated loss of 7,453 trees.

Note: The Clover Valley Tree Removal Summary (Stantec 2005) has made some revisions to the previous EIR analyses. Number of oak trees to be impacted now total 7,422, which is approximately 21.8% of the oaks located on-site.

Previously Proposed Mitigation

Implementation of the following mitigation measure would reduce the magnitude of impact; however, the impact would remain significant and unavoidable.

The project applicant shall establish the oak tree preserve as described in the 1997 Development Agreement [as stated below]:

1) *grant to the City open space and conservation easements for an Oak Tree Preserve and an Open Space Trail System; and*

2) *construct a bicycle/pedestrian trail to the satisfaction of the City on the Open Space Trail and along the southern side of the east-west connector road, from the west boundary of the project to the west side of the commercial parcel at Sierra College Boulevard.*

The oak tree preserve is intended to provide some habitat value and is considered an effective method of mitigating (minimizing) the loss of trees because more natural habitat would improving survival and regeneration. Although the option exists to replant trees in the newly urbanized environment, replanting measures were not considered as effective as tree preservation. The impact remains significant and unavoidable because a net loss of nearly 7,500 trees would occur with the approval of the proposed LLTSM and the future build-out of the site.

In previous environmental documents, the City of Rocklin has distinguished between the short-term and long-term impact from the loss of trees due to new development. Where tree replacement was required for the loss of trees, a short-term significant and unavoidable impact was identified. However, because the trees would mature over time, the tree replacement mitigation is considered less-than-significant in the long-term. For this EIR, the mitigation measure is based upon the 1997 Development Agreement requiring the establishment of a tree preserve; therefore, a short-term and long-term impact from the loss of trees is not distinguished.

Identified Deficiencies

This impact should be renamed to refer to the loss of oaks, so as not to be confused with the loss of oak woodland community habitat value. Impacts to oak trees are based on the accuracy of the Arborist Survey and the applicant's land use plan.

Comments noted during the Notice of Preparation (NOP) scoping meeting identified a deficiency in the land use plan, in that it did not assess impacts to trees on the individual lots or impacts to the dripline of remaining trees during construction. Mitigation should be established to address these issues. A more detailed description and discussion of the efficacy of protective measures needs to be included.

In addition, comments were received that dealt with the removal of oak trees and their replacement with non-native species. In the City of Rocklin's Oak Tree Preservation Guidelines, under "III. Undeveloped Property – Tree Preservation Plan Permit", it specifies that "All replacement trees shall be from the Native Oak Tree list", which is Appendix A of that document. Therefore, per the City of Rocklin's guidelines, native oaks would not be replaced with non-native species.

Revised/Additional Impacts/Mitigation

Impact 1a. Construction-Related Disturbance to Remaining Oak Trees

This would be a significant impact.

During construction and implementation of the proposed project, damage to oak trees could occur. Impacts could include die-off of the existing oak trees from damage to the roots during grading, storage of materials, placement of fill within drip line zones, or landscaping activities.

Mitigation Measure 1a. To mitigate the impact due to construction related disturbance to oak trees the following measure shall be implemented:

- Project shall be in compliance with the City of Rocklin Oak Tree Preservation Guidelines, as outlined in Section IV. Protection of Oaks Trees During Construction.

Significance After Mitigation: Implementation of Mitigation Measure 1a would reduce impacts due to construction related disturbance to remaining oak trees to a less-than-significant level.
Responsibility and Monitoring: The City of Rocklin Conservation, Development and Planning Department will determine the success of this measure.

Impact 2. Impacts To Grassland

Summary

Grasslands cover approximately 30-percent of the project site. The 1995 EIR determined that the potential loss of grasslands was less-than-significant because the habitat was "dominated by introduced species".

Previously Proposed Mitigation

None

Identified Deficiencies

The available botanical documents refer to different types of grassland. This should be clarified. A vegetation habitat map/table quantifying impacts would be helpful. Regardless of whether the grasslands are dominated by non-native species, they still provide habitat value (foraging, nesting opportunity, overwintering area). While the probability is considered low, there are some potentially occurring special-status plants associated with grasslands. The grassland also serves as potential nesting habitat for various species such as birds and pond turtles (see later discussions).

A recent determinate survey for special-status plants has not been performed on the project site; therefore a follow-up rare plant survey targeting potentially occurring grassland special status species (Big-scale balsamroot (*Balsamorhiza macrolepis var. macrolepis*), Brandegee's clarkia (*Clarkia biloba ssp. Brandegee*), Stinkbells (*Fritillaria agrestis*)) is suggested during the appropriate blooming periods (March through July).

Revised/Additional Impacts/Mitigation

Impact 2a. Impact to Special-Status Grassland Plant Species
[Jessica to provide impact language]

Mitigation Measure 2a. To mitigate impacts to special-status grassland plants due to project construction, the following measure shall be implemented:
A determinate survey for special-status plants shall be performed within one year prior to construction and within the blooming season for each plants species as indicated below:
Big-scale balsamroot (*Balsamorhiza macrolepis var. macrolepis*), (March through June)
Brandegee's clarkia (*Clarkia biloba ssp. Brandegee*), (May through July)
Stinkbells (*Fritillaria agrestis*), (March through June)

Impact 3. Effects on Riparian and Seasonal Wetlands

Summary

Riparian and seasonal wetlands constitute approximately six-percent of the project site along the banks of the Clover Valley Creek. The total loss of wetlands due to project construction would be approximately 2.56 acres.

Previously Proposed Mitigation

The City shall require the project applicant to mitigate impacts to ensure the avoidance of any net loss of seasonal wetlands and jurisdictional waters of the United States, or the bed, *channel, or bank of any stream. Such avoidance may be achieved by implementing and complying with the provisions of Section 404 of the Clean Water Act, as administered by the U.S. Army Corps of Engineers, and under Sections 1600-1607 of the California Department of Fish and Game (CDFG), which includes obtaining all required permits from the U.S. Army Corps of Engineers and entering into a Streambed Alteration Agreement with CDFG and complying with all terms and conditions of those permits and agreements.*

It should be noted that the applicant has obtained a permit from the U.S. Army Corps of Engineers. Prior to issuance of grading permits, the applicant shall provide verification to the City Engineer that the permit from the U.S. Army Corps of Engineers is valid and reflects the current project design.

Identified Deficiencies

The original delineation was verified on December 20, 1990, and expired on December 20, 1992. On December 19, 1997, a request was submitted to the U.S. Army Corps of Engineers (Corps) to re-verify the original delineation. Sid Davis conducted a field with the Corps on February 27, 1998. As a result of that field visit, the Corps requested that the wetland acreage be increased to approximately 42 acres of stream, riparian wetland, and seasonal wetland. It is unknown if a re-verification letter was received for the project in 1998. It is our understanding that Mr. Davis recently performed a ground-truthing of the current wetland delineation. He determined that the wetland delineation map sufficiently represents current conditions and he will be requesting that the Corps re-verify the delineation.

The proponent has received several public comments in regards to the proposed buffer distance off of the edge of riparian and seasonal wetland areas. The BO received from NMFS indicated that the "road would not be closer to the creek than a minimum of 75 feet from the edge of the riparian zone to protect the aquatic habitat". The City of Rocklin's General Plan Open Space/Conservation Action Plan states that "The City will apply open space designations to all lands located within 50 feet from the edge of the bank of all perennial and intermittent streams and creeks providing natural drainage, and to areas consisting of riparian habitat. The City will designate a buffer area greater than 50 feet for perennial streams when it is determined that such a buffer area is necessary to adequately protect drainage and habitat areas. In designating these areas as open space, the City is preserving natural resources and protecting these areas from development."

In addition, one special-status plant species (Sanford's Arrowhead) has the potential to occur in the riparian areas.

Revised/Additional Impact/Mitigation

Impact 3a. Construction-Related Impacts to Riparian/Seasonal Wetland Habitat Due to Intrusion

This would be a significant impact.

Significant impacts to the riparian and seasonal wetlands could occur during construction activities as a result of trampling of vegetation, staging of equipment, placement of materials, and/or dumping of debris.

Mitigation Measure 3a. To mitigate construction-related impacts to riparian/seasonal wetland habitat the following measure shall be implemented:

- Temporary high visibility fencing shall be used for the duration of construction activities occurring within 200 feet of riparian habitat. To prevent inadvertent impacts from encroachment into this community, fencing should be placed 75 feet away from the outside edge of riparian vegetation and/or the dripline of riparian trees (except where project improvement plans require construction within that 75-foot buffer). Where project improvement plans require construction activities to occur within that 75-foot buffer, fencing should be placed at the limits of the required construction activity. Placement of the fencing should be determined by a qualified biologist prior to construction and monitored during the construction period to assure the success of this action.

- A determinate survey for Sanford's arrowhead shall be performed within one year prior to construction and within the appropriate blooming season for the species (May through October).

Significance After Mitigation: Implementation of Mitigation Measure 3a would reduce construction-related impacts to riparian habitat to a less-than-significant level.

Responsibility and Monitoring: Temporary barrier to be implemented by project applicant with monthly monitoring (during construction activities within 200 feet of the creek) by the City of Rocklin's Community Development Department.

Impact 3b. Long-Term Operation-Related Impacts to Riparian/Seasonal Wetland Habitat Due to Intrusion

This would be a significant impact.

Significant impacts to the riparian/seasonal wetlands could occur after project development as a result of trampling of vegetation by pedestrians accessing the areas near Clover Valley Creek. The proposed project currently incorporates an undeveloped setback of approximately 50 feet from the edge of Clover Valley Creek to prevent disturbance to wetland areas.

Mitigation Measure 3b. The setback between the proposed roads and Clover Valley Creek shall be increased from 50 feet to 75 feet, per the conservation recommendations from NMFS in the Biological Opinion dated October 22, 2002. In addition, fencing would be installed along the buffer boundary and signs would be posted identifying the area as natural habitat, to further reduce on-going impacts to the riparian area as identified in the *Open Space Management Plan for The Clover Valley Project Area* (Wildlands 2005)

Significance After Mitigation: Implementation of Mitigation Measure 3b would reduce long-term impacts to riparian habitat to a less-than-significant level.

Responsibility and Monitoring: The permanent setback would be implemented by the project applicant with annual monitoring reports per the Open Space Management Plan prepared for distribution to the City of Rocklin Community Development Department, the Corps, and CDFG.

Impact 4. Impact To Wildlife Habitat

Summary

Impacts to grassland areas could eliminate various prey species such as voles, deer mice, pocket gophers, ground squirrels and other small mammals, consequently impacting foraging habitat for raptors and other predators. The removal of seasonal wetland on the site would entail (a) the loss of foraging habitat for browsers such as deer and rabbits, (b) the loss of breeding habitat for amphibians and wetland nesting birds, (c) the loss of food sources for insectivorous and other species, and (d) the loss of resting and foraging sites for waterfowl and shorebirds.

In addition, impacts to the riparian forest due to the construction of a bridge, parks, and trails, and the removal of oak woodlands, could significantly affect the food, shelter, and nesting habitat for wildlife species.

Previously Proposed Mitigation

The developer shall submit plans of the proposed park and trail design for the review and approval of the City Engineer, prior to construction of the parks and trails. The plans shall indicate that parks be removed from the riparian habitat, and the trails, where feasible, be confined to the upslope side of the ponds.

Although implementation of the mitigation measure would reduce the magnitude of the cumulative impact, the impact would be considered significant and unavoidable.

Identified Deficiencies

This impact needs to be expanded and described in much more detail. "Wildlife Habitat" is too general and should be broken down into several separate impacts that address both construction and long-term impacts to various habitat types. The mitigation measure presented does not describe how impacts to wildlife could be avoided, minimized, and possibly mitigated.

Revised/Additional Impacts/Mitigation

Impact 4a. Conversion of Woodland Habitat

This would be a less-than-significant impact.

The removal of 7,422 oak trees, which is approximately 21.8% of the oaks located on-site, would not be considered a significant impact due to the preservation of almost 80% of the oak woodland within the project site.

No mitigation would be required.

Impact 4b. Conversion of Grassland Habitat

This would be a significant impact.

The conversion of 30 percent of non-native grassland habitat would eliminate a substantial area of cover and a portion of the prey base of many wildlife species. Habitat loss is one of the most significant threats to the remaining populations of several special-status bird species. Project construction would create a loss of suitable foraging habitat for those species requiring open grassland habitat. Raptors (including ground nesting species) have the potential to occur on-site, and are therefore, special-status species that could be significantly impacted by the loss of non-native grassland habitat. Northwestern pond turtles may also lay eggs in adjacent uplands/grassland and often over-winter in these areas.

Mitigation Measure 4b. The impact would be considered significant and unavoidable.

Impact 4c. Construction Impacts to Riparian and Aquatic Habitats

This would be a significant impact.

The proposed project would directly impact any wetlands and/or waters on-site due to culvert and outfall construction. Decreased water quality due to contaminated and or sediment laden runoff originating from construction areas may impact fish and aquatic animals associated with wetlands and the riparian habitats.

Mitigation Measure 4c. To mitigate construction-related drainage impacts to riparian and aquatic habitats the following measure shall be implemented:

- As a condition of Use Permit approval, obtain a National Pollution Discharge Elimination System (NPDES) General Construction Activity Permit from the Regional Water Quality Control Board (RWQCB). This permit is required of all construction projects totaling one acre or more. As part of the permit and post-construction agency monitoring process, the applicant shall prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) in accordance with guidelines set forth by the RWQCB.

  The SWPPP shall include design details and construction specification s for all site drainage controls and other water quality mitigations. In addition, the SWPPP shall contain the implementation schedule, methods, and locations of erosion control features, and be designed to prevent sediment loads greater than ten percent of background levels during construction.

  The SWPPP shall specify the use of siltation basins during construction. In addition, bare areas created by the removal of vegetation shall be stabilized and seeded with an erosion control mix prior to October 15th of each construction year.

  Typical site erosion control measures, also referred to as BMPs, are outlined in the California Storm water Best Management Practice Handbooks for Construction

Activity.[1] In addition to practices discussed above, BMPs, which could be implemented as a part of the SWPPP include:

- Seeding and protection of bared soils against raindrop impact and detachment by overland runoff through application of a sterile, broadcasted rice straw, or other approved mulch.
- Vegetated buffers and drainage swales to filter sediments and adsorbed contaminants from site runoff.
- Isolation and disposal of waste construction materials.

Significance After Mitigation: Implementation of Mitigation Measure 4c would reduce construction-related drainage impacts to riparian and aquatic habitats to a less-than-significant level.

Responsibility and Monitoring: The project applicant would be responsible to obtain the General Construction Activity Permit from the RWQCB and to implement the BMPs outlined in the project SWPPP. The RWQCB would inspect the project site over the construction period and at unspecified intervals after project completion, until the site is fully revegetated. This inspection regime normally continues for two or three years following the cessation of construction. If violations of the permit conditions are revealed during the agency inspections, the RWQCB would alert the applicant and the applicant would be required to correct the violations to the satisfaction of the Board.

Impact 4d. Long-Term Impacts to Riparian and Aquatic Habitat.

This would be a significant impact.

The proposed *Clover Valley* project would involve the installation of culverts and outfalls into the riparian wetlands and Clover Valley Creek. Although a buffer would surround

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[1] *California Storm Water Best Management Practice Handbook*, Stormwater Quality Task Force, March 1993.

the wetland areas, some impacts to special-status fish and aquatic animals is anticipated resulting from decreased water quality due to contaminated runoff originating from the residential development.

Mitigation Measure 4d. To mitigate for long-term impacts to riparian and aquatic habitats the following measure shall be implemented:

- Same as Mitigation Measure 4c.
- Incorporate a management plan into the project SWPPP and implement plan measures. The plan shall contain specific maintenance procedures designed to minimize both the production of site runoff due to reclaimed water in wet years (i.e., when antecedent soil moisture is high and urban requirements generate small volumes of surface runoff) and residual contaminants in applied chemical amendments.
- Implement source control BMPs to eliminate water quality contaminants originating from development of the project site. BMPs may include fiber rolls for erosion control, temporary gravel bags around drainage inlets, temporary cross-slope drains along roads, and revegetation in areas of cut or fill slopes.

Significance After Mitigation: Implementation of Mitigation Measure 4d would reduce long-term impacts to riparian and aquatic habitats to a less-than-significant level.

Responsibility and Monitoring: Same as for Mitigation Measure 4c.

Impact 5. Impacts To Special-Status Species

Summary

The Wildlife Survey Report cited in the 1995 Clover Valley Lakes Annexation EIR found that impacts to tri-colored blackbirds did not exist, and that impacts to western pond turtles were less-than-significant. Field surveys also revealed that a suitable nesting habitat for Cooper's hawks occurred on the project site but, apart from the noted presence of one Cooper's hawk, on-site nests were not found. The 1995 EIR concluded that the impact to special-status species was potentially significant, but reduced to a less-than-significant level with mitigation.

Previously Proposed Mitigation

a. The project applicant, in consultation with the City of Rocklin and CDFG, shall conduct a pre-construction breeding-season survey (approximately February 15 through August 30) of the project site during the same calendar year that construction is planned to begin. The survey shall be conducted by a qualified raptor biologist to determine if any birds-of-prey are nesting on, or directly adjacent to, the proposed project site. Surveys would not be needed if construction activities occur outside of the dates shown.

If phased construction procedures are planned for the proposed project, the results of the above survey shall be valid only for the season when it is conducted. A new survey shall be conducted for construction occurring in subsequent seasons.

A report shall be submitted to the City of Rocklin, following the completion of the raptor nesting survey that includes, at a minimum, the following information:

- *A description of methodology, including dates of field visits, the names of survey personnel with résumés, and a list of references cited and persons contacted.*

- *A map showing the location(s) of any raptor nests observed on the project site.*

If the above survey does not identify any nesting raptor species on the project site, further mitigation shall not be required. However, should any raptor species by found nesting on the project site, the following mitigation measure (4.6MM-5b) shall be implemented.

b. The project applicant, in consultation with the City of Rocklin and CDFG, shall avoid all birds-of-prey nest sites located in the project site during the breeding season while the nest is occupied with adults and/or young. The occupied nest shall be monitored by a qualified raptor *biologist to determine when the nest is no longer used. Avoidance shall include the establishment of a nondisturbance buffer zone around the nest site. The size of the buffer zone shall be determined in consultation with the City and CDFG. Highly visible temporary construction fencing shall delineate the buffer zone.*

c. If a legally protected species nest is located in a tree designated for removal, the removal shall be deferred until after August 30th, or until the adults and young are no longer dependent on the nest site as determined by a qualified biologist.

Identified Deficiencies

Previous impacts did not address potentially occurring special-status plants (although of the plants identified in this evaluation, only one, Sanford's arrowhead, is a federal species of concern), Valley elderberry longhorn beetle, Northwestern pond turtle, marsh-occupying birds, or special-status bat species. The prior impact analysis focused on a small number of species. All species identified in ECORP's updated species list should be addressed.

Revised/Additional Impact/Mitigation

Impact 5a. Impacts to Valley Elderberry Longhorn Beetle

This would be a significant impact.

A Biological Opinion from USFWS was received on October 27, 2005, regarding potential impacts to Valley Elderberry Longhorn Beetle and mitigation was established.

Mitigation Measure 5a. To mitigate impacts to Valley elderberry longhorn beetle the following measure shall be implemented:

Compensation shall be provided by the project applicant as stated below:

- Transplantation of affected elderberry plants to the USFWS-approved conservation area(s).

- Planting of additional elderberry seedlings or cuttings and planting of associated native species at the USFWS-approved conservation area(s).

- Management and monitoring of the USFWS-approved conservation area(s) for either ten (10) consecutive years or seven (7) years over a 15-year period with monitoring reports submitted for each monitoring year.

- A management plan for long-term protection of the USFWS-approved conservation area(s) in perpetuity as habitat for the Valley elderberry longhorn beetle.

In addition to compensation requirements, the project applicant shall adhere to all other conservation measures as outlined in the Biological Opinion.

Significance After Mitigation: Implementation of Mitigation Measure 5a would reduce impacts to Valley elderberry longhorn beetle to a less-than-significant level.

Responsibility and Monitoring: To be implemented by project applicant with permit approval (for listed species) of the appropriate resource agency (i.e., that agency with regulatory authority over the subject species). If no permit is required, determination of active breeding status and/or implementation of relocation procedures to be conducted by a qualified biologist in consultation with the appropriate resource agency (i.e., that agency with expressed interest in or regulatory authority over the subject species).

Impact 5b. Construction-Related Impacts to Northwestern Pond Turtles

This would be a significant impact.

Removal of habitat for the Northwestern pond turtle could occur on the project site. Although buffers would be established from the top of bank of Clover Valley Creek, some impacts to riparian and wetland habitat would occur during culvert and outfall installation.

Mitigation Measure 5b. Pre-construction surveys shall be conducted to determine the presence or absence of this species prior to construction near known or potential habitat for Northwestern pond turtle (i.e., utility crossing in or adjacent to riparian areas). If pond turtles are observed, a determination shall be made in consultation with CDFG as to whether or not construction will adversely impact this species and what measures shall be implemented.

If found to be present on-site a biological monitor shall be present during construction in sensitive areas, to alert construction crews to the possible presence of aquatic species. To avoid affecting habitat that may support sensitive aquatic species, a minimum 20-foot-wide setback would be established and staked by the biological monitor before construction activities begin at specific locations. Stream buffer areas would start at the outer edge of the woody or herbaceous riparian vegetation, or top of bank, whichever distance is greater.

Significance After Mitigation: Implementation of Mitigation Measure 5b would reduce impacts to Northwestern pond turtle to a less-than-significant level.

Responsibility and Monitoring: To be implemented by project applicant with permit approval (for listed species) of the appropriate resource agency (i.e., that agency with regulatory authority over the subject species). If no permit is required, determination of active breeding status and/or implementation of relocation procedures to be conducted by a qualified biologist in consultation with the appropriate resource agency (i.e., that agency with expressed interest in or regulatory authority over the subject species).

Impact 5c. Impacts to Freshwater Marsh-Occupying Birds

This would be a significant impact.

Special-status bird species potentially associated with the freshwater marsh community (e.g., California black rail and tricolored blackbird). Although no permanent impacts to the freshwater marsh areas associated with the riparian wetland are expected due to the incorporation of a buffer adjacent to these areas, freshwater marsh-occupying birds could be significantly temporarily impacted by culvert/outfall installation.

Mitigation Measure 5c. To mitigate temporary impacts to freshwater marsh occupying bird species the following measure shall be implemented:

- Pre-construction bird surveys shall be conducted prior to construction grading per consultation with CDFG, during the appropriate activity period for each species.

- Where a non-listed species is identified in the impact area, construction activities should be scheduled to occur outside of the breeding season and/or individual(s) should be relocated away from the impact area according to agency protocols (if any). If monitoring of construction activities is required (by those agency protocols) it shall be conducted by a qualified biologist and reported to the appropriate agency (i.e., that agency with expressed interest in the subject species).

- Where a listed species would be affected, appropriate permitting would be pursued with the agency (or agencies) having regulatory authority over it. Mitigation measures stipulated in the appropriate permitting instrument (i.e., a Management Agreement with the California Department of Fish and Game) would be imposed. If monitoring of construction activities is required (by a permitting instrument) it will be conducted by a qualified biologist and reported to the appropriate agency (i.e., that agency with expressed interest in or regulatory authority over the subject species).

Significance After Mitigation: Implementation of Mitigation Measure 5c would reduce impacts to freshwater marsh occupying bird species to a less-than-significant level.

Responsibility and Monitoring: To be implemented by project applicant with permit approval (for listed species) of the appropriate resource agency (i.e., that agency with regulatory authority over the subject species). If no permit is required, determination of active breeding status and/or implementation of relocation procedures to be conducted by a qualified biologist in consultation with the appropriate resource agency (i.e., that agency with expressed interest in or regulatory authority over the subject species).

Impact 5d. Impacts to Nesting Raptors

This would be a significant impact.

Mitigation Measure 5d. To mitigate potential impacts to nesting raptors, the following measure shall be implemented:

- A qualified biologist shall conduct a pre-construction survey to determine the presence or absence of raptor nests on the project site. If nesting is determined, an adequate buffer zone around the active nest should be established in consultation with CDFG. The buffer zone shall be maintained for the duration of the nesting season, typically February through August, and monitored weekly to assure compliance and success of this action.

Significance After Mitigation: Implementation of Mitigation Measure 5d would reduce impacts to nesting raptors to a less-than-significant level.

Responsibility and Monitoring: To be implemented by project applicant with permit approval (for listed species) of the appropriate resource agency (i.e., that agency with regulatory authority over the subject species). If no permit is required, determination of active breeding status and/or implementation of relocation procedures to be conducted by a qualified biologist in consultation with the appropriate resource agency (i.e., that agency with expressed interest in or regulatory authority over the subject species).

Impact 5e. Disturbance to Active Bat Maternity Roosts

This would be a significant impact.

Significant impacts to potentially occurring special-status bats may occur from removal of snags and structures. The species potentially impacted are Yuma myotis, Townsend's big-eared bat, and pallid bat.

Mitigation Measure 5e. To mitigate impacts due to disturbance to active bat maternity roosts the following mitigation shall be implemented:

- If the removal of snags and/or structures must occur during the maternity season for special-status bats (June through August), the project applicant shall conduct pre-construction surveys to determine the presence or absence of these species.

- If determined to be present, the bats shall be removed utilizing standard non-invasive exclusion methods, implemented by a qualified biologist in consultation with CDFG.

Significance After Mitigation: Implementation of Mitigation Measure 5e would reduce impacts due to disturbance to active bat maternity roosts to a less-than-significant level.

Responsibility and Monitoring: To be implemented by project applicant with permit approval (for listed species) of the appropriate resource agency (i.e., that agency with regulatory authority over the subject species). If no permit is required, determination of active breeding status and/or implementation of relocation procedures to be conducted by a qualified biologist in consultation with the appropriate resource agency (i.e., that agency with expressed interest in or regulatory authority over the subject species).

Impact 6. Impacts To Special-Status Fish

Summary

Because of existing constraints in the Clover Valley Creek Channel downstream of the project site, the portion of Clover Valley Creek in the project area is not considered as migratory habitat for state and federally listed fish species. In February 2001, ECORP Consulting, Inc. conducted a survey on the Clover Valley Creek channel from its confluence with Antelope Creek to identify any upstream passage barriers for anadromous salmonids such as steelhead and fall-run Chinook salmon. ECORP concluded that significant barriers are present that would preclude both use of upstream habitat by spawning or rearing steelhead and salmon; and designation of upstream habitat as critical habitat for steelhead as determined by the National Marine Fisheries Service.

Previously Proposed Mitigation

No mitigation was required.

Identified Deficiencies

The BO and the Essential Fish Habitat Consultation document that NMFS issued on May 9, 2002, included reasonable and prudent measures, terms and conditions, and conservation recommendations to minimize incidental take of Central Valley steelhead and EFH of fall-run Chinook in the Dry Creek watershed. A potential impact was identified to downstream habitat that must be addressed in the revised EIR.

Revised/Additional Impacts/Mitigation

Mitigation Measure 6a. To mitigate for construction impacts to special-status fish in the Dry Creek watershed, the following measures shall be implemented (as consistent with the terms and conditions/conservation measures outlined in the Biological Opinion):

- All in-channel work shall occur only between June 1 to October 15.

- Best management practices shall be employed during all phases of construction to minimize soil erosion, removal of wetland and riparian vegetation, siltation, and introduction of pollutants to the creek.

- When practical, during construction of the stream crossings, workers shall perform work from the top of the creek banks for the purposes of avoiding work and heavy equipment in flowing water, disturbing creekbank vegetation, and instream habitat. All riparian vegetation that is removed or destroyed shall be replaced on-site at a 3:1 ratio.

- If cofferdams are used, water pumped out of the dam, which may be turbid or that contacts wet concrete shall be pumped out and disposed of outside the creek channel in a location, such as a detention pond, where it will not re-enter the flow of the creek.

- Culverts not intended to be used as flood control devices shall be designed so they do not impede fish migration or alter channel characteristics, such as by using bottomless arches and being sized to accommodate the active channel width, as described in *NOAA Fisheries Fish Passage Guidelines.*

Significance After Mitigation: Implementation of Mitigation Measure 6a would reduce impacts to special-status fish to a less-than-significant level.

Responsibility and Monitoring: To be implemented by project applicant with permit approval (for listed species) of the appropriate resource agency (i.e., that agency with regulatory authority over the subject species). If no permit is required, determination of active breeding status and/or implementation of relocation procedures to be conducted by a qualified biologist in consultation with the appropriate resource agency (i.e., that agency with expressed interest in or regulatory authority over the subject species).

Mitigation Measure 6b. To mitigate for on-going project impacts to special-status fish in the Dry Creek watershed, the following measure shall be implemented (as consistent with the terms and conditions/conservation measures outlined in the Biological Opinion):

- The Corps shall ensure the Vortechnics™ filtration system is maintained in perpetuity to ensure they are functioning properly to remove pollutants and protect water quality. A copy of the maintenance contract shall be submitted to NOAA fisheries within 90 days following completion of installation.

- The applicant shall send a report at project construction completion with a written description of instream construction activities and implementation of proposed minimization measures. The report shall include photographs of the five stream crossings before, during, and immediately after the project is completed for the purpose of developing a reference library of instream and riparian habitat characteristics.

- Water quality shall be monitored before construction as a baseline and during the first rainy season after project completion to ensure the filtration systems are functioning properly. Samples should be taken from below at least five stormwater outlets and should capture the "first flush" storm. NOAA Fisheries must review and approve of the final design of the monitoring plan prior to implementation. A monitoring report shall be submitted to NOAA Fisheries within 90 days following completion of sampling.

- The bike trail shall be designed such that it does not enter the riparian corridor or existing wetlands and design should include maintaining a setback from riparian vegetation of 50 feet to avoid further encroachment on the creek corridor. Bike trail layout and construction activities should avoid disturbance and removal of riparian vegetation to the maximum extent possible.

Conservation Recommendations from NMFS also included:

- The Corps shall encourage the applicant to consider redesigning the layout of the road system within the development thereby the road would not be closer to the creek than a minimum of 75 feet from the edge of the riparian zone to protect the aquatic habitat. The Corps shall also encourage the applicant to consider redesigning the two crossings with the double culvert design intended to slow storm flows and serve as flood control such that they are not a risk of causing excessive velocities, downstream erosion, and scour.

- The Corps shall encourage implementation of measures to provide upstream fish passage through Clover Valley Creek by replacing downstream barriers to migration such as the culvert at Argonaut Road.

Significance After Mitigation: Implementation of Mitigation Measure 6b would reduce impacts to special-status fish species to a less-than-significant level.

Responsibility and Monitoring: To be implemented by project applicant with permit approval (for listed species) of the appropriate resource agency (i.e., that agency with regulatory authority over the subject species). If no permit is required, determination of active breeding status and/or implementation of relocation procedures to be conducted by a qualified biologist in consultation with the appropriate resource agency (i.e., that agency with expressed interest in or regulatory authority over the subject species).

Impact 7. Cumulative Biological Impacts To Vegetation And Wildlife

Summary

The project would contribute incrementally to the cumulative loss of native plant communities, wildlife habitat values, special-status species and their potential habitat, and wetland resources in the south Placer County region, and would be considered a significant impact.

Previously Proposed Mitigation

While implementation of the following mitigation measure would reduce the cumulative impact, the impact would remain significant and unavoidable.
Implement previous mitigation measures 4.6MM-1, 4.6MM-3, and 4.6MM-5.

Identified Deficiencies

Regional development in South Placer County has multiplied since the previous EIR was prepared; therefore, cumulative impacts have increased. The cumulative impact would remain significant and unavoidable.

Revised/Additional Impacts/Mitigation

None

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Appendix A

Special-Status Species with the Potential to Occur within Clover Valley

Table 4.8-1
Special-Status Species with the Potential to Occur within Clover Valley

Common Name	Scientific Name	Federal ESA Status	California ESA Status	Other Status	Habitat Description	Approximate Survey Dates	Family (plants)	Distribution [plants by County(ies)]
Plants								
Big-scale balsamroot	*Balsamorhiza macrolepis* var. *macrolepis*	-	-	1B	cismontane woodland; valley/foothill grassland (sometimes serpentine)	March-June	Asteraceae	Alameda, Butte, Mariposa, Napa, Placer, Santa Clara, Tehama
Brandeqee's clarkia	*Clarkia biloba ssp. brandegee*	-	-	1B	chaparral, cismontane woodland	May-July	Onagraceae	Butte, El Dorado, Nevada, Placer, Yuba
Veiny monardella	*Monardella douglasii* ssp. *venosa*	-	-	FSC, 1B	valley/foothill grassland (clay)	May-July	Lamiaceae	Butte, Shasta (ext.), Tuo (ext.)
Stinkbells	*Fritillaria agrestis*	-	-	4	cismontane woodland, valley/foothill grassland (clay/serpentine)	March-June	Liliaceae	Alameda, Contra Costa, Fresno, Kern, Mendocino, Monterey, Mariposa, Placer, Sacramento, San Barbara, San Benito, San Luis Obispo, San Mateo, Stanislaus, Tuolumne
Sanford's arrowhead	*Sagittaria sanfordii*	-	-	FSC, 1B	marsh, creeks, ditches	May-October	Alismataceae	Butte, Del Norte, Fresno, Kern, Merced, Marin, Sacramento, Shasta, San Joaquin, Tehama, (ext. Ora., Vent.)
Invertebrates								
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT	-	-	elderberry shrubs	any season		Central Valley/foothills
Amphibians								
California red-legged frog	*Rana aurora draytonii*	FT	-	CSC	streams, marshes, ponds	May 1-November 1		Coast Range (extirpated (?) Sierra foothills)
Foothill yellow-legged frog	*Rana boylii*	-	-	FSC, CSC, FS, BLM	rocky streams	April-September		western Sierra foothills to Kern Co., San Joaquin Co.
Western spadefoot toad	*Spea hammondii*	-	-	FSC, CSC, BLM	vernal pools, wetlands/adjacent grassland	March-May		widespread Central Valley
Reptiles								
Northwestern pond turtle	*Clemmys marmorata marmorata*	-	-	FSC, CSC, FS	creeks, ponds	April-October		widespread N. California
Coast horned lizard (*frontale* population)	*Phrynosoma coronatum*	-	-	FSC, CSC, BLM	open, sandy areas, varied habitats	April-Oct		widespread
Birds								
White-tailed kite (nesting)	*Elanus leucurus*	-	-	FSC, CFP	woodland, grassland	March-June		widespread
Northern harrier (nesting)	*Circus cyaneus*	-	-	CSC	marsh, grassland	April-September		widespread
Sharp-shinned hawk (nesting)	*Accipiter striatus*	-	-	CSC	woodland	nest (April-August); winter CV (September-April)		widespread
Cooper's hawk (nesting)	*Accipiter cooperii*	-	-	CSC	woodland	April-July		widespread
Ferruginous hawk (wintering)	*Buteo regalis*	-	-	FSC	grassland	November-February		Central Valley
Golden eagle (nesting and wintering)	*Aquila chrysaetos*	-	-	BCC, CSC, CFP, CDF, BLM	grassland	nest (February-August); winter CV (October-February)		widespread
Merlin (wintering)	*Falco columbarius*	-	-	CSC	woodland, grassland	September-April		widespread
California black rail	*Laterallus jamaicensis coturniculus*	-	CT	BCC, CFP	marsh	March-July		coastal, SF Bay-delta, Yuba County
Burrowing owl (burrow sites)	*Athene cunicularia*	-	-	FSC, BCC, CSC, BLM	grassland	March-August		Central Valley
Loggerhead shrike	*Lanius ludovicianus*	-	-	FSC, BCC, CSC	grassland, woodland	April-May		widespread
California thrasher	*Toxostoma redivivum*	-	-	FSC	chaparral, riparian scrub	February-July		Sierra Nevada foothills, Coast Range
Yellow-breasted chat (nesting)	*Icteria virens*	-	-	CSC	riparian	May-July		foothills
Lark sparrow (nesting)	*Chondestes grammacus*	-	-	CNDDB	oak woodland, scrub	year round res. (nests April-May)		widespread
Tricolored blackbird (nesting colony)	*Agelaius tricolor*	-	-	FSC, BCC, CSC, BLM	marsh, grassland	April-June		widespread
Mammals								
Yuma myotis	*Myotis yumanensis*	-	-	FSC, BLM	Riparian woodland, caves, mines, buildings, bridges, rock crevices, trees	April-September		Widespread
Townsend's big-eared bat	*Corynorhinus townsendii townsendii*	-	-	FSC, CSC, FS, BLM	caves, mines, buildings, rock crevices, trees	April-September		San Joaquin, Marin, Humboldt, Alameda, Napa, Lake, Yolo, Colusa, Mendocino (from CNDDB)
Pallid bat	*Antrozous pallidus*	-	-	CSC, FS, BLM	mines, man-made structures, rock outcrops, and woodland near open grasslands for foraging	April-September		Lake, Sonoma, Marin, Mariposa, Tuolumne, San Joaquin, Inyo, Kern, Santa Barbara, San Bernadino, Riverside, Orange, Imperial, San Diego, San Luis Obispo, Mono (from CNDDB)
Ringtail	*Bassariscus astutus*	-	-	CFP	rock outcrops, riparian	any season		
American badger	*Taxidea taxus*	-	-	CSC	annual grassland	any season		widespread

Status Codes:

- FE - Federal ESA listed, Endangered.
- FT - Federal ESA listed, Threatened.
- FPE - Formally Proposed for federal ESA listing as Endangered.
- FPT - Formally Proposed for federal ESA listing as Threatened.
- FPD - Listed under Federal ESA, but formally proposed for delisting.
- Fd - Formally Delisted (delisted species are monitored for 5 years).
- FC - Candidate for federal ESA listing as Threatened or Endangered.
- FSC - U. S. Fish and Wildlife Service Species of Concern (USFWS, updated August 11, 2004).
- BCC - U. S. Fish and Wildlife Service Bird of Conservation Concern (USFWS, 2002).
- BLM - Bureau of Land Management Sensitive Species.
- FS - U. S. Forest Service Sensitive Species.
- CE - California ESA or Native Plant Protection Act listed, Endangered.
- CT - California ESA or Native Plant Protection Act listed, Threatened.
- CR - California ESA or Native Plant Protection Act listed, Rare.
- CC - Candidate for California ESA listing as Endangered or Threatened.
- CFP - Fish and Game Code of California Fully Protected Species (§3511-birds, §4700-mammals, §5050-reptiles/amphibians).
- CSC - California Department of Fish and Game Species of Special Concern (CDFG, updated August 2004).
- CDF - California Department of Forestry Sensitive Species.
- 1A - California Native Plant Society/Presumed extinct.
- 1B - California Native Plant Society/Rare or Endangered in California and elsewhere.
- 2 - California Native Plant Society/Rare or Endangered in California, more common elsewhere.
- 4 - California Native Plant Society/Plants of Limited Distribution.
- CNDDB - Species that is tracked by CDFG's Natural Diversity Database but does not have any of the above special-status designations otherwise.

City of Rocklin
Clover Valley
Recalculated EIR

Inventory of Biological Sources:

Folder 1 (Untabbed):

Wetlands Packet (letters within)

- Re: Nationwide Permit #26. Department of the Army Regulatory Branch. February 7, 2004
- Sub: Pre-Construction notification for Clover Lakes. United States Department of the Interior. Fish and Wildlife Service. August 7, 1998
- Taylor Hooper and Wiley. October 26, 2000
- Department of the Army. March 8, 1999
- Department of the Army. December 20, 1990

Clover Valley Parkway Impacted Tree Summary. March 2001

Clover Valley Tree Removal Summary by Stantec. November 2005.

Clover Valley Plant and Animal Impact Analysis. Davis^2 Consulting Earth Scientists. June 1, 2001 (Holland Sited within)

Valley Elderberry Longhorn Beetle Mitigation Monitoring Plan. October 19, 2004

- B. Demar Hooper (letter). August 23, 2005

Loose:

- Taylor Hooper and Wiley. June 19, 2002
- Department of the Army, Regulatory Branch. March 8, 1999
- Vacated Critical Habitat Designations Diagram for 19 Pacific Salmon and Steelhead Evolutionarily Significant Units.
- Unspecified Mitigation Measures (papercliped)
- Department of the Army, Regulatory Branch. March 8, 1999

Folder 2 (Bio New):

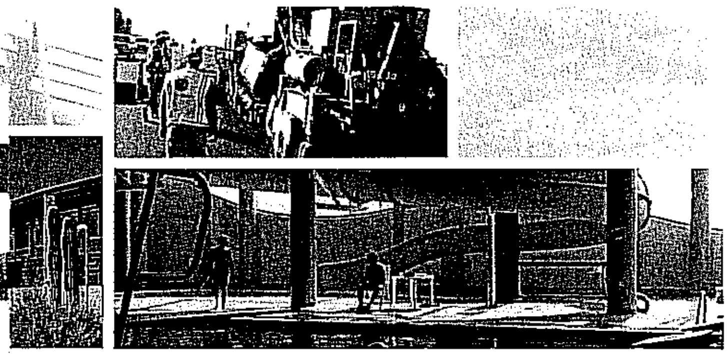
- Clover Valley Subdivision Entitlement Application Response to Completeness Letter. August 4, 2005
- Review of the Proposed Clover Valley Lake Project. United States Department of the Interior Fish and Wildlife Service. October 27, 2005

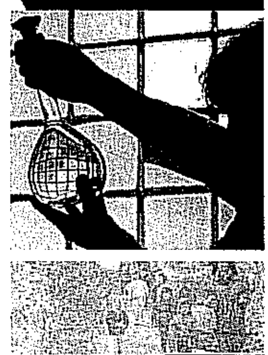
Folder 3 (Biology):
Packet assembled by Stantec that contains biologically related correspondence.

- Re: Clover Valley Lakes wetlands delineation. Davis^2 Consulting Earth Scientists. December 19, 1997

- Re: Clover Valley lakes wetlands delineation. Davis^2 Consulting Earth Scientists. March 12, 1998
- Letter of Transmittal: NRCS Field Indicators of Hydric Soils. Davis^2 Consulting Earth Scientists. March 9, 1998
- Re: Hydric Soils. Davis^2 Consulting Earth Scientists. March 18, 1998
- Re: Clover Valley Lakes. Davis^2 Consulting Earth Scientists. April 6, 1998
- Re: Clover Valley Lakes post preapplication meeting notes. Davis^2 Consulting Earth Scientists. May 8, 1998
- Re: Clover Valley Creek Stream Channel and Fish Passage Investigation. ECORP Consulting, Inc. February 27, 2001
- Clover Valley Plant and Animal Impact Analysis. Davis^2 Consulting Earth Scientists. April 27, 2001
- Re: Clover Valley Creek Stream Cannel and Fish Passage Investigation. ECORP Consilting, Inc. May 4, 2001
- Preconstruction Notice for Clover Valley Lakes. Placer County, California. Davis^2 Consulting Earth Scientists. June 29, 1998

APPENDIX J





Stantec

CLOVER VALLEY

TREE REMOVAL SUMMARY

November, 2005

Prepared by:
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2590 Venture Oaks Way
Sacramento, CA 95833
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Stantec

Summary

This oak tree removal summary is based on field survey completed by Stantec Consulting Inc. in conjunction with an arborist report prepared by Sierra Nevada Arborists. This report is meant to supplement the Tree Plan sheets included as part of the entitlement application submitted to the City of Rocklin.

This summary provides a "Phase Layout" exhibit depicting the assumed limits of the various development phases and a tabular compilation of those oak trees to be removed as part of the construction of all currently planned infrastructure associated with this project. Also included is a detailed list of all those trees to be removed by tree number. The detailed list includes arborist-generated data on the species, diameter breast height (dbh), and canopy spread on the oak trees to be removed. Phase and point descriptions where the trees are generally located are also provided in these detailed lists.

The summary tables include analysis of major roadways, easement areas, and a phase-by-phase analysis focusing on both the number of oak trees and the total caliper inches of oak trees to be removed. The total estimated number of trees in the project area is 28,246 as defined in the arborist report and supplemental inventory report. The original arborist report dated November 13, 2001 inventoried 28,053 oak trees. That report was amended with a supplemental survey prepared by the arborist dated August 2004 that included another 193 trees. (It is noted that the August 2004 supplemental survey identified 213 trees but 20 of those trees were duplicates from the original 2001 report, hence the adjusted number of 193 trees for the supplemental report.) The total of these two arborist surveys represents the current 28,246 trees for this project.

The results of these tree removal analyses indicate that an estimated 7,422 total oak trees will be removed. Of that number 1,632 trees are located within the major roadway construction areas. The balance, 5,790 trees, is located within the planned residential, commercial and easement areas. The total percentage of trees removed, net of the major roadway areas, is roughly 21.8 percent.

The review of total caliper inches of oak trees was similarly accomplished. Overall there are roughly 410,505 inches of trees as defined in the arborist reports. This figure was reduced for major roadways and off-site areas to an estimated net number of 387,351 total inches. The total inches of oak trees estimated for removal located within the planned residential, commercial and easement areas are 84,456 inches, or roughly 21.8 percent.

The Development Agreement allows for a maximum of 25 percent oak tree removal net of the trees within the major roadway areas. The results of this study indicate that the number of trees and the diameter inches of trees removed are less than this 25 percent number. In should be noted that this tree impact analysis assumed a "worst case" scenario in which every tree within the developed areas would be removed. It is likely that with final grading plans there would be a number of trees that could be saved that are currently shown as removed.

Stantec

Clover Valley Partners

Clover Valley

City of Rocklin, CA

Tree Summary

(Number of Trees)

Location		Fair, Fair-Poor Trees*	Poor Trees	Total Trees
Phase 2		993	146	1,139
Phase 3		281	44	325
Phase 3A		128	40	168
Phase 4A		907	223	1,130
Phase 4B		494	64	558
Phase 4C		1,137	169	1,306
Phase 4D		385	20	405
Phase 4E		60	4	64
Phase 4F		617	146	763
Phase 4G		224	44	268
Phase 4H		182	24	206
Phase 4I		262	42	304
Phase 4J		496	133	629
Easements (E)		98	29	127
Open Space (OS)		17,460	3,220	20,680
Offsite (O) - NA		120	24	144
Offsite removed (OR)		21	9	30
Total Trees (Gross)		**23,865**	**4,381**	**28,246**
Removed Trees (Ph 2, 3, 4, E, OR, A)		**6,285**	**1,137**	**7,422**

E = Removed from Easements, OR = Off-site trees that will be removed, A = Arborist Info

Stantec

Clover Valley Partners

Clover Valley

City of Rocklin, CA

Tree Summary

(Removal of Trees)

		Fair, Fair-Poor Trees	Poor Trees	Total Trees
Total Trees (Gross)		23,865	4,381	28,246
15 - Major Roads (2, 3, 3a)		1,402	230	1,632
Total Trees (Net*)		**22,463**	**4,151**	**26,614**
Trees Removed (Net*)		4,883	907	5,790

*Total trees minus major roads

		Tree Removal Rate based on Trees Removed / Trees Net		
Location		**Percent Removed Fair, Fair-Poor**	**Percent Removed Poor**	**Percent Removed Total****
Phase 4A		4.04%	5.37%	4.25%
Phase 4B		2.20%	1.54%	2.10%
Phase 4C		5.06%	4.07%	4.91%
Phase 4D		1.71%	0.48%	1.52%
Phase 4E		0.27%	0.10%	0.24%
Phase 4F		2.75%	3.52%	2.87%
Phase 4G		1.00%	1.06%	1.01%
Phase 4H		0.81%	0.58%	0.77%
Phase 4I		1.17%	1.01%	1.14%
Phase 4J		2.21%	3.20%	2.36%
Easements (E)		0.44%	0.70%	0.48%
Offsite removed (OR)		0.09%	0.22%	0.11%
Total Trees (Net)		**21.74%**	**21.85%**	**21.76%**

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Clover Valley Partners

Clover Valley

City of Rocklin, CA

Tree Summary

(Caliper Inches of Trees)

Location		Caliper Inches Fair, Fair-Poor	Caliper Inches Poor	Caliper Inches Total
Phase 2		12,762	1,981	14,743
Phase 3		4,862	546	5,408
Phase 3A		2,521	482	3,003
Phase 4A		11,323	3,000	14,323
Phase 4B		7,844	918	8,762
Phase 4C		16,270	2,453	18,723
Phase 4D		7,504	330	7,834
Phase 4E		739	65	804
Phase 4F		8,061	2,072	10,133
Phase 4G		4,028	514	4,542
Phase 4H		3,176	291	3,467
Phase 4I		4,772	759	5,531
Phase 4J		6,039	1,797	7,836
Easements (E)		1,752	368	2,120
Open Space (OS)		257,072	43,463	300,535
Offsite (O) - NA		1,969	391	2,360
Offsite removed (OR)		268	113	381
Total Trees (Gross)		**350,962**	**59,543**	**410,505**
Removed Trees (Ph 2, 3, 4, E, OR, A)		**91,921**	**15,689**	**107,610**

E = Removed from Easements, OR = Off-site trees that will be removed, A = Arborist Info

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Clover Valley Partners

Clover Valley

City of Rocklin, CA

Tree Summary - Phase 2 (Valley View Parkway)

(All data available on Trees)

Number and Caliper Inches of Trees Removed

Tree Species	Number of Fair trees Removed	Caliper Inches of Fair Trees Removed	Caliper Inches of Fair Multi-Stem Trees Removed	Number of Fair/Poor trees Removed	Caliper Inches of Fair/Poor Trees Removed	Caliper Inches of Multi-Stem Fair/Poor Trees Removed	Number of Poor trees Removed	Caliper Inches of Poor Trees Removed	Caliper Inches of Poor Multi-Stem Trees Removed
Black Oak	1		19						
Blue Oak	338	2364	725	19	188	36	37	356	101
Live Oak	491	826	6588	95	150	1305	109	265	1259
Valley Oak	40	336	119	2	15				
Misc	7	91							
Total	877	3617	7451	116	353	1341	146	621	1360

	Number of trees Removed	Caliper Inches of Trees Removed	Caliper Inches of Multi-Stem Trees Removed	Total Caliper Inches of Trees Removed
Fair Trees	877	3617	7451	11068
Fair / Poor Trees	116	353	1341	1694
Fair & Fair / Poor Trees	**993**	3970	8792	**12762**
Poor Trees	**146**	621	1360	**1981**

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 2

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
330	Blue Oak	23						26	330	2
331	Blue Oak			11				13	331	2
332	Blue Oak	17						21	332	2
333	Blue Oak			6				7	333	2
4251	Blue Oak	10						13	4251	2
5114	Blue Oak		3 at 21					16	5114	2
5115	Blue Oak	6						12	5115	2
5116	Live Oak				5 at 33			24	5116	2
5117	Live Oak	14						22	5117	2
5118	Blue Oak		5,5					12	5118	2
5119	Blue Oak	15						17	5119	2
5132	Live Oak		7,7					23	5132	2
5133	Live Oak						4,6	16	5133	2
5140	Live Oak		5,8					18	5140	2
5141	Live Oak					8		16	5141	2
5142	Live Oak					6		14	5142	2
5260	Blue Oak	6						8	5260	2
5261	Live Oak		3 at 9					18	5261	2
5262	Live Oak	6						16	5262	2
5263	Live Oak	5						16	5263	2
5264	Blue Oak	5						8	5264	2
5265	Live Oak	6						14	5265	2
5266	Live Oak						4 at 15	13	5266	2
5267	Live Oak	6						13	5267	2
5343	Live Oak	6						15	5343	2
5344	Blue Oak	7						12	5344	2
5357	Live Oak						7,13	18	5357	2
5415	Blue Oak	4						8	5415	2
5416	Live Oak		7 at 36					15	5416	2
5417	Live Oak		6,6					18	5417	2
5426	Blue Oak	5						9	5426	2
5427	Blue Oak		5,5					8	5427	2
5428	Blue Oak	5						12	5428	2
5429	Blue Oak	5						9	5429	2
5443	Live Oak						3 at 14	16	5443	2
5444	Live Oak	4						14	5444	2
5445	Blue Oak	4						6	5445	2
5446	Live Oak	5						12	5446	2
5447	Live Oak	5						10	5447	2
5448	Live Oak	4						8	5448	2
5449	Live Oak		4 at 14					14	5449	2
5450	Live Oak		4,5					13	5450	2
5451	Live Oak		11 at 54					16	5451	2
5452	Live Oak	5						10	5452	2
5453	Live Oak		3 at 15					15	5453	2
5454	Live Oak		3 at 15					16	5454	2
5455	Live Oak		3 at 13					15	5455	2
5456	Live Oak		4,6					16	5456	2
5457	Live Oak	6						10	5457	2
5458	Live Oak		4 at 18					13	5458	2

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 2

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
5459	Live Oak		4 at 15					14	5459	2
5460	Blue Oak	9						14	5460	2
[illegible]	[illegible]		[illegible]					[illegible]	[illegible]	[illegible]
5462	Live Oak		8 at 44					15	5462	2
5463	Live Oak		4,6					17	5463	2
5464	Live Oak		7 at 34					15	5464	2
5465	Blue Oak		5,7					12	5465	2
5466	Live Oak		6,6					15	5466	2
5467	Live Oak						4,6	10	5467	2
5468	Live Oak		6 at 24					15	5468	2
5469	Blue Oak	6						8	5469	2
5470	Blue Oak			9				14	5470	2
5471	Blue Oak	18						26	5471	2
5472	Live Oak		4 at 22					17	5472	2
5473	Live Oak		4 at 16					10	5473	2
5474	Blue Oak		5,5					10	5474	2
5476	Live Oak			7				12	5476	2
5477	Live Oak		3 at 12					15	5477	2
5478	Live Oak		3 at 10					13	5478	2
5479	Live Oak		4,5					10	5479	2
5480	Live Oak					5		6	5480	2
5481	Live Oak		5 at 36					15	5481	2
5482	Blue Oak	6						8	5482	2
5499	Live Oak		7 at 34					20	5499	2
5500	Live Oak		4 at 25					18	5500	2
5501	Live Oak		3 at 16					18	5501	2
5502	Blue Oak	10						19	5502	2
5503	Blue Oak	8						18	5503	2
5504	Blue Oak		3 at 23					22	5504	2
5505	Blue Oak		6,6					15	5505	2
5506	Blue Oak	6						10	5506	2
5507	Live Oak		3 at 18					17	5507	2
5508	Blue Oak	6						18	5508	2
5509	Live Oak		3 at 14					14	5509	2
5510	Live Oak		4 at 23					16	5510	2
5511	Live Oak		4 at 21					22	5511	2
5512	Blue Oak	5						8	5512	2
5513	Blue Oak					10		20	5513	2
5514	Live Oak	11						14	5514	2
5515	Live Oak		3 at 10					16	5515	2
5516	Blue Oak					9		12	5516	2
5517	Blue Oak	6						9	5517	2
5518	Blue Oak	7						13	5518	2
5519	Blue Oak	5						10	5519	2
5520	Live Oak		5 at 14					18	5520	2
5569	Live Oak		4 at 22					25	5569	2
5570	Live Oak		5 at 17					18	5570	2
5571	Live Oak		3 at 16					19	5571	2
5572	Live Oak	6						15	5572	2
5572	Live Oak	5						14	5573	2

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 2

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
5574	Live Oak	7						18	5574	2
5576	Live Oak		4,4					14	5576	2
5577	Blue Oak		3 at 12					14	5577	2
5578	Blue Oak					14		20	5578	2
5579	Blue Oak	8						16	5579	2
5580	Blue Oak	5						8	5580	2
5581	Blue Oak		4,5					10	5581	2
5582	Live Oak		5 at 14					12	5582	2
5583	Live Oak		8 at 35					17	5583	2
5584	Live Oak		4 at 19					20	5584	2
5585	Live Oak		8 at 27					17	5585	2
5586	Live Oak		4 at 16					18	5586	2
5587	Live Oak		7 at 20					18	5587	2
5588	Blue Oak		3,4					8	5588	2
5589	Live Oak		4 at 14					15	5589	2
5590	Blue Oak	5						8	5590	2
5591	Live Oak		6 at 23					17	5591	2
5592	Live Oak		4 at 20					20	5592	2
5593	Blue Oak		3 at 10					10	5593	2
5594	Live Oak		5 at 35					16	5594	2
5608	Live Oak		3 at 11					18	5608	2
5609	Live Oak		6 at 20					15	5609	2
5610	Live Oak	6						17	5610	2
5611	Live Oak		6 at 23					14	5611	2
5612	Blue Oak	6						10	5612	2
5613	Live Oak		6,6					23	5613	2
5614	Live Oak		7 at 25					19	5614	2
5615	Live Oak		5 at 24					18	5615	2
5616	Blue Oak	8						16	5616	2
5617	Live Oak		4 at 20					15	5617	2
5618	Live Oak		5,5					15	5618	2
5619	Live Oak		3 at 14					15	5619	2
5620	Live Oak		4 at 15					15	5620	2
5621	Live Oak		3 at 10					12	5621	2
5622	Live Oak		4,6					17	5622	2
5623	Live Oak		3 at 12					16	5623	2
5626	Live Oak		4 at 16					18	5626	2
5627	Live Oak		5,6					22	5627	2
5628	Live Oak		5 at 15					17	5628	2
5629	Live Oak		3 at 10					14	5629	2
5630	Live Oak		3 at 10					14	5630	2
5631	Live Oak		3 at 10					14	5631	2
5632	Live Oak		5 at 17					15	5632	2
5633	Blue Oak	11						16	5633	2
5634	Live Oak		5 at 16					24	5634	2
5635	Live Oak		3 at 10					16	5635	2
5636	Live Oak	6						16	5636	2
5637	Live Oak	4						13	5637	2
5638	Live Oak		6,7					14	5638	2
5639	Blue Oak	10						15	5639	2

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Removed Oak Tree Inventory - Phase 2

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
5640	Blue Oak	11						16	5640	2
5641	Live Oak						3 at 10	14	5641	2
[illegible]	[illegible]		[illegible]					[illegible]	[illegible]	[illegible]
5643	Blue Oak		5,5					8	5643	2
5644	Live Oak		4 at 24					17	5644	2
5645	Blue Oak	4						10	5645	2
5646	Live Oak		6 at 28					12	5646	2
5647	Blue Oak	5						12	5647	2
5648	Blue Oak	6						8	5648	2
5649	Blue Oak		5,5					12	5649	2
5650	Blue Oak	5						8	5650	2
5651	Live Oak		6 at 28					26	5651	2
5652	Blue Oak					9		12	5652	2
5653	Blue Oak		6,7					15	5653	2
5654	Blue Oak	8						15	5654	2
5655	Blue Oak	8						15	5655	2
5656	Live Oak		5 at 35					16	5656	2
5657	Blue Oak	5						8	5657	2
5658	Blue Oak		4,6					11	5658	2
5659	Live Oak	5						10	5659	2
5660	Blue Oak	6						10	5660	2
5661	Blue Oak	6						10	5661	2
5662	Blue Oak	5						6	5662	2
5663	Blue Oak	6						8	5663	2
5665	Blue Oak	4						9	5665	2
5666	Live Oak		6 at 24					15	5666	2
5692	Live Oak		4,5					17	5692	2
5693	Live Oak	6						12	5693	2
5694	Live Oak		3 at 19					16	5694	2
5695	Live Oak		3 at 15					15	5695	2
5696	Blue Oak	7						12	5696	2
5697	Blue Oak	7						10	5697	2
5698	Live Oak	7						18	5698	2
5699	Blue Oak	9						14	5699	2
5700	Live Oak		4 at 18					14	5700	2
5701	Live Oak	5						14	5701	2
5702	Live Oak		4 at 28					21	5702	2
5703	Live Oak		6,6					15	5703	2
5704	Live Oak	7						18	5704	2
5705	Blue Oak		3 at 15					15	5705	2
5706	Live Oak	5						14	5706	2
5707	Blue Oak	5						8	5707	2
5708	Live Oak		6,6					18	5708	2
5709	Live Oak		4 at 20					14	5709	2
5710	Live Oak		5,7					14	5710	2
5711	Blue Oak	10						14	5711	2
5724	Live Oak		5 at 15					16	5724	2
5725	Live Oak		6 at 23					18	5725	2
5726	Live Oak		4 at 13					15	5726	2
5727	Live Oak		4 at 12					15	5727	2

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 2

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
5728	Live Oak		4 at 12					15	5728	2
5729	Live Oak		3 at 10					14	5729	2
5730	Blue Oak	9						15	5730	2
5731	Live Oak		5,5					15	5731	2
5732	Live Oak		4,6					16	5732	2
5733	Live Oak		9 at 20					20	5733	2
5734	Live Oak		3 at 15					18	5734	2
5735	Blue Oak	11						17	5735	2
5736									5736	2
5736									50021	2
5737	Live Oak		3 at 11					12	5737	2
5738	Blue Oak		8,9					15	5738	2
5746	Blue Oak		7,10					14	5746	2
5747	Blue Oak	5						7	5747	2
5748	Blue Oak	5						5	5748	2
5749	Blue Oak	15						20	5749	2
5750	Live Oak		4,6					12	5750	2
5751	Live Oak		4,5					16	5751	2
5752	Live Oak		4,6					15	5752	2
5753	Live Oak	6						12	5753	2
5754	Live Oak		3 at 15					16	5754	2
5755	Live Oak	6						13	5755	2
5756	Blue Oak	8						13	5756	2
5757	Blue Oak	15						16	5757	2
5758	Blue Oak	6						10	5758	2
5759	Live Oak		5 at 20					18	5759	2
5760	Live Oak		3 at 18					19	5760	2
5761	Live Oak	7						19	5761	2
5762	Live Oak		3 at 17					19	5762	2
5763	Live Oak		3 at 14					12	5763	2
5839	Blue Oak	7						10	5839	2
5840	Live Oak		5 at 22					15	5840	2
5841	Blue Oak	5						8	5841	2
5903	Live Oak		5 at 35					25	5903	2
5904	Live Oak		3 at 22					18	5904	2
5905	Live Oak	20						15	5905	2
5906	Live Oak	6						8	5906	2
5907	Live Oak		4 at 24					16	5907	2
5908	Live Oak		4 at 25					26	5908	2
5909	Live Oak		3,4					25	5909	2
5910	Live Oak	7						18	5910	2
5911	Live Oak		5 at 34					22	5911	2
5912	Live Oak		5 at 28					20	5912	2
5913	Live Oak		4 at 13					15	5913	2
5914	Live Oak	6						14	5914	2
5915	Live Oak		9 at 38					23	5915	2
5916	Live Oak		3 at 11					15	5916	2
5917	Live Oak		15 at 62					17	5917	2
5918	Live Oak		10,14					20	5918	2
5919	Live Oak	17						26	5919	2

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 2

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
5922	Blue Oak	10						17	5922	2
5923	Blue Oak	17						19	5923	2
[illegible]	Live Oak		[illegible]					[illegible]	[illegible]	[illegible]
5926	Blue Oak	6						12	5926	2
5927	Blue Oak	7						13	5927	2
5928	Blue Oak		5,6					12	5928	2
5929	Blue Oak		3 at 10					8	5929	2
5930	Blue Oak	8						13	5930	2
5931	Blue Oak		5,5					12	5931	2
5932	Live Oak		8 at 42					17	5932	2
5934	Valley Oak		3 at 13					14	5934	2
5935	Blue Oak		4,6					10	5935	2
5936	Live Oak				5 at 23			18	5936	2
5937	Blue Oak	6						8	5937	2
5938	Live Oak	6						18	5938	2
7016	Blue Oak	5						6	7016	2
7018	Blue Oak	6						8	7018	2
7037	Blue Oak			14				15	7037	2
7038	Blue Oak	17						17	7038	2
7039	Blue Oak	18						19	7039	2
7040	Blue Oak	14						15	7040	2
7042	Blue Oak			11				16	7042	2
7043	Blue Oak	15						16	7043	2
7044	Blue Oak					13		20	7044	2
7063	Live Oak	8						17	7063	2
7064	Live Oak		4 at 22					16	7064	2
7065	Blue Oak	9						12	7065	2
7066	Valley Oak	15						18	7066	2
7067	Blue Oak	10						12	7067	2
7068	Blue Oak		8,10					17	7068	2
7069	Blue Oak			12				16	7069	2
7070	Blue Oak					11		14	7070	2
7071	Blue Oak	16						17	7071	2
7078	Blue Oak	13						15	7078	2
7079	Blue Oak	11						13	7079	2
7080	Blue Oak	10						14	7080	2
7083	Blue Oak	6						10	7083	2
7084	Live Oak		6 at 36					15	7084	2
7085	Blue Oak	6						10	7085	2
7086	Blue Oak		5,10					16	7086	2
7102	Blue Oak	9						12	7102	2
7103	Blue Oak	8						14	7103	2
7104	Live Oak	10						15	7104	2
7105	Live Oak		5 at 29					15	7105	2
7106	Blue Oak	10						15	7106	2
7109	Blue Oak	5						13	7109	2
7110	Live Oak	5						21	7110	2
7111	Live Oak		3 at 25					20	7111	2
7112	Live Oak		6 at 31					18	7112	2
7113	Blue Oak	7						14	7113	2

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Removed Oak Tree Inventory - Phase 2

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
7114	Live Oak		4 at 32					23	7114	2
7115	Live Oak		3 at 20					21	7115	2
7116	Live Oak		5 at 33					18	7116	2
7117	Live Oak		3 at 16					14	7117	2
7118	Live Oak						4,6	20	7118	2
7119	Live Oak				7 at 37			22	7119	2
7120	Blue Oak	10						16	7120	2
7121	Live Oak	10						14	7121	2
7122	Live Oak	6						15	7122	2
7123	Live Oak		5,9					18	7123	2
7124	Live Oak		5,6					19	7124	2
7125	Live Oak	6						12	7125	2
7126	Live Oak	9						19	7126	2
7127	Live Oak		6 at 37					18	7127	2
7130	Blue Oak	8						12	7130	2
7131	Live Oak		4 at 20					15	7131	2
7132	Blue Oak			13				17	7132	2
7133	Live Oak					5		6	7133	2
7134	Live Oak		5,10					19	7134	2
7135	Live Oak	10						19	7135	2
7136	Live Oak		5 at 19					10	7136	2
7137	Live Oak		6 at 31					20	7137	2
7138	Live Oak	9						18	7138	2
7220	Live Oak	8						17	7220	2
7221	Live Oak		8,9					22	7221	2
7222	Live Oak		4 at 18					17	7222	2
7223	Live Oak				3 at 14			12	7223	2
7224	Live Oak				6 at 29			18	7224	2
7225	Live Oak		5 at 25					15	7225	2
7226	Live Oak		4 at 16					14	7226	2
7227	Live Oak				5 at 34			22	7227	2
7228	Live Oak		4 at 28					17	7228	2
7229	Live Oak		4 at 22					20	7229	2
7230	Live Oak	6						10	7230	2
7231	Live Oak				4,6			17	7231	2
7232	Live Oak		6,7					16	7232	2
7233	Live Oak	8						15	7233	2
7234	Live Oak		5 at 23					15	7234	2
7235	Live Oak		6 at 30					22	7235	2
7236	Live Oak						4 at 20	14	7236	2
7237	Blue Oak	6						16	7237	2
7238	Live Oak		4 at 22					15	7238	2
7239	Live Oak		9,9					22	7239	2
7240	Live Oak				3 at 18			18	7240	2
7241	Live Oak		5,6					14	7241	2
7242	Live Oak		6,6					15	7242	2
7243	Live Oak		7,10					17	7243	2
7244	Live Oak	5						20	7244	2
7245	Live Oak	5						14	7245	2
7246	Live Oak		5 at 15					12	7246	2

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		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
7247	Live Oak		5 at 30					18	7247	2
7248	Live Oak	6						14	7248	2
[illegible]	[illegible]		[illegible]					[illegible]	[illegible]	[illegible]
7250	Live Oak		6 at 30					19	7250	2
7251	Live Oak		4 at 25					18	7251	2
7283	Blue Oak	9						13	7283	2
7284	Blue Oak	6						12	7284	2
7285	Blue Oak	8						13	7285	2
7286	Blue Oak	11						16	7286	2
7287	Blue Oak	5						8	7287	2
7288	Blue Oak	5						12	7288	2
7289	Blue Oak	10						13	7289	2
7290	Blue Oak	7						10	7290	2
7292	Live Oak	6						16	7292	2
7293	Blue Oak	11						17	7293	2
7305	Blue Oak			7				8	7305	2
7306	Blue Oak					8		13	7306	2
7307	Blue Oak	6						9	7307	2
7308	Blue Oak	6						10	7308	2
7309	Blue Oak	10						14	7309	2
7310	Blue Oak	6						12	7310	2
7311	Blue Oak	6						13	7311	2
7312	Live Oak	5						10	7312	2
7313	Live Oak		5 at 26					23	7313	2
7314	Blue Oak	5						15	7314	2
7315	Blue Oak	9						12	7315	2
7316	Live Oak		6 at 44					20	7316	2
7317	Live Oak		3 at 11					16	7317	2
7318	Live Oak		3 at 15					22	7318	2
7319	Live Oak		5 at 28					20	7319	2
7320	Live Oak	6						10	7320	2
7321	Live Oak		5 at 32					20	7321	2
7322	Live Oak	5						10	7322	2
7323	Live Oak		6 at 32					17	7323	2
7324	Live Oak	6						13	7324	2
7325	Live Oak		6,10					20	7325	2
7326	Live Oak	5						15	7326	2
7327	Live Oak		5 at 23					18	7327	2
7328	Live Oak		5 at 33					19	7328	2
7329	Live Oak		4 at 26					20	7329	2
7330	Live Oak		3 at 17					18	7330	2
7348	Live Oak				4 at 17			15	7348	2
7349	Live Oak		6,8					12	7349	2
7434	Live Oak		5,6					13	7434	2
7435	Blue Oak		3 at 17					14	7435	2
7436	Blue Oak		3 at 13					10	7436	2
7437	Blue Oak		7,8					15	7437	2
7438	Blue Oak	8						13	7438	2
7439	Blue Oak	8						12	7439	2
7440	Live Oak					6		10	7440	2

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		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
7441	Live Oak						3 at 14	13	7441	2
7442	Live Oak					6		17	7442	2
7443	Blue Oak	6						8	7443	2
7444	Blue Oak	5						8	7444	2
7445	Blue Oak				5,6			10	7445	2
7446	Blue Oak		8,8					16	7446	2
7447	Blue Oak	8						12	7447	2
7448	Blue Oak					8		10	7448	2
7449	Blue Oak		3,5					6	7449	2
7450	Live Oak						5,6	12	7450	2
7451	Blue Oak	6						10	7451	2
7452	Live Oak						4,4	10	7452	2
7453	Live Oak	8						13	7453	2
7454	Blue Oak	10						13	7454	2
7455	Live Oak		3 at 23					15	7455	2
7456	Blue Oak		7,8					15	7456	2
7457	Blue Oak		6,9					16	7457	2
7459	Live Oak			12				16	7459	2
7460	Live Oak		6,7					14	7460	2
7461	Blue Oak	6						8	7461	2
7462	Blue Oak	6						13	7462	2
7463	Blue Oak	11						14	7463	2
7503	Blue Oak	14						17	7503	2
7504	Blue Oak					13		12	7504	2
7506	Blue Oak	8						13	7506	2
7507	Blue Oak	8						14	7507	2
7508	Blue Oak	8						14	7508	2
7511	Blue Oak					11		16	7511	2
7513									7513	2
7514									7514	2
7515	Blue Oak	7						9	7515	2
7516	Blue Oak	8						12	7516	2
7524	Blue Oak						8,10	17	7524	2
7525	Blue Oak						7,11	18	7525	2
7526	Blue Oak					11		12	7526	2
7527	Blue Oak					10		13	7527	2
7528	Blue Oak					9		16	7528	2
7530	Blue Oak						8,9	14	7530	2
7531	Blue Oak	8						12	7531	2
7532	Blue Oak	9						14	7532	2
7533	Blue Oak	10						17	7533	2
7534	Blue Oak	7						8	7534	2
7535	Blue Oak	10						14	7535	2
7536	Blue Oak	6						8	7536	2
7540	Blue Oak	15						16	7540	2
7541	Blue Oak	9						14	7541	2
7549	Blue Oak		3,7					18	7549	2
7550	Blue Oak	15						18	7550	2
7551	Blue Oak		4,6					8	7551	2
7552	Live Oak		4 at 17					16	7552	2

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		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
7553	Blue Oak	15						21	7553	2
7554	Blue Oak	7						13	7554	2
[illegible]	Blue Oak		[illegible]					[illegible]	[illegible]	[illegible]
7556	Blue Oak	17						24	7556	2
7557	Blue Oak	6						12	7557	2
7558	Live Oak						4 at 11	13	7558	2
7559	Blue Oak	15						17	7559	2
7560	Blue Oak	7						15	7560	2
7562	Blue Oak	7						11	7562	2
7563	Blue Oak	8						12	7563	2
7564									7564	2
7565	Blue Oak	11						14	7565	2
7566	Blue Oak	7						14	7566	2
7567	Live Oak		6,11					18	7567	2
7568	Blue Oak	17						24	7568	2
7569	Blue Oak	7						12	7569	2
7570	Blue Oak		5,6					13	7570	2
7571	Blue Oak			15				18	7571	2
7572	Live Oak		7 at 49					28	7572	2
7575	Blue Oak			20				24	7575	2
7579	Live Oak				4 at 18			16	7579	2
7580	Live Oak		4 at 24					19	7580	2
7581	Live Oak						7,9	16	7581	2
7582	Live Oak						8,10	17	7582	2
7583	Blue Oak	7						18	7583	2
7584	Blue Oak	16						25	7584	2
7586	Live Oak		3 at 18					20	7586	2
7589	Live Oak				4,6			19	7589	2
7590	Blue Oak	17						22	7590	2
7591	Live Oak						3 at 21	16	7591	2
7592	Live Oak		5 at 29					20	7592	2
7593	Live Oak				5 at 23			17	7593	2
7594									7594	2
7595	Live Oak		5,8					20	7595	2
7596	Live Oak		5 at 20					17	7596	2
7597	Live Oak				3 at 9			16	7597	2
7598	Live Oak				3 at 10			17	7598	2
7599	Live Oak		3 at 12					12	7599	2
7600	Live Oak				3 at 31			20	7600	2
7601	Live Oak						4 at 38	22	7601	2
7602	Blue Oak	7						15	7602	2
7603	Blue Oak		5,5					9	7603	2
7604	Blue Oak						4,6	8	7604	2
7605	Live Oak		5 at 13					12	7605	2
7606	Live Oak				5 at 14			13	7606	2
7607	Blue Oak	8						12	7607	2
7608	Live Oak						4 at 19	22	7608	2
7609	Live Oak		5 at 21					18	7609	2
7611	Live Oak				7 at 29			22	7611	2
7613	Live Oak		4 at 11					14	7613	2

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		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
7614	Live Oak		4 at 11					15	7614	2
7615	Live Oak		5 at 22					16	7615	2
7616	Live Oak		6 at 18		6 at 18			20	7616	2
7617	Live Oak		12 at 36				12 at 36	22	7617	2
7618	Live Oak		5 at 16					17	7618	2
7619	Live Oak		3 at 12					16	7619	2
7620	Live Oak		4 at 11					16	7620	2
7626	Live Oak		4 at 20					16	7626	2
7627	Live Oak		6 at 24					20	7627	2
7628	Live Oak		5 at 20					19	7628	2
7629	Live Oak		3 at 11					16	7629	2
7630	Live Oak					11		20	7630	2
7631	Live Oak		3 at 13					14	7631	2
7632	Live Oak	7						15	7632	2
7633	Live Oak				7 at 28			20	7633	2
7634	Blue Oak	6						8	7634	2
7645	Live Oak		5,5					12	7645	2
7646	Live Oak	6						12	7646	2
7647	Live Oak		3 at 23					22	7647	2
7648	Live Oak		4 at 12					13	7648	2
7649	Live Oak		3 at 11					17	7649	2
7650	Live Oak		4, 7					18	7650	2
7651	Live Oak						7 at 35	29	7651	2
7652	Live Oak		5 at 20					16	7652	2
7653	Live Oak				4 at 23			20	7653	2
7654	Live Oak					13		18	7654	2
7655	Live Oak					15		20	7655	2
7658	Live Oak					5		13	7658	2
7659	Live Oak				3 at 9			10	7659	2
7661	Live Oak				5 at 13			20	7661	2
7662	Live Oak		6 at 13					17	7662	2
7663	Live Oak		3 at 7					17	7663	2
7664	Live Oak				4 at 12			14	7664	2
7666	Live Oak				3 at 8			13	7666	2
7667	Live Oak				6 at 15			16	7667	2
7668	Live Oak				4 at 14			13	7668	2
7669	Live Oak		4,4					16	7669	2
7670	Live Oak				3 at 8			17	7670	2
7671	Live Oak				4 at 19			17	7671	2
7672	Live Oak					6		15	7672	2
7673	Live Oak		3 at 15					16	7673	2
7674	Live Oak						6 at 31	18	7674	2
7675	Live Oak				7 at 34			20	7675	2
7676	Live Oak				3 at 10			16	7676	2
7677	Live Oak		8 at 21					14	7677	2
7678	Live Oak				5,6			17	7678	2
7679	Live Oak		8 at 23					20	7679	2
7680	Live Oak						3 at 13	15	7680	2
7681	Live Oak		4 at 15					16	7681	2
7682	Live Oak						6 at 22	14	7682	2

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		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
7683	Live Oak		4 at 11					13	7683	2
7684	Live Oak				6 at 54			30	7684	2
[illegible]	[illegible]		[illegible]					[illegible]	[illegible]	[illegible]
7686	Live Oak		5,6					15	7686	2
7687	Live Oak		4 at 12					17	7687	2
7688	Live Oak		3 at 13					15	7688	2
7689	Live Oak		4 at 22					15	7689	2
7690	Live Oak		4,4					20	7690	2
7691	Live Oak		3 at 12					13	7691	2
7692	Live Oak		4 at 10					15	7692	2
7693	Blue Oak	10						17	7693	2
7694	Live Oak						3 at 26	17	7694	2
7695	Live Oak						4 at 12	16	7695	2
7698	Live Oak		4 at 12					15	7698	2
7699	Live Oak						3 at 14	18	7699	2
7700	Live Oak		4 at 18					16	7700	2
7701	Live Oak				4 at 13			17	7701	2
7702	Live Oak						3 at 18	20	7702	2
7703	Live Oak		3 at 16					18	7703	2
7705	Live Oak		3 at 13					12	7705	2
7706	Live Oak				6 at 17			15	7706	2
7708	Live Oak				5 at 18			17	7708	2
7710	Live Oak		6 at 15					15	7710	2
7711	Live Oak				4 at 12			18	7711	2
7715	Live Oak		3 at 15					17	7715	2
7716	Live Oak		4 at 23					22	7716	2
7717	Live Oak		4 at 12					13	7717	2
7718	Live Oak		4 at 16					17	7718	2
7719	Live Oak		5 at 26					16	7719	2
7720	Live Oak						3 at 12	15	7720	2
7721	Live Oak				3 at 10			11	7721	2
7722	Live Oak						3 at 10	9	7722	2
7723	Live Oak		5,6					16	7723	2
7724	Live Oak		5 at 21					17	7724	2
7726	Live Oak				3 at 15			16	7726	2
7728	Blue Oak			7				14	7728	2
7729	Blue Oak					6		12	7729	2
7730	Blue Oak	8						12	7730	2
7731	Live Oak				3 at 10			13	7731	2
7732	Blue Oak					11		14	7732	2
7733	Live Oak						4 at 17	14	7733	2
7734	Live Oak		5 at 19					19	7734	2
7735	Live Oak				4 at 16			14	7735	2
7736	Live Oak		4 at 19					18	7736	2
7737	Blue Oak		5,5					10	7737	2
7738	Live Oak				7 at 16			16	7738	2
7739	Valley Oak	8						15	7739	2
7740	Live Oak				5,7			19	7740	2
7742	Live Oak		3 at 16					21	7742	2
7743	Live Oak						4 at 10	15	7743	2

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Removed Oak Tree Inventory - Phase 2

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
7744	Live Oak		3 at 18					20	7744	2
7745	Live Oak						4 at 23	20	7745	2
7746	Blue Oak					6		12	7746	2
7747	Blue Oak	8						13	7747	2
7748	Live Oak		5,6					15	7748	2
7749	Blue Oak	8						15	7749	2
7750	Blue Oak	11						17	7750	2
7751	Live Oak						4 at 12	16	7751	2
7752	Blue Oak	6						13	7752	2
7755	Blue Oak	7						8	7755	2
7757	Blue Oak					11		14	7757	2
7758	Live Oak				6 at 17			16	7758	2
7759	Blue Oak	15						20	7759	2
7760	Live Oak		5 at 19					16	7760	2
7761	Live Oak		7 at 31					19	7761	2
7762	Live Oak		4 at 10					12	7762	2
7763	Blue Oak					16		18	7763	2
7764	Live Oak		8 at 25					13	7764	2
7765	Live Oak		3,7					14	7765	2
7766	Live Oak		7 at 38					20	7766	2
7767	Live Oak		4 at 19					17	7767	2
7768	Live Oak				7 at 28			14	7768	2
9001	Valley Oak	14						20	9001	2
9002	Valley Oak	11						15	9002	2
9003	Valley Oak	10						18	9003	2
9004	Valley Oak	3						10	9004	2
9005	Valley Oak	5						16	9005	2
9006	Valley Oak	9						14	9006	2
9007	Live Oak	5						16	9007	2
9008	Valley Oak	13						18	9008	2
9009	Valley Oak	5						11	9009	2
9010	Valley Oak	8						13	9010	2
9011	Valley Oak	11						17	9011	2
9012	Valley Oak	9						10	9012	2
9013	Valley Oak	5						14	9013	2
9014	Valley Oak	9						16	9014	2
9015	Valley Oak	12						22	9015	2
9016	Valley Oak		9,9					18	9016	2
9017	Valley Oak	9						11	9017	2
9018	Valley Oak	31						30	9018	2
9019	Live Oak		6,7,8					12	9019	2
9020	Valley Oak	6						11	9020	2
9021	Valley Oak	6						9	9021	2
9022	Valley Oak	5						7	9022	2
9023	Valley Oak		2,6					8	9023	2
9024	Valley Oak		6,6					7	9024	2
9025	Valley Oak			7				12	9025	2
9026	Valley Oak	8						15	9026	2
9027	Valley Oak	7						19	9027	2
9028	Valley Oak	12						18	9028	2

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Removed Oak Tree Inventory - Phase 2

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
9029	Valley Oak		4,8					15	9029	2
9032	Valley Oak			8				13	9032	2
[illegible]	Valley Oak	14						[illegible]	[illegible]	2
9034	Valley Oak	7						15	9034	2
9035									9035	2
9037	Valley Oak	22						31	9037	2
9041	Valley Oak		3 at 30					26	9041	2
9042	Valley Oak	5						7	9042	2
9043	Valley Oak	14						17	9043	2
9044	Valley Oak	9						17	9044	2
9045	Blue Oak	16						26	9045	2
9046	Valley Oak	6						20	9046	2
9048	Live Oak		14,16					35	9048	2
9374	Live Oak		8,8					15	9374	2
9375	Live Oak		3 at 18					18	9375	2
9376	Live Oak		4,6					14	9376	2
9377	Live Oak	6						10	9377	2
9378	Live Oak					8		22	9378	2
9379	Live Oak					5		10	9379	2
9380	Live Oak		3 at 11					14	9380	2
9381	Live Oak	6						17	9381	2
9382	Live Oak					8		15	9382	2
9383	Live Oak		5 at 25					18	9383	2
9384	Blue Oak						8,9	17	9384	2
9385	Blue Oak	8						15	9385	2
9386	Live Oak	9						16	9386	2
9387	Live Oak		6,6					15	9387	2
9388	Live Oak		3 at 10					13	9388	2
9389	Live Oak	5						12	9389	2
9390	Live Oak		5,6					10	9390	2
9391	Live Oak	6						8	9391	2
9392	Live Oak						6,7	14	9392	2
9393	Live Oak					6		10	9393	2
9394	Live Oak					10		17	9394	2
9395	Live Oak		3,5					12	9395	2
9396	Live Oak						4,6	16	9396	2
9409	Live Oak						12,12	24	9409	2
9410	Blue Oak	12						15	9410	2
9411	Live Oak						10,12	14	9411	2
9412	Live Oak	5						16	9412	2
9413	Live Oak						3 at 26	13	9413	2
9414	Blue Oak	10						25	9414	2
9425	Blue Oak	13						11	9425	2
9426	Blue Oak	16						17	9426	2
9427	Blue Oak	7						12	9427	2
9428	Live Oak					8		13	9428	2
9429	Live Oak						3 at 18	17	9429	2
9430	Blue Oak	13						15	9430	2
9431	Blue Oak	5						8	9431	2
9432	Blue Oak	5						7	9432	2

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		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
9433	Blue Oak	6						7	9433	2
9434	Blue Oak	13						17	9434	2
9435	Blue Oak	9						11	9435	2
9436	Blue Oak	9						12	9436	2
9437	Blue Oak	7						12	9437	2
9438	Live Oak						3 at 25	17	9438	2
9439	Blue Oak		5,5					12	9439	2
9440	Blue Oak	8						8	9440	2
9441	Blue Oak						10,11	18	9441	2
9442	Blue Oak		8,8					15	9442	2
9490	Blue Oak	11						14	9490	2
9491	Blue Oak	7						13	9491	2
9492	Blue Oak	12						16	9492	2
9493	Blue Oak	8						12	9493	2
9494	Blue Oak	9						15	9494	2
9495	Live Oak					5		9	9495	2
9496	Live Oak					7		13	9496	2
9497	Blue Oak	8						10	9497	2
9498	Blue Oak	7						10	9498	2
9499	Live Oak						5 at 25	16	9499	2
9500	Live Oak		5,6					15	9500	2
9501	Blue Oak	6						10	9501	2
9502	Blue Oak		6,7					15	9502	2
9503	Blue Oak	6						14	9503	2
9504	Blue Oak			23				25	9504	2
9505	Blue Oak	9						14	9505	2
9506	Blue Oak	10						13	9506	2
9507	Blue Oak	15						18	9507	2
9529	Blue Oak		6,7					13	9529	2
9530	Blue Oak	8						16	9530	2
9531	Blue Oak	7						13	9531	2
9532	Blue Oak	6						14	9532	2
9533	Blue Oak	7						10	9533	2
9534	Blue Oak	19						25	9534	2
9535	Blue Oak	7						15	9535	2
9536	Blue Oak	12						17	9536	2
9537	Blue Oak	6						11	9537	2
9538	Live Oak		3 at 23					19	9538	2
9539	Blue Oak	5						12	9539	2
9540	Blue Oak	8						12	9540	2
9541	Blue Oak	9						12	9541	2
9542	Blue Oak					13		17	9542	2
9543	Blue Oak	5						8	9543	2
9551	Blue Oak	7						10	9551	2
9552	Blue Oak	6						11	9552	2
9553	Blue Oak	5						8	9553	2
9554	Blue Oak	6						13	9554	2
9555	Blue Oak	6						10	9555	2
9556	Blue Oak					9		13	9556	2
9557	Live Oak						3 at 13	12	9557	2

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		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
9558	Blue Oak					16		17	9558	2
9559	Live Oak	7						16	9559	2
[illegible]	[illegible]		[illegible]					[illegible]	[illegible]	[illegible]
9561	Live Oak		3 at 12					16	9561	2
9562	Live Oak		4,7					15	9562	2
9563	Blue Oak	10						17	9563	2
9564	Blue Oak	6						15	9564	2
9565	Live Oak					6		12	9565	2
9566	Blue Oak	9						12	9566	2
9567	Live Oak						7,8	18	9567	2
9568	Live Oak						3 at 14	13	9568	2
9569	Blue Oak			11				15	9569	2
9570	Blue Oak	10						16	9570	2
9571	Blue Oak	9						14	9571	2
9572	Live Oak		4 at 17					16	9572	2
9573	Blue Oak	5						10	9573	2
9574	Live Oak						3 at 24	18	9574	2
9575	Blue Oak		5,10					14	9575	2
9576	Blue Oak	7						10	9576	2
9577	Blue Oak	7						12	9577	2
9578	Blue Oak	7						10	9578	2
9579	Blue Oak	5						7	9579	2
9580	Blue Oak	6						10	9580	2
9581	Blue Oak	10						15	9581	2
9582	Blue Oak	7						11	9582	2
9583	Blue Oak	9						12	9583	2
9584	Blue Oak	8						12	9584	2
9585	Blue Oak					11		15	9585	2
9586	Blue Oak	8						10	9586	2
9587	Blue Oak	8						8	9587	2
9588	Blue Oak	5						6	9588	2
9589	Blue Oak	9						10	9589	2
9590	Blue Oak		5,7					14	9590	2
9591	Blue Oak		3 at 14					11	9591	2
9592	Live Oak					7		9	9592	2
9593	Blue Oak	8						14	9593	2
9594	Blue Oak	6						13	9594	2
9595	Blue Oak		4,4					8	9595	2
9598	Blue Oak	8						13	9598	2
9601	Blue Oak	9						12	9601	2
9602	Blue Oak	7						11	9602	2
9603	Blue Oak		5,5					10	9603	2
9604	Live Oak			7				15	9604	2
9605	Live Oak				4,6			13	9605	2
9606	Live Oak				4 at 20			17	9606	2
9607	Blue Oak	11						18	9607	2
9608	Blue Oak	7						9	9608	2
9609	Blue Oak	5						10	9609	2
9610	Blue Oak			12				14	9610	2
9639	Blue Oak	8						13	9639	2

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		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
9640	Blue Oak	10						13	9640	2
9641	Live Oak						4 at 29	18	9641	2
9642	Live Oak		5,6					14	9642	2
9643	Live Oak						4 at 15	16	9643	2
9644	Blue Oak	11						15	9644	2
9645	Blue Oak	10						13	9645	2
9646	Blue Oak	7						10	9646	2
9647	Blue Oak	7						11	9647	2
9648	Blue Oak	9						15	9648	2
9649	Blue Oak	10						12	9649	2
9650	Blue Oak	10						12	9650	2
9651	Blue Oak	7						10	9651	2
9652	Blue Oak	7						11	9652	2
9653	Live Oak				4 at 15			12	9653	2
9654	Blue Oak	6						8	9654	2
9655	Blue Oak	7						10	9655	2
9656	Blue Oak	4						10	9656	2
9657	Live Oak		3 at 17					15	9657	2
9658	Live Oak						5,12	14	9658	2
9659	Live Oak					5		12	9659	2
9660	Live Oak				7 at 30			17	9660	2
9661	Live Oak		3 at 24					17	9661	2
9662	Blue Oak	10						15	9662	2
9663	Live Oak		4,7					16	9663	2
9664	Live Oak				3,6			8	9664	2
9674	Live Oak						4 at 18	14	9674	2
9675	Live Oak				9,9			19	9675	2
9681	Blue Oak	6						14	9681	2
9682	Live Oak	9						17	9682	2
9683	Live Oak	10						17	9683	2
9684	Live Oak		13,14					20	9684	2
9685	Live Oak	8						15	9685	2
9686	Live Oak		3,4					15	9686	2
9687	Live Oak		4,5					14	9687	2
9688	Live Oak		4,5					16	9688	2
9822	Live Oak				4 at 19			16	9822	2
9823	Blue Oak	6						14	9823	2
9824	Live Oak	5						12	9824	2
9825	Live Oak					5		20	9825	2
9826	Live Oak						6,6	19	9826	2
9827	Live Oak				8,9			23	9827	2
9828	Live Oak		5 at 30					17	9828	2
9829	Live Oak	6						15	9829	2
9830	Live Oak	6						17	9830	2
9831	Live Oak	5						18	9831	2
9832	Live Oak			5				15	9832	2
9833	Live Oak		3 at 22					19	9833	2
9834	Blue Oak	7						12	9834	2
9835	Live Oak				4 at 19			18	9835	2
9836	Live Oak						6,6	18	9836	2

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		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
9837	Live Oak						3,7	16	9837	2
9838	Live Oak		5,6					17	9838	2
9839	Live Oak		3 at 13					17	9839	2
9850	Live Oak		6,6					17	9850	2
9851	Live Oak		4,5					13	9851	2
9853	Live Oak						4 at 19	20	9853	2
9854	Live Oak	5						17	9854	2
9855	Live Oak						3 at 17	16	9855	2
9856	Live Oak		4 at 13					15	9856	2
9857	Live Oak	5						14	9857	2
9858	Live Oak					5		16	9858	2
9859	Live Oak					6		8	9859	2
9860	Live Oak					7		6	9860	2
9861	Live Oak			15				20	9861	2
9862	Blue Oak		8,10					17	9862	2
9863	Live Oak					5		15	9863	2
9864	Live Oak					9		18	9864	2
9866	Live Oak					9		14	9866	2
9867	Live Oak			10				16	9867	2
9868	Live Oak						6,8	20	9868	2
9869	Live Oak			8				20	9869	2
9870	Live Oak		7,7					14	9870	2
9871	Live Oak		11,13					18	9871	2
9872	Live Oak						3 at 22	20	9872	2
9873	Live Oak					8		15	9873	2
9874	Live Oak				4,7			15	9874	2
9875	Live Oak			12				21	9875	2
9876	Live Oak	9						14	9876	2
9877	Live Oak			9				17	9877	2
10049	Live Oak		3 at 14					15	10049	2
10051	Live Oak		4,6					13	10051	2
10052	Live Oak						6,8	17	10052	2
10054	Live Oak		5,6					12	10054	2
10055	Live Oak			6				13	10055	2
10056	Live Oak	6						15	10056	2
10057	Live Oak				4,6			15	10057	2
10058	Live Oak						4 at 25	18	10058	2
10065	Live Oak		3 at 16					13	10065	2
10066	Live Oak		6,6					14	10066	2
10067	Live Oak	6						11	10067	2
10068	Live Oak						3 at 15	18	10068	2
10075	Live Oak		3 at 12					13	10075	2
10076	Live Oak	5						10	10076	2
10077	Live Oak	5						10	10077	2
10078	Live Oak		5 at 21					12	10078	2
10079	Live Oak		3 at 17					15	10079	2
10281	Blue Oak	7						15	10281	2
10282	Blue Oak		3 at 14					14	10282	2
10283	Blue Oak	4						9	10283	2
10284	Blue Oak		5,5					11	10284	2

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		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
10285	Live Oak		4,5					16	10285	2
10286	Live Oak		3 at 15					16	10286	2
10287	Blue Oak	10						12	10287	2
10288	Blue Oak	7						13	10288	2
10289	Blue Oak			9				14	10289	2
10290	Live Oak			6				10	10290	2
10291	Blue Oak		4,6					15	10291	2
10292	Blue Oak	6						11	10292	2
10293	Live Oak		3,5					12	10293	2
10294	Live Oak		4 at 16					17	10294	2
10295	Live Oak		3 at 10					15	10295	2
10296	Live Oak		4 at 15					16	10296	2
10297	Live Oak						5 at 22	18	10297	2
10302	Live Oak				4 at 15			16	10302	2
10321	Live Oak		4,5					15	10321	2
10322	Live Oak		3 at 12					14	10322	2
10323	Live Oak		4 at 28					16	10323	2
10324	Live Oak		4,5					13	10324	2
10325	Live Oak		4 at 24					18	10325	2
10326	Blue Oak		6,6					10	10326	2
10327	Live Oak		6,6					13	10327	2
10328	Live Oak		3,6					11	10328	2
10329	Live Oak	5						12	10329	2
10330	Live Oak		4 at 17					15	10330	2
10331	Live Oak		3 at 20					20	10331	2
10332	Live Oak	6						17	10332	2
10333	Live Oak	8						12	10333	2
10334	Live Oak	5						15	10334	2
10335	Live Oak		5,6					12	10335	2
10336	Live Oak	7						14	10336	2
10337	Live Oak		5 at 24					18	10337	2
10338	Live Oak		3,6					15	10338	2
10339	Live Oak		3 at 14					16	10339	2
10340	Live Oak	6						14	10340	2
10341	Live Oak	6						17	10341	2
10342	Live Oak		3 at 28					25	10342	2
10343	Live Oak	6						18	10343	2
10344	Live Oak		4,4					16	10344	2
10345	Live Oak	6						17	10345	2
10346	Live Oak		4 at 17					18	10346	2
10347	Live Oak		3 at 16					15	10347	2
10348	Live Oak	9						16	10348	2
10349	Live Oak				3 at 10			15	10349	2
10350	Blue Oak					5		6	10350	2
10351	Live Oak	6						15	10351	2
10352	Live Oak		4,7					21	10352	2
10353	Live Oak		4 at 20					17	10353	2
10354	Live Oak		4,6					22	10354	2
10355	Live Oak	9						18	10355	2
10356	Live Oak	8						14	10356	2

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 2

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
10364	Live Oak	8						18	10364	2
10365	Live Oak	8						18	10365	2
10366	Live Oak		3 at 22					[illegible]	10366	2
10367	Live Oak		8,11					21	10367	2
10388	Live Oak	5						11	10388	2
10389	Live Oak		4 at 12					14	10389	2
10390	Live Oak	8						16	10390	2
10391	Blue Oak	9						13	10391	2
10392	Live Oak		4,7					18	10392	2
10393	Live Oak					6		18	10393	2
10394	Live Oak		6,6					16	10394	2
10395	Blue Oak				4,6			10	10395	2
10396	Live Oak	7						12	10396	2
10397	Blue Oak	6						16	10397	2
10398	Blue Oak	7						9	10398	2
10399	Live Oak		3,5					12	10399	2
10400	Blue Oak					16		17	10400	2
10405	Live Oak	5						14	10405	2
10406	Live Oak	5						13	10406	2
10407	Blue Oak		5,7					13	10407	2
10408	Blue Oak	6						12	10408	2
10409	Live Oak				4 at 22			15	10409	2
10410	Live Oak				3 at 13			15	10410	2
10411	Blue Oak	5						10	10411	2
10412	Live Oak		3 at 16					16	10412	2
10413	Live Oak	6						10	10413	2
10414	Live Oak					6		6	10414	2
10416	Live Oak		3 at 16					16	10416	2
10417	Live Oak		4,7					17	10417	2
10423	Blue Oak	8						13	10423	2
10424	Live Oak		3 at 17					15	10424	2
10425	Blue Oak	6						11	10425	2
10426	Blue Oak	5						10	10426	2
10427	Live Oak	5						17	10427	2
10428	Blue Oak	6						13	10428	2
10429	Blue Oak		3,5					8	10429	2
10430	Live Oak		6,11					18	10430	2
10431	Blue Oak					8		10	10431	2
10432	Blue Oak	7						10	10432	2
10433	Live Oak	6						12	10433	2
10434	Live Oak	6						20	10434	2
10435	Live Oak	5						18	10435	2
10436	Live Oak	8						18	10436	2
10437	Black Oak		5 at 19					17	10437	2
10438	Live Oak	5						16	10438	2
10439	Live Oak	6						15	10439	2
10440	Live Oak		4 at 20					13	10440	2
10441	Live Oak	6						10	10441	2
10442	Live Oak	8						18	10442	2
10443	Blue Oak	11						15	10443	2

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 2

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
10444	Live Oak		9 at 41					22	10444	2
10445	Live Oak		5 at 34					21	10445	2
10446	Live Oak		4 at 15					17	10446	2
10447	Live Oak	6						16	10447	2
10448	Live Oak		5 at 23					16	10448	2
10449	Live Oak		5 at 43					24	10449	2
10452	Live Oak	5						20	10452	2
10453	Live Oak		4 at 21					16	10453	2
10454	Live Oak		5,7					15	10454	2
10519	Live Oak		6,6					12	10519	2
10520	Live Oak					5		13	10520	2
10521	Live Oak				4,8			18	10521	2
10522	Live Oak	9						16	10522	2
10523	Live Oak						3 at 25	15	10523	2
10524	Blue Oak	7						11	10524	2
10525	Blue Oak	5						10	10525	2
10526	Live Oak			9				15	10526	2
10527	Live Oak		4,7					16	10527	2
10528	Live Oak						9,10	14	10528	2
10529	Live Oak						3 at 15	16	10529	2
10530	Live Oak					10		18	10530	2
10532	Live Oak						3 at 19	14	10532	2
10624	Live Oak			6				13	10624	2
10625	Live Oak						4,5	14	10625	2
10626	Live Oak		5,7					12	10626	2
10627	Live Oak		3,5					14	10627	2
10628	Live Oak			5				10	10628	2
10629	Live Oak		3 at 12					16	10629	2
10630	Live Oak				3 at 19			16	10630	2
10631	Live Oak		3,5					15	10631	2
10632	Live Oak	5						17	10632	2
10633	Live Oak		3,5					14	10633	2
10634	Live Oak			15				21	10634	2
10635	Live Oak						6,6	15	10635	2
10636	Blue Oak	6						10	10636	2
10637	Live Oak		3 at 12					15	10637	2
10638	Live Oak	8						13	10638	2
10639	Blue Oak					5		10	10639	2
10640	Live Oak				3 at 15			15	10640	2
10641	Live Oak	5						10	10641	2
10642	Live Oak					5		10	10642	2
10643	Live Oak				3 at 16			17	10643	2
10644	Live Oak						3 at 15	16	10644	2
10645	Live Oak				4,6			16	10645	2
10646	Live Oak			7				10	10646	2
10647	Live Oak	7						14	10647	2
10648	Live Oak		7,7					14	10648	2
10649	Live Oak	5						13	10649	2
10650	Live Oak		4 at 13					15	10650	2
10651	Blue Oak	5						9	10651	2

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 2

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
10652	Live Oak		7 at 35					16	10652	2
10653	Live Oak			6				17	10653	2
[illegible]	[illegible]	[illegible]						[illegible]	[illegible]	[illegible]
10655	Live Oak					9		16	10655	2
10656	Live Oak	7						12	10656	2
10657	Live Oak	10						19	10657	2
10658	Blue Oak	5						15	10658	2
10659	Live Oak		4 at 12					15	10659	2
10660	Live Oak				4 at 21			18	10660	2
10661	Live Oak		5,5					12	10661	2
10662	Live Oak						6,6	17	10662	2
10663	Live Oak		3 at 14					16	10663	2
10884	Valley Oak	16						18	10884	2
42748	Live Oak	7						18	42748	2
42749	Valley Oak		13,13					22	42749	2
42751	Valley Oak	12						18	42751	2
47106	Blue Oak	8						15	47106	2
47107	Blue Oak					22		20	47107	2
47108	Blue Oak			8				9	47108	2
47111	Live Oak						6 at 46	21	47111	2
47112	Live Oak					9		11	47112	2
47113	Blue Oak	8						10	47113	2
47114	Blue Oak	13						15	47114	2
47115	Blue Oak	13						14	47115	2
47116	Blue Oak					16		17	47116	2
47117	Blue Oak					21		20	47117	2
47118	Blue Oak	19						22	47118	2
47129	Blue Oak		6,6					13	47129	2
47130	Blue Oak	18						23	47130	2
47180	Blue Oak	5						11	47180	2
47187	Live Oak		4 at 15					16	47187	2
47189	Live Oak		4,6					19	47189	2
47190	Live Oak		3 at 11					15	47190	2
47191	Live Oak		2,5					16	47191	2
47193	Live Oak				4,6			18	47193	2
47194	Live Oak		4,4					15	47194	2
47195	Live Oak						3,4	14	47195	2
47196	Live Oak	5						14	47196	2
47197	Live Oak						3 at 11	16	47197	2
47198	Live Oak		4,4					13	47198	2
47205	Live Oak		3 at 10					16	47205	2
47206	Live Oak		2,4					10	47206	2
47207	Live Oak				3 at 8			15	47207	2
47209	Live Oak	4						8	47209	2
47210	Live Oak				2,4			14	47210	2
47211	Live Oak			5				18	47211	2
47212	Live Oak				2,5			14	47212	2
47213	Live Oak				4 at 11			15	47213	2
47214	Live Oak		3,4					16	47214	2
47215	Live Oak		4,4					18	47215	2

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 2

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
47217	Live Oak		3,4					15	47217	2
47218	Live Oak		4,4					16	47218	2
47219	Live Oak		5,5					14	47219	2
47220	Live Oak				3 at 14			16	47220	2
47228	Blue Oak				3 at 15			14	47228	2
47229	Live Oak						6 at 27	17	47229	2
47244	Blue Oak	8						14	47244	2
47245	Blue Oak	6						10	47245	2
47246	Blue Oak	6						14	47246	2
47247	Blue Oak	9						18	47247	2
47249	Live Oak		4 at 15					18	47249	2
47250	Live Oak		3 at 13					11	47250	2
47251	Live Oak		3 at 19					17	47251	2
47252	Live Oak		4 at 17					18	47252	2
47253	Blue Oak		3 at 12					15	47253	2
47254	Live Oak		6,7					20	47254	2
47255	Live Oak				4 at 16			20	47255	2
47257	Live Oak				5 at 26			18	47257	2
47258	Blue Oak	7						15	47258	2
47259	Live Oak				3 at 13			15	47259	2
47260	Live Oak				6 at 20			12	47260	2
47261	Live Oak		7 at 32					19	47261	2
47262	Blue Oak					13		18	47262	2
47265	Live Oak		5 at 22					18	47265	2
47266	Blue Oak	14						18	47266	2
47267	Live Oak				4 at 20			16	47267	2
47268	Live Oak						3,9	16	47268	2
47269	Live Oak						3 at 20	17	47269	2
47270	Blue Oak	7						12	47270	2
47271	Blue Oak	12						17	47271	2
47272	Live Oak		3 at 20					16	47272	2
47273	Blue Oak					15		18	47273	2
47274	Live Oak		4 at 21					16	47274	2
47275	Blue Oak		5,11					16	47275	2
47276	Live Oak		9 at 50					22	47276	2
47277	Live Oak				4,5			14	47277	2
47278	Blue Oak	9						15	47278	2
47279	Live Oak				4 at 13			13	47279	2
47782	Live Oak	6						12	47782	2

Stantec

Clover Valley Partners

Clover Valley

City of Rocklin, CA

Tree Summary - Phase 3 (Major Roads)

(All data available on Trees)

Number and Caliper Inches of Trees Removed

Tree Species	Number of Fair trees Removed	Caliper Inches of Fair Trees Removed	Caliper Inches of Fair Multi-Stem Trees Removed	Number of Fair/Poor trees Removed	Caliper Inches of Fair/Poor Trees Removed	Caliper Inches of Multi-Stem Fair/Poor Trees Removed	Number of Poor trees Removed	Caliper Inches of Poor Trees Removed	Caliper Inches of Poor Multi-Stem Trees Removed
Blue Oak	25	158	77	1	8				
Live Oak	169	335	2914	68	106	990	44	114	432
Valley Oak	10	122	27	1	6				
Misc	7	119							
Total	211	734	3018	70	120	990	44	114	432

	Number of trees Removed	Caliper Inches of Trees Removed	Caliper Inches of Multi-Stem Trees Removed	Total Caliper Inches of Trees Removed
Fair Trees	211	734	3018	3752
Fair / Poor Trees	70	120	990	1110
Fair & Fair / Poor Trees	**281**	854	4008	**4862**
Poor Trees	**44**	114	432	**546**

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 3

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
776	Live Oak					7		14	776	3
777	Live Oak						3 at 16	15	777	3
779	Live Oak						5 at 41	26	779	3
5892	Live Oak		3 at 20					15	5892	3
5893	Live Oak	6						15	5893	3
5894	Live Oak		5 at 22					15	5894	3
5895	Live Oak		4 at 16					18	5895	3
5896	Live Oak		3 at 24					15	5896	3
5897	Live Oak	6						10	5897	3
5898	Blue Oak		3 at 15					15	5898	3
5899	Live Oak		3 at 16					18	5899	3
6446	Valley Oak	10						14	6446	3
6448	Blue Oak		6,7					14	6448	3
6450	Live Oak		5 at 36					20	6450	3
6478	Live Oak	13						18	6478	3
6480	Live Oak	10						16	6480	3
6481	Valley Oak	17						21	6481	3
6482	Valley Oak	10						15	6482	3
6487	Valley Oak	13						19	6487	3
6490	Valley Oak	27						26	6490	3
6491	Valley Oak	14						14	6491	3
7938	Live Oak						3 at 10	10	7938	3
7939	Live Oak		7,8					16	7939	3
7940	Live Oak	10						20	7940	3
7941	Live Oak			6				17	7941	3
7942	Live Oak		3 at 27					20	7942	3
7943	Live Oak	8						16	7943	3
7944	Live Oak		6,7					18	7944	3
7945	Live Oak			7				16	7945	3
7946	Live Oak		4 at 32					24	7946	3
7947	Live Oak		5 at 31					18	7947	3
7948									7948	3
7949	Live Oak				5 at 33			30	7949	3
7950	Live Oak		4,8					22	7950	3
7951	Live Oak				4 at 25			20	7951	3
7956	Live Oak	7						14	7956	3
7957	Live Oak		6 at 36					26	7957	3
7960	Live Oak		3 at 18					20	7960	3
7961	Live Oak		5 at 28					18	7961	3
8407									8407	3
8407									50037	3
8583	Live Oak	10						16	8583	3
8584	Blue Oak	13						16	8584	3
8585	Live Oak	8						18	8585	3
8586	Live Oak				9 at 52			25	8586	3
8587	Live Oak		7,8					14	8587	3
8589	Live Oak		4 at 35					23	8589	3
8590	Live Oak		5 at 36					20	8590	3
8591	Blue Oak		7,8					13	8591	3
8603	Live Oak				3 at 12			12	8603	3

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 3

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
8604	Blue Oak	9						13	8604	3
8605	Blue Oak	9						15	8605	3
9762	Live Oak		6,6					14	9762	3
9763	Live Oak		3 at 14					12	9763	3
9764	Live Oak		3,4					10	9764	3
10146	Live Oak	6						15	10146	3
10147	Live Oak	6						14	10147	3
10148	Live Oak		6 at 24					14	10148	3
10149	Blue Oak	5						11	10149	3
10150	Live Oak			11				17	10150	3
10151	Live Oak		4 at 16					17	10151	3
10152	Live Oak						6,11	18	10152	3
10153	Live Oak						4,6	16	10153	3
10154	Live Oak		9 at 44					18	10154	3
10155	Live Oak			6				12	10155	3
10156	Live Oak	8						16	10156	3
10157	Blue Oak	6						9	10157	3
10160	Live Oak					6		14	10160	3
10161	Live Oak		5,6					12	10161	3
10162	Live Oak		7 at 54					18	10162	3
10163	Live Oak					6		11	10163	3
10164	Live Oak	6						14	10164	3
10165	Live Oak		7 at 44					20	10165	3
10166	Live Oak		4,5					17	10166	3
10167	Live Oak	6						13	10167	3
10168	Live Oak				4 at 17			17	10168	3
10169	Live Oak		6,7					17	10169	3
10170	Live Oak		7 at 35					17	10170	3
10171	Live Oak	7						15	10171	3
10172	Live Oak	6						13	10172	3
10173	Blue Oak	7						10	10173	3
10174	Blue Oak	4						12	10174	3
10175	Live Oak		4 at 17					15	10175	3
10176	Live Oak	5						10	10176	3
10177	Live Oak	5						11	10177	3
10178	Live Oak		3 at 11					15	10178	3
10179	Live Oak		6 at 25					17	10179	3
10180	Live Oak				3 at 22			23	10180	3
10181	Live Oak		3 at 12					17	10181	3
10182	Live Oak		3 at 27					19	10182	3
10183	Live Oak		4 at 17					18	10183	3
10184	Live Oak	7						19	10184	3
10185	Live Oak	6						15	10185	3
10186	Blue Oak	5						9	10186	3
10187	Live Oak	6						10	10187	3
10188	Live Oak				4,4			13	10188	3
10189	Live Oak				4 at 17			16	10189	3
10190	Live Oak					6		12	10190	3
10191	Live Oak		4 at 25					19	10191	3

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 3

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
10192	Live Oak		5,7					16	10192	3
10193	Blue Oak	8						17	10193	3
10194	Live Oak					8		14	10194	3
10195	Blue Oak	17						21	10195	3
10196	Live Oak		3 at 16					11	10196	3
10197	Live Oak	5						12	10197	3
10198	Live Oak		4 at 15					15	10198	3
10199	Blue Oak	6						11	10199	3
10200	Live Oak				5 at 17			16	10200	3
10201	Live Oak		4 at 14					16	10201	3
10202	Live Oak		5,7					18	10202	3
10203	Live Oak		3 at 16					19	10203	3
10204	Live Oak		3 at 15					17	10204	3
10208	Blue Oak		2,6					10	10208	3
10209	Live Oak		6 at 38					15	10209	3
14001	Valley Oak	14						22	14001	3
14237	Blue Oak	16						20	14237	3
16585	Valley Oak		12,15					25	16585	3
16850	Live Oak		5 at 22					14	16850	3
16851	Live Oak		4 at 17					12	16851	3
16852	Live Oak				3 at 15			14	16852	3
16853	Live Oak				9,12			17	16853	3
16859	Blue Oak	8						10	16859	3
16860	Live Oak		4,8					13	16860	3
16861	Live Oak			5				8	16861	3
16862	Live Oak		6 at 32					20	16862	3
16875	Live Oak				7,9			20	16875	3
16877	Live Oak			5				6	16877	3
16878	Live Oak				3 at 8			14	16878	3
16879	Live Oak		4,11					20	16879	3
16880	Live Oak				5,5			17	16880	3
16881	Live Oak				6,8			20	16881	3
16882	Live Oak					6		16	16882	3
16883	Live Oak		3 at 15					17	16883	3
16884	Live Oak		6,8					20	16884	3
16885	Live Oak	7						20	16885	3
16886	Live Oak				6,6			18	16886	3
16887	Live Oak	9						17	16887	3
16888	Live Oak						4,5	15	16888	3
16889	Live Oak				5,9			16	16889	3
16891	Live Oak					4		12	16891	3
16892	Live Oak					4		17	16892	3
16893	Live Oak		6,12					18	16893	3
16894	Live Oak				3,7			12	16894	3
16895	Live Oak		7,8					18	16895	3
16896	Blue Oak	6						10	16896	3
16897	Live Oak		4 at 19					16	16897	3
16898	Live Oak		4,7					21	16898	3
16899	Live Oak	5						12	16899	3
16900	Live Oak	6						13	16900	3

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 3

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
16901	Live Oak		4 at 24					20	16901	3
16902	Live Oak		5,6					18	16902	3
[illegible]	[illegible]	[illegible]						[illegible]	[illegible]	[illegible]
16904	Live Oak					5		13	16904	3
16905	Live Oak						5,6	15	16905	3
16906	Live Oak		3,9					17	16906	3
16907	Live Oak		9,10					25	16907	3
16908	Live Oak		4 at 22					26	16908	3
16909	Live Oak			8				20	16909	3
16910	Live Oak				3 at 17			22	16910	3
16911	Live Oak				7 at 38			21	16911	3
16912	Live Oak						5 at 22	20	16912	3
16913	Live Oak						4,5	15	16913	3
16914	Live Oak					4		15	16914	3
16915	Live Oak				4 at 15			16	16915	3
16916	Live Oak				3,5			20	16916	3
16917	Live Oak	5						13	16917	3
16918	Live Oak					5		10	16918	3
16919	Live Oak			6				13	16919	3
16920	Live Oak					6		15	16920	3
16921	Live Oak						6,7	25	16921	3
16922	Live Oak				3 at 15			17	16922	3
16923	Live Oak		9,11					24	16923	3
16924	Live Oak						4,5	12	16924	3
16925	Live Oak				7 at 42			18	16925	3
16926	Live Oak				3 at 10			12	16926	3
16939	Live Oak		4 at 29					18	16939	3
16940	Live Oak		7,9					17	16940	3
16941	Live Oak						6 at 28	18	16941	3
16942	Live Oak						3 at 15	16	16942	3
16943	Live Oak			5				10	16943	3
16944	Live Oak					5		8	16944	3
16945	Blue Oak	7						12	16945	3
16946	Live Oak				3 at 17			18	16946	3
16947	Live Oak		5 at 24					25	16947	3
16948	Live Oak				4 at 19			20	16948	3
16949	Live Oak	7						20	16949	3
16950	Live Oak		6 at 37					22	16950	3
16951	Live Oak				3 at 14			17	16951	3
16952	Live Oak		3 at 16					20	16952	3
16953	Live Oak		4,6					20	16953	3
16954	Live Oak				4 at 23			18	16954	3
16955	Live Oak		8,8					18	16955	3
16956	Live Oak				5 at 19			16	16956	3
16957	Live Oak				8 at 39			24	16957	3
16958	Live Oak	7						15	16958	3
16959	Live Oak		5,7					20	16959	3
16960	Live Oak		6 at 39					23	16960	3
16961	Live Oak		9 at 65					22	16961	3
16963	Live Oak		9,13					20	16963	3

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 3

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
16964	Live Oak		7 at 36					22	16964	3
16965	Live Oak		5,6					18	16965	3
16966	Live Oak				3,5			18	16966	3
16967	Live Oak					4		15	16967	3
16968	Live Oak		4 at 22					25	16968	3
16969	Live Oak		5 at 34					25	16969	3
16970	Live Oak		5,5					17	16970	3
16971	Live Oak		4 at 20					20	16971	3
16972	Live Oak				4 at 16			14	16972	3
16974	Blue Oak	6						10	16974	3
16977	Live Oak						3,5	14	16977	3
16980	Live Oak		5,5					16	16980	3
16981	Live Oak		6 at 35					23	16981	3
16982	Live Oak						3 at 19	20	16982	3
16983	Live Oak		4 at 21					17	16983	3
16984	Live Oak		4 at 30					18	16984	3
16986	Live Oak		3 at 24					22	16986	3
16987									16987	3
16989	Live Oak		5 at 36					24	16989	3
16990	Live Oak				4 at 17			18	16990	3
16991	Live Oak				3 at 16			22	16991	3
16992	Live Oak						4 at 26	25	16992	3
16993	Live Oak		4,5					17	16993	3
16994	Live Oak		6 at 30					18	16994	3
16995	Live Oak		4 at 21					16	16995	3
17001	Live Oak				6 at 28			30	17001	3
17002	Live Oak		4 at 22					24	17002	3
17003	Live Oak		7 at 41					20	17003	3
17004	Live Oak	13						26	17004	3
17005	Live Oak		6 at 45					23	17005	3
17006	Blue Oak	6						12	17006	3
17007	Live Oak			6				18	17007	3
17008	Live Oak						7,13	23	17008	3
17011	Live Oak		5 at 31					24	17011	3
17012	Live Oak			4				14	17012	3
17013	Live Oak		5 at 25					18	17013	3
17014	Live Oak	8						15	17014	3
17015	Live Oak	9						16	17015	3
17016	Live Oak		4 at 29					18	17016	3
17017	Live Oak		3 at 14					17	17017	3
17018	Live Oak					4		14	17018	3
17019	Live Oak			5				19	17019	3
17020	Live Oak	10						17	17020	3
17021	Live Oak				5 at 27			24	17021	3
17022	Live Oak	10						16	17022	3
17023	Live Oak		11,11					18	17023	3
17024	Live Oak				3 at 15			26	17024	3
17025	Live Oak				4 at 19			20	17025	3
17026	Live Oak				3 at 12			16	17026	3
17047	Live Oak			6				11	17047	3

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 3

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
17048	Live Oak					5		13	17048	3
17049	Live Oak		3 at 12					13	17049	3
17053									17053	3
17054	Live Oak		6,7					17	17054	3
17055	Live Oak		7 at 40					24	17055	3
17056	Live Oak		4 at 13					20	17056	3
17057	Live Oak		7 at 49					20	17057	3
17058	Blue Oak	8						15	17058	3
17059	Live Oak				3,5			20	17059	3
17060	Blue Oak			8				10	17060	3
17061	Live Oak		6,6					14	17061	3
17062	Live Oak		4 at 24					20	17062	3
17063	Live Oak						4,4	10	17063	3
17064	Live Oak						5 at 21	15	17064	3
17065	Live Oak		3,8					16	17065	3
17066	Live Oak					7		20	17066	3
17067	Blue Oak		3 at 15					15	17067	3
17068	Valley Oak			6				15	17068	3
17069	Live Oak				6 at 36			17	17069	3
17070	Live Oak		3 at 15					18	17070	3
17071	Live Oak	10						22	17071	3
17072	Live Oak						5 at 34	26	17072	3
17073	Live Oak			6				12	17073	3
17074	Live Oak	7						12	17074	3
17075	Live Oak			10				16	17075	3
17076	Live Oak	6						14	17076	3
17077	Live Oak	7						12	17077	3
17079	Live Oak		8 at 57					24	17079	3
17080	Live Oak		3 at 19					22	17080	3
17081	Live Oak		7 at 45					24	17081	3
17082	Live Oak					5		22	17082	3
17083	Live Oak			5				22	17083	3
17084	Live Oak			5				14	17084	3
17085	Live Oak	6						16	17085	3
17086	Live Oak						5,5	20	17086	3
17087	Live Oak		7 at 42					28	17087	3
17088	Live Oak						4,4	16	17088	3
17123	Live Oak					6		17	17123	3
17124	Live Oak				4,6			17	17124	3
17125	Live Oak		3 at 25					24	17125	3
17126	Valley Oak	9						20	17126	3
17127	Live Oak		10 at 72					26	17127	3
17128	Live Oak		4 at 35					20	17128	3
17129	Live Oak	10						22	17129	3
17130	Live Oak		5,9					16	17130	3
17131	Live Oak		4 at 22					25	17131	3
17132	Live Oak		4,7					24	17132	3
17133	Live Oak					6		16	17133	3
17162	Live Oak				7 at 36			22	17162	3

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 3

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
17163	Live Oak		3 at 16					18	17163	3
17164	Live Oak		7 at 50					25	17164	3
17165									17165	3
17166	Live Oak					5		17	17166	3
17167	Blue Oak	12						17	17167	3
17168	Live Oak		3 at 28					17	17168	3
17169	Live Oak				6,9			28	17169	3
17170	Live Oak				4 at 24			22	17170	3
17171	Live Oak		3 at 22					20	17171	3
17172	Valley Oak	8						16	17172	3
17173	Live Oak		4 at 32					22	17173	3
17174	Live Oak		4,7					18	17174	3
17175	Live Oak				3 at 11			18	17175	3
17176	Live Oak				4 at 27			19	17176	3
17177	Live Oak		4 at 27					24	17177	3
17178	Live Oak				5,10			20	17178	3
19520	Live Oak	8						15	19520	3
23030	Blue Oak		3 at 11					12	23030	3
23096									23096	3
45954	Live Oak				16,21			40	45954	3
45955	Live Oak						4 at 68	41	45955	3
46021	Live Oak		5,8					16	46021	3
46022	Live Oak	8						15	46022	3
46023	Live Oak	11						18	46023	3
46024	Live Oak		5 at 35					18	46024	3

Clover Valley Partners

Clover Valley

City of Rocklin, CA

Tree Summary - Phase 3a (Major Roads)

(All data available on Trees)

Number and Caliper Inches of Trees Removed

Tree Species	Number of Fair trees Removed	Caliper Inches of Fair Trees Removed	Caliper Inches of Fair Multi-Stem Trees Removed	Number of Fair/Poor trees Removed	Caliper Inches of Fair/Poor Trees Removed	Caliper Inches of Multi-Stem Fair/Poor Trees Removed	Number of Poor trees Removed	Caliper Inches of Poor Trees Removed	Caliper Inches of Poor Multi-Stem Trees Removed
Blue Oak	27	235	56	1	13		5	42	8
Interior Live Oak	1		25						
Live Oak	55	144	1281	17	62	212	34	173	245
Valley Oak	19	315	25	1	27		1		14
Misc	7	126							
Total	109	820	1387	19	102	212	40	215	267

	Number of trees Removed	Caliper Inches of Trees Removed	Caliper Inches of Multi-Stem Trees Removed	Total Caliper Inches of Trees Removed
Fair Trees	109	820	1387	2207
Fair / Poor Trees	19	102	212	314
Fair & Fair / Poor Trees	**128**	922	1599	**2521**
Poor Trees	**40**	215	267	**482**

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 3a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
34	Blue Oak	16						15	34	3a
35	Blue Oak					16		12	35	3a
37	Blue Oak					12		11	37	3a
774	Blue Oak	14						16	774	3a
1140	Valley Oak	15						19	1140	3a
1142	Live Oak	15						20	1142	3a
1143	Live Oak						8,9	17	1143	3a
1144	Live Oak		6 at 56					22	1144	3a
1145	Live Oak		3 at 27					20	1145	3a
1146	Live Oak		15,20					30	1146	3a
1147	Live Oak				3 at 57			32	1147	3a
1148	Live Oak		15,16					26	50579	3a
1159	Valley Oak	27						28	1159	3a
1160	Valley Oak	24						33	1160	3a
1161	Live Oak						3 at 21	26	1161	3a
1162	Live Oak		4 at 64					40	1162	3a
2911	Live Oak		3 at 16					18	50249	3a
2913	Blue Oak	7						10	50235	3a
2914	Live Oak	11						15	50234	3a
2915	Live Oak	8						16	50232	3a
2916	Live Oak		6 at 30					16	50236	3a
2917	Live Oak		4 at 29					19	50237	3a
2918	Live Oak				5 at 11			12	50230	3a
2942									50166	3a
2943	Blue Oak					8		8	50157	3a
2945	Blue Oak	8						12	50161	3a
2946	Valley Oak	7						11	50165	3a
2947	Live Oak		3 at 16					14	50201	3a
2965	Blue Oak		5,9					13	50156	3a
2966	Blue Oak	7						12	50155	3a
2967	Blue Oak	6						8	50154	3a
2969	Blue Oak	8						14	50153	3a
2970	Blue Oak		6,12					17	50146	3a
2971	Live Oak					5		8	50145	3a
2973	Live Oak						3 at 11	15	50144	3a
2974	Blue Oak	10						13	50133	3a
2976	Live Oak						5,6	16	50132	3a
2980	Blue Oak		7,7					13	2980	3a
2981	Blue Oak	7						8	2981	3a
2995	Live Oak		11 at 67					22	50174	3a
2996	Live Oak				4 at 26			19	50171	3a
3113	Live Oak	6						15	3113	3a
3114	Live Oak		3 at 24					19	3114	3a
3115	Live Oak		7 at 32					26	3115	3a
3116	Live Oak						3 at 14	16	3116	3a
3117	Live Oak						3 at 16	17	3117	3a
3118	Live Oak				4 at 12			16	3118	3a
3119	Live Oak		5 at 17					14	3119	3a
3120	Live Oak		6 at 28					17	3120	3a
3121	Live Oak					6		3	3121	3a

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 3a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
3122	Live Oak					7		13	3122	3a
3123	Live Oak					6		16	3123	3a
[illegible]	[illegible]					[illegible]		[illegible]	[illegible]	[illegible]
3125	Live Oak					7		27	3125	3a
3126	Live Oak		13,18					21	3126	3a
3127	Live Oak		9,12					30	3127	3a
3128	Live Oak			10				22	3128	3a
3131	Live Oak			15				20	3131	3a
3132	Live Oak					8		10	3132	3a
3133	Live Oak				3 at 30			26	3133	3a
3134	Live Oak		6,9					20	3134	3a
3135	Live Oak	8						20	3135	3a
3136	Valley Oak			27				35	3136	3a
3137	Live Oak			9				22	3137	3a
3138	Live Oak					15		16	3138	3a
3139	Live Oak					15		22	3139	3a
3140	Live Oak					20		24	3140	3a
3144	Live Oak					8		14	3144	3a
3145	Live Oak						7,7	19	3145	3a
3148	Live Oak		14,18					31	3148	3a
3149	Live Oak				3 at 29			18	3149	3a
3150	Live Oak						4,4	6	3150	3a
3151	Live Oak			7				18	3151	3a
16791	Live Oak						14,15	30	16791	3a
16811	Live Oak		2,4					10	16811	3a
16846	Valley Oak	6						10	16846	3a
16847	Valley Oak	12						22	16847	3a
17179	Live Oak		6 at 38					20	17179	3a
17187	Live Oak				3 at 14			17	17187	3a
17188	Live Oak		7 at 39					19	17188	3a
17189	Live Oak		3 at 23					20	17189	3a
17190	Live Oak	7						14	17190	3a
17191	Live Oak	8						16	17191	3a
17192	Live Oak						8 at 36	20	17192	3a
17193	Live Oak		7 at 33					20	17193	3a
17194	Live Oak		6,7					16	17194	3a
17243	Blue Oak	10						14	17243	3a
17244	Blue Oak	11						13	17244	3a
17245	Blue Oak	9						10	17245	3a
17247	Blue Oak	13						16	17247	3a
17248	Blue Oak	9						15	17248	3a
17255	Live Oak						9,14	20	17255	3a
20216	Valley Oak						3 at 14	16	20216	3a
20217	Valley Oak	15						30	20217	3a
20220	Live Oak					10		19	20220	3a
20221	Live Oak		14,26					40	20221	3a
20222	Valley Oak	31						40	20222	3a
20223	Valley Oak	22						30	20223	3a
20228	Live Oak	14						20	20228	3a
20229	Valley Oak	13						21	20229	3a

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 3a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
20230	Live Oak	11						19	20230	3a
20231	Valley Oak	15						19	20231	3a
20232	Valley Oak	14						20	20232	3a
20233	Valley Oak	12						17	20233	3a
20234	Valley Oak	19						27	20234	3a
20235	Valley Oak	8						20	20235	3a
20236	Valley Oak	15						22	20236	3a
20238	Valley Oak	8						16	50177	3a
20251	Live Oak		11 at 118					26	20251	3a
20253	Live Oak		8 at 26					17	50227	3a
20255	Live Oak		5,6					15	50233	3a
20271	Blue Oak	9						10	50200	3a
20283									50167	3a
20285									50169	3a
20286									50170	3a
20289	Live Oak		3 at 17					20	50168	3a
20290	Live Oak		4 at 28					16	50175	3a
20309	Blue Oak						4,4	9	50134	3a
20332	Live Oak					5		13	50163	3a
20333	Live Oak		9 at 48					17	50162	3a
20335	Live Oak						3 at 22	16	20335	3a
20349	Live Oak	5						12	20349	3a
20352	Live Oak					6		5	20352	3a
20353	Live Oak					8		10	20353	3a
20356	Blue Oak	12						15	20356	3a
20357	Blue Oak		3 at 10					10	20357	3a
20358	Blue Oak	6						8	20358	3a
20362	Live Oak		3,5					12	20362	3a
20363	Live Oak			5				11	20363	3a
20364	Live Oak		3,5					12	20364	3a
20365	Live Oak				4,5			16	20365	3a
20366	Live Oak				5,6			20	20366	3a
20367	Live Oak				5,8			20	20367	3a
20369	Live Oak		4,6					15	20369	3a
20374	Live Oak					5		14	20374	3a
20375	Live Oak			6				15	20375	3a
20376	Live Oak					5		14	20376	3a
20377	Live Oak	19						34	20377	3a
20378	Live Oak					6		15	20378	3a
20379	Live Oak			10				22	20379	3a
20380	Live Oak	7						19	20380	3a
20381	Live Oak					6		19	20381	3a
20382	Blue Oak	10						15	20382	3a
20383	Live Oak						10,13	19	20383	3a
20384	Live Oak					8		16	20384	3a
20386	Live Oak	8						16	20386	3a
20387	Live Oak	9						26	20387	3a
20388	Blue Oak			13				14	20388	3a
20392	Blue Oak	9						17	20392	3a
20393	Blue Oak					6		15	20393	3a

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 3a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
20394	Live Oak					6		14	20394	3a
20431	Blue Oak	12						15	20431	3a
[illegible]	[illegible]		[illegible]					[illegible]	[illegible]	[illegible]
23008	Live Oak		3 at 38					24	23008	3a
23009	Live Oak		9,14					26	23009	3a
23010	Live Oak		18,18					28	23010	3a
23011	Live Oak		7 at 66					29	23011	3a
23012	Blue Oak	17						20	23012	3a
23013	Live Oak	8						16	23013	3a
23014	Blue Oak	9						16	23014	3a
23015	Blue Oak	16						15	23015	3a
23016	Valley Oak	52						38	23016	3a
23017	Live Oak		4 at 32					18	23017	3a
43081	Valley Oak		8,17					26	43081	3a
50241	erior Live Oak		6,8,11					13	50241	3a
50858									50858	3a
50860									50860	3a
2999-20289									50176	3a

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
1	Blue Oak	14						15	1	4a
2	Blue Oak					15		15	2	4a
209	Blue Oak	10						17		4a
287	Blue Oak	10						17		4a
290	Blue Oak	10						17		4a
298	Blue Oak	10						17		4a
314	Blue Oak	10						17		4a
342	Blue Oak	10						17		4a
343	Blue Oak	10						17		4a
369	Blue Oak	10						17		4a
384	Blue Oak	10						17		4a
457	Live Oak	10						17		4a
468	Blue Oak	10						17		4a
599	Blue Oak	10						17		4a
762	Blue Oak	10						17		4a
763	Live Oak	10						17		4a
765	Blue Oak	10						17		4a
767	Blue Oak	10						17		4a
816	Live Oak	10						17		4a
856	Blue Oak	10						17		4a
878	Live Oak	10						17		4a
1115	Live Oak	10						17		4a
1214	Blue Oak	10						17		4a
1282	Live Oak	10						17		4a
1283	Blue Oak	10						17		4a
1284	Live Oak	10						17		4a
1285	Live Oak	10						17		4a
1286	Live Oak	10						17		4a
1287	Blue Oak	10						17		4a
1288	Live Oak	10						17		4a
1289	Live Oak	10						17		4a
1290	Live Oak	10						17		4a
1291	Live Oak	10						17		4a
1292	Live Oak	10						17		4a
1293	Live Oak	10						17		4a
1294	Live Oak	10						17		4a
1295	Live Oak	10						17		4a
1296	Live Oak	10						17		4a
1297	Live Oak	10						17		4a
1298	Live Oak	10						17		4a
1299	Live Oak	10						17		4a
1310	Live Oak	10						17		4a
1333	Blue Oak	11						12	1333	4a
1334	Blue Oak	12						15	1334	4a
1335	Blue Oak	14						16	1335	4a
1336	Blue Oak				6,9			12	1336	4a
1337	Blue Oak	17						19	1337	4a
1338	Blue Oak		3 at 24					13	1338	4a
1339	Blue Oak	8						11	1339	4a
1340	Blue Oak	16						23	1340	4a

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4a

Tree #	Species	Fair Trees DBH	Fair Trees Multi-stem DBH	Poor-Fair Trees DBH	Poor-Fair Trees Multi-stem DBH	Poor Trees DBH	Poor Trees Multi-stem DBH	Dripline	Point#	Phase
1341	Blue Oak	16						16	1341	4a
1342	Blue Oak	13						15	1342	4a
[illegible]	[illegible]	[illegible]						[illegible]	[illegible]	[illegible]
1344	Blue Oak			10				15	1344	4a
1345	Blue Oak			15				16	1345	4a
1346	Blue Oak					12		12	1346	4a
1347	Blue Oak			12				14	1347	4a
1350	Blue Oak					10		15	1350	4a
1351	Blue Oak	13						15	1351	4a
1352	Blue Oak		3 at 26					17	1352	4a
1353	Blue Oak					7		9	1353	4a
1354	Blue Oak	16						14	1354	4a
1355	Blue Oak			24				17	1355	4a
1356	Blue Oak	14						14	1356	4a
1357	Blue Oak	12						13	1357	4a
1358	Blue Oak	8						13	1358	4a
1359	Blue Oak					26		13	1359	4a
1360	Blue Oak	10						12	1360	4a
1361	Blue Oak	13						12	1361	4a
1362	Blue Oak	11						15	1362	4a
1363	Blue Oak		5,7					10	1363	4a
1364	Blue Oak					10		9	1364	4a
1368	Blue Oak		9,12					16	1368	4a
1369	Blue Oak	7						8	1369	4a
1370	Blue Oak	16						16	1370	4a
1371	Live Oak						3 at 20	12	1371	4a
1372	Live Oak					9		15	1372	4a
1373	Blue Oak		13,15					16	1373	4a
1374	Blue Oak	9						10	1374	4a
1375	Blue Oak		8,10					15	1375	4a
1376	Blue Oak	8						11	1376	4a
1377	Blue Oak	13						16	1377	4a
1378	Blue Oak						13,15	18	1378	4a
1379	Blue Oak		6,8					15	1379	4a
1381	Blue Oak	9						12	1381	4a
1382	Blue Oak	11						11	1382	4a
1384	Blue Oak		10,12					17	1384	4a
1385	Blue Oak	8						8	1385	4a
1386	Blue Oak					8		7	1386	4a
1387	Blue Oak		7,9					14	1387	4a
1388	Blue Oak					16		18	1388	4a
1389	Blue Oak	8						12	1389	4a
1390	Blue Oak		9,10					15	1390	4a
1391	Blue Oak	8						10	1391	4a
1392	Blue Oak	11						14	1392	4a
1395	Blue Oak	6						12	1395	4a
1396	Blue Oak	10						15	1396	4a
1397	Blue Oak	8						15	1397	4a
1398	Blue Oak		5,7					14	1398	4a
1399	Blue Oak	11						13	1399	4a

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
1400	Blue Oak	15						16	1400	4a
1735	Blue Oak	10						17		4a
1786	Blue Oak	10						17		4a
1786	Blue Oak	10						17		4a
1788	Blue Oak	10						17		4a
1835	Blue Oak	10						17		4a
1889	Live Oak	10						17		4a
1901	Blue Oak	10						12	1901	4a
1902	Blue Oak					12		14	1902	4a
1905	Blue Oak	12						16	1905	4a
1906	Blue Oak					21		16	1906	4a
1907	Blue Oak	7						8	1907	4a
1908	Blue Oak	7						9	1908	4a
1909	Blue Oak	7						10	1909	4a
1910	Blue Oak		6,6					13	1910	4a
1914	Blue Oak	10						12	1914	4a
1915	Blue Oak		5,5					10	1915	4a
1916	Blue Oak	12						14	1916	4a
1918	Live Oak						38	29	1918	4a
1920	Blue Oak		9,11					17	1920	4a
1921	Blue Oak	8						16	1921	4a
1926	Live Oak						5,6	16	1926	4a
1927	Live Oak				3 at 24			24	1927	4a
1928	Blue Oak	6						13	1928	4a
1930	Live Oak					10		10	1930	4a
1931	Live Oak					6		8	1931	4a
1932	Live Oak		7 at 45					21	1932	4a
1934	Live Oak		5,6					13	1934	4a
1935	Blue Oak					11		6	1935	4a
1939	Blue Oak	9						15	1939	4a
1940	Blue Oak		4,7					17	1940	4a
1941	Blue Oak	6						10	1941	4a
1946	Live Oak	8						17	1946	4a
1948	Live Oak	8						16	1948	4a
1949	Blue Oak					15		17	1949	4a
1951	Live Oak	6						15	1951	4a
1952	Live Oak	12						18	1952	4a
1953	Live Oak	17						15	1953	4a
1954	Live Oak	10						17		4a
1955	Live Oak					7		13	1955	4a
1961	Live Oak					6		15	1961	4a
1962	Live Oak	7						15	1962	4a
1963	Live Oak		6 at 39					22	1963	4a
1964	Live Oak		5 at 33					19	1964	4a
1965	Blue Oak		7,7					17	1965	4a
1966	Live Oak					12		15	1966	4a
1967	Live Oak					8		16	1967	4a
1968	Live Oak				5,7			18	1968	4a
1969	Live Oak					9		14	1969	4a
1970	Live Oak		9,11					16	1970	4a

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
1971	Live Oak					14		18	1971	4a
1973	Blue Oak		8,11					15	1973	4a
[illegible]	[illegible]		[illegible]					[illegible]	[illegible]	[illegible]
1976	Blue Oak					10		16	1976	4a
1980	Live Oak						7,11	17	1980	4a
1981	Live Oak			9				17	1981	4a
1982	Live Oak		7,11					17	1982	4a
1983	Live Oak	12						18	1983	4a
1984	Live Oak			12				19	1984	4a
1986	Live Oak	10						17		4a
1986	Blue Oak					8		11	1986	4a
1989	Blue Oak	6						9	1989	4a
1990	Blue Oak	6						9	1990	4a
1991	Blue Oak	9						17	1991	4a
1993	Live Oak						7,10	13	1993	4a
1994	Blue Oak					6		9	1994	4a
1995	Live Oak					8		12	1995	4a
1996									1996	4a
1996									50005	4a
1997	Blue Oak			7				15	1997	4a
1998	Live Oak					7		13	1998	4a
1999	Live Oak		4 at 26					17	1999	4a
2000	Blue Oak					10		14	2000	4a
2001	Blue Oak	9						15	2001	4a
2002	Live Oak					8		6	2002	4a
2003	Blue Oak					9		14	2003	4a
2004	Blue Oak	10						17	2004	4a
2005	Live Oak		5,6					18	2005	4a
2015	Live Oak	10						17		4a
2018	Live Oak		5,6					18	2018	4a
2019	Live Oak		3 at 13					15	2019	4a
2020	Blue Oak	6						14	2020	4a
2021	Live Oak		9,10					18	2021	4a
2022	Blue Oak			9				15	2022	4a
2023	Live Oak					7		12	2023	4a
2024	Blue Oak					16		19	2024	4a
2025	Blue Oak	6						15	2025	4a
2026	Blue Oak	6						15	2026	4a
2027	Blue Oak					6		16	2027	4a
2028	Blue Oak		5,5					12	2028	4a
2029	Blue Oak	5						14	2029	4a
2030	Live Oak		3 at 23					17	2030	4a
2031	Blue Oak	7						10	2031	4a
2032	Blue Oak	6						12	2032	4a
2033	Blue Oak					11		14	2033	4a
2034	Blue Oak	8						12	2034	4a
2035	Blue Oak				4 at 24			16	2035	4a
2036	Blue Oak	6						12	2036	4a
2045	Live Oak				3 at 19			16	2045	4a
2069	Blue Oak	7						10	2069	4a

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Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
2070	Blue Oak					14		12	2070	4a
2098	Blue Oak	10						11	2098	4a
2099	Blue Oak		8,9					12	2099	4a
2100	Blue Oak		6,6					10	2100	4a
2115	Blue Oak	7						10	2115	4a
2116	Blue Oak	11						12	2116	4a
2117	Blue Oak			14				17	2117	4a
2119	Blue Oak		5,6					9	2119	4a
2120	Blue Oak		9,16					20	2120	4a
2121	Blue Oak	11						15	2121	4a
2122	Blue Oak	12						15	2122	4a
2123	Blue Oak		3 at 14					12	2123	4a
2124	Blue Oak	11						16	2124	4a
2125	Blue Oak	6						8	2125	4a
2126	Blue Oak		4 at 14					6	2126	4a
2127	Blue Oak	7						8	2127	4a
2128	Blue Oak			6				7	2128	4a
2129	Blue Oak		4 at 21					12	2129	4a
2130	Blue Oak	14						21	2130	4a
2131	Blue Oak	9						17	2131	4a
2132	Blue Oak		7,12					18	2132	4a
2133	Blue Oak					8		8	2133	4a
2140	Blue Oak	14						16	2140	4a
2143	Blue Oak		7,8					14	2143	4a
2144	Blue Oak	16						17	2144	4a
2145	Blue Oak		13,13					20	2145	4a
2146	Blue Oak	6						12	2146	4a
2147	Blue Oak	23						21	2147	4a
2148	Blue Oak	6						6	2148	4a
2149	Blue Oak	12						16	2149	4a
2150	Blue Oak	8						8	2150	4a
2151	Blue Oak	12						14	2151	4a
2152	Blue Oak	10						14	2152	4a
2153	Blue Oak					11		13	2153	4a
2154	Blue Oak	7						8	2154	4a
2155	Blue Oak	10						12	2155	4a
2156	Blue Oak	12						14	2156	4a
2157	Blue Oak		6,7					6	2157	4a
2158	Blue Oak					17		18	2158	4a
2159	Blue Oak		11,12					16	2159	4a
2160	Blue Oak		7,8					11	2160	4a
2161	Blue Oak	8						8	2161	4a
2162	Blue Oak			8				6	2162	4a
2163	Blue Oak	9						11	2163	4a
2164	Blue Oak			7				8	2164	4a
2165	Blue Oak					9		11	2165	4a
2166	Blue Oak					13		16	2166	4a
2167	Blue Oak	9						12	2167	4a
2168	Blue Oak	12						15	2168	4a
2169	Blue Oak	16						15	2169	4a

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
2170	Blue Oak	6						8	2170	4a
2171	Blue Oak	13						13	2171	4a
2172	Blue Oak	[illegible]						[illegible]	2172	[illegible]
2173	Blue Oak			12				13	2173	4a
2174	Blue Oak	11						13	2174	4a
2175	Blue Oak	11						15	2175	4a
2176	Blue Oak					13		15	2176	4a
2177	Blue Oak	7						12	2177	4a
2178	Blue Oak					9		6	2178	4a
2179	Blue Oak	13						15	2179	4a
2180	Blue Oak					9		12	2180	4a
2181	Blue Oak					7		6	2181	4a
2182	Blue Oak	14						15	2182	4a
2183	Blue Oak	11						15	2183	4a
2184	Blue Oak				7,8			15	2184	4a
2190	Blue Oak						7,8	12	2190	4a
2191	Blue Oak					10		13	2191	4a
2192	Live Oak					10		15	2192	4a
2193	Blue Oak	9						10	2193	4a
2194	Blue Oak					7		12	2194	4a
2195	Blue Oak			10				14	2195	4a
2197	Blue Oak	10						13	2197	4a
2198	Blue Oak	8						12	2198	4a
2200	Blue Oak		9,12					17	2200	4a
2201	Blue Oak			12				12	2201	4a
2202	Blue Oak		3 at 13					10	2202	4a
2203	Blue Oak	8						11	2203	4a
2204	Blue Oak	8						12	2204	4a
2205	Blue Oak	22						28	2205	4a
2206	Blue Oak	9						10	2206	4a
2207	Blue Oak	8						10	2207	4a
2208	Blue Oak		4 at 15					9	2208	4a
2209	Blue Oak					21		19	2209	4a
2210	Blue Oak	9						17	2210	4a
2211	Blue Oak		5,10					15	2211	4a
2212	Blue Oak		6,7					12	2212	4a
2213	Blue Oak	8						12	2213	4a
2221	Live Oak					8		16	2221	4a
2226	Blue Oak	6						13	2226	4a
2227	Blue Oak	7						8	2227	4a
2228	Blue Oak	7						15	2228	4a
2232	Live Oak		3 at 14					16	2232	4a
2243	Live Oak				9,9			18	2243	4a
2244	Blue Oak					8		11	2244	4a
2245	Blue Oak						10,12	18	2245	4a
2248	Blue Oak					19		18	2248	4a
2254	Blue Oak		4,6					14	2254	4a
2294	Blue Oak	11						13	2294	4a
2296	Blue Oak	9						12	2296	4a
2297	Blue Oak	7						9	2297	4a

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Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
2298	Blue Oak		5,6					10	2298	4a
2299	Blue Oak		7,7					12	2299	4a
2300	Blue Oak	8						13	2300	4a
2301	Blue Oak		6,10					12	2301	4a
2302	Blue Oak						8,9	12	2302	4a
2303	Blue Oak		3 at 21					14	2303	4a
2308	Blue Oak	10						17		4a
2309	Blue Oak	10						17		4a
2334	Blue Oak	9						13	2334	4a
2335	Blue Oak	11						14	2335	4a
2336	Blue Oak		7,9					14	2336	4a
2337	Blue Oak	8						12	2337	4a
2338	Blue Oak	7						9	2338	4a
2339	Blue Oak	12						14	2339	4a
2340	Blue Oak				5,8			10	2340	4a
2355	Blue Oak	11						16	2355	4a
2356	Blue Oak	10						14	2356	4a
2358	Blue Oak	13						15	2358	4a
2359	Blue Oak		3,9					13	2359	4a
2360	Blue Oak	8						13	2360	4a
2361	Blue Oak	8						9	2361	4a
2362	Blue Oak		11,11					16	2362	4a
2363	Blue Oak	21						20	2363	4a
2364	Blue Oak	17						17	2364	4a
2365	Blue Oak	13						14	2365	4a
2366	Live Oak						7,9	15	2366	4a
2367	Live Oak						6,8	12	2367	4a
2368	Live Oak				7 at 36			13	2368	4a
2369	Blue Oak	8						12	2369	4a
2370	Live Oak					8		17	2370	4a
2371	Live Oak				4 at 25			19	2371	4a
2373	Blue Oak		9,9					12	2373	4a
2374	Blue Oak		2,6					8	2374	4a
2375	Blue Oak					9		9	2375	4a
2376	Live Oak						6 at 38	17	2376	4a
2377	Live Oak				3 at 19			19	2377	4a
2378	Blue Oak	8						9	2378	4a
2379	Blue Oak		7,11					14	2379	4a
2380	Blue Oak					16		12	2380	4a
2381	Blue Oak	9						9	2381	4a
2382	Blue Oak	8						8	2382	4a
2383	Blue Oak	10						8	2383	4a
2384	Blue Oak	8						10	2384	4a
2385	Blue Oak	7						8	2385	4a
2386	Live Oak				5 at 31			16	2386	4a
2387	Blue Oak			8				7	2387	4a
2388	Blue Oak	12						14	2388	4a
2397	Live Oak	10						17		4a
2411	Blue Oak		3 at 16					12	2411	4a
2420	Blue Oak						4 at 19	17	2420	4a

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		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
2421	Blue Oak			7				8	2421	4a
2439	Live Oak			7				10	2439	4a
[illegible]	Live Oak						[illegible]	[illegible]	[illegible]	[illegible]
2442	Live Oak		3 at 22					17	2442	4a
2443	Blue Oak	13						14	2443	4a
2444	Blue Oak					15		14	2444	4a
2445	Blue Oak	7						10	2445	4a
2446	Live Oak		4 at 29					18	2446	4a
2447	Blue Oak	9						12	2447	4a
2448	Blue Oak	6						8	2448	4a
2449	Blue Oak						6,6	8	2449	4a
2450	Live Oak	10						17		4a
2450	Blue Oak	6						5	2450	4a
2451	Live Oak	10						17		4a
2451	Live Oak						10	11	2451	4a
2452	Blue Oak	10						17		4a
2452	Blue Oak	10						12	2452	4a
2453	Blue Oak						13,13	16	2453	4a
2455	Blue Oak					8		11	2455	4a
2479	Blue Oak	10						17		4a
2503	Blue Oak	17						18	2503	4a
2504	Blue Oak	8						11	2504	4a
2505	Blue Oak	13						16	2505	4a
2506	Blue Oak	11						15	2506	4a
2510	Blue Oak	10						17		4a
2513	Blue Oak		10,13					17	2513	4a
2514	Blue Oak	11						16	2514	4a
2515	Blue Oak	8						8	2515	4a
2516	Blue Oak	8						9	2516	4a
2517	Blue Oak					11		7	2517	4a
2518	Blue Oak	18						19	2518	4a
2519	Blue Oak					18		18	2519	4a
2520	Blue Oak	12						14	2520	4a
2521	Blue Oak						11,12	14	2521	4a
2522	Blue Oak	7						13	2522	4a
2523	Blue Oak	8						12	2523	4a
2524	Blue Oak		3 at 28					18	2524	4a
2525	Blue Oak					20		18	2525	4a
2526	Blue Oak					19		20	2526	4a
2527	Blue Oak	11						14	2527	4a
2528	Blue Oak	13						16	2528	4a
2529	Blue Oak	12						15	2529	4a
2530	Blue Oak	14						16	2530	4a
2531	Blue Oak	14						15	2531	4a
2532	Blue Oak	17						18	2532	4a
2533	Blue Oak	6						10	2533	4a
2534	Blue Oak	9						13	2534	4a
2535	Blue Oak	16						17	2535	4a
2536	Blue Oak	16						14	2536	4a
2537	Blue Oak	9						15	2537	4a

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Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
2538	Blue Oak	11						13	2538	4a
2539	Blue Oak	7						10	2539	4a
2540	Blue Oak			10				14	2540	4a
2541	Blue Oak	11						13	2541	4a
2542	Blue Oak	10						19	2542	4a
2543	Blue Oak	12						14	2543	4a
2544	Blue Oak	7						8	2544	4a
2545	Blue Oak					16		18	2545	4a
2546	Blue Oak	11						12	2546	4a
2547	Blue Oak	9						10	2547	4a
2548	Blue Oak	11						12	2548	4a
2549	Blue Oak	12						13	2549	4a
2550	Blue Oak		14,19					20	2550	4a
2551	Blue Oak	13						18	2551	4a
2552	Blue Oak		5,12					17	2552	4a
2553	Blue Oak			20				18	2553	4a
2554	Blue Oak	7						8	2554	4a
2555	Blue Oak	7						9	2555	4a
2556	Blue Oak	7						9	2556	4a
2557	Blue Oak		9,13					17	2557	4a
2558	Blue Oak		5,17					20	2558	4a
2559	Blue Oak	18						23	2559	4a
2560	Blue Oak		8,9					14	2560	4a
2561	Blue Oak	13						16	2561	4a
2562	Live Oak					7		8	2562	4a
2563	Blue Oak	6						5	2563	4a
2564	Blue Oak	24						25	2564	4a
2565	Blue Oak	16						16	2565	4a
2566	Blue Oak					17		15	2566	4a
2567	Blue Oak					12		14	2567	4a
2568	Blue Oak	19						20	2568	4a
2569	Blue Oak	20						22	2569	4a
2570	Blue Oak		10,16					24	2570	4a
2571	Blue Oak	14						17	2571	4a
2572	Blue Oak	11						20	2572	4a
2573	Blue Oak					10		15	2573	4a
2574	Blue Oak		9,16					17	2574	4a
2575	Blue Oak		11,12					17	2575	4a
2576	Blue Oak	20						25	2576	4a
2577	Blue Oak	10						13	2577	4a
2578	Blue Oak	14						19	2578	4a
2579	Blue Oak	19						22	2579	4a
2580	Blue Oak		9,9					14	2580	4a
2581	Blue Oak	15						20	2581	4a
2582	Blue Oak	13						17	2582	4a
2583	Blue Oak	17						18	2583	4a
2586	Blue Oak		7,11					16	2586	4a
2587	Blue Oak	9						12	2587	4a
2588	Blue Oak			13				16	2588	4a
2589	Blue Oak	15						18	2589	4a

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		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
2592	Blue Oak	17						18	2592	4a
2593	Blue Oak	11						14	2593	4a
[illegible]	[illegible]	[illegible]						[illegible]	[illegible]	
2595	Blue Oak					17		15	2595	4a
2596	Blue Oak		6,6					15	2596	4a
2597	Blue Oak	8						11	2597	4a
2598	Blue Oak	8						12	2598	4a
2599	Blue Oak	13						16	2599	4a
2600	Blue Oak	12						17	2600	4a
2601	Blue Oak	11						14	2601	4a
2602	Blue Oak	8						14	2602	4a
2603	Blue Oak					18		21	2603	4a
2604	Blue Oak					6		5	2604	4a
2605	Blue Oak	7						9	2605	4a
2606	Blue Oak	8						13	2606	4a
2607	Blue Oak					22		22	2607	4a
2608	Blue Oak	10						14	2608	4a
2609	Blue Oak	8						10	2609	4a
2610	Blue Oak					8		10	2610	4a
2611	Blue Oak					19		18	2611	4a
2612	Blue Oak	10						12	2612	4a
2613	Blue Oak		6,8					14	2613	4a
2614	Blue Oak		10,11					16	2614	4a
2615	Blue Oak	15						19	2615	4a
2616	Blue Oak	16						16	2616	4a
2617	Blue Oak	10						11	2617	4a
2618	Blue Oak	8						10	2618	4a
2619	Blue Oak	19						20	2619	4a
2620	Blue Oak		4,6					11	2620	4a
2621	Blue Oak		3 at 27					17	2621	4a
2622	Blue Oak	15						17	2622	4a
2623	Blue Oak	9						11	2623	4a
2624	Blue Oak	18						12	2624	4a
2625	Blue Oak	15						16	2625	4a
2626	Blue Oak			21				26	2626	4a
2627	Blue Oak	10						14	2627	4a
2628	Blue Oak	6						10	2628	4a
2629	Blue Oak					20		20	2629	4a
2630	Blue Oak					29		26	2630	4a
2631	Blue Oak	9						11	2631	4a
2632	Blue Oak	8						14	2632	4a
2633	Blue Oak			16				15	2633	4a
2634	Blue Oak	5						7	2634	4a
2635	Blue Oak					9		8	2635	4a
2636	Blue Oak						5,6	6	2636	4a
2637	Blue Oak			9				12	2637	4a
2638	Blue Oak	13						16	2638	4a
2639	Blue Oak	10						13	2639	4a
2640	Blue Oak	11						14	2640	4a
2641	Blue Oak	18						22	2641	4a

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Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
2642	Blue Oak	8						10	2642	4a
2643	Blue Oak					6		8	2643	4a
2644	Blue Oak	7						8	2644	4a
2645	Blue Oak		5,10					15	2645	4a
2646	Blue Oak	15						15	2646	4a
2647	Blue Oak	11						13	2647	4a
2648	Blue Oak					8		4	2648	4a
2649	Blue Oak	7						8	2649	4a
2650	Blue Oak	7						8	2650	4a
2651	Blue Oak					9		6	2651	4a
2652	Blue Oak					10		11	2652	4a
2653	Blue Oak						6,6	8	2653	4a
2654	Blue Oak	12						11	2654	4a
2655	Blue Oak			9				10	2655	4a
2656	Blue Oak		3 at 15					12	2656	4a
2657	Blue Oak	7						10	2657	4a
2658	Blue Oak	11						12	2658	4a
2659	Blue Oak	11						15	2659	4a
2660	Blue Oak					9		6	2660	4a
2661	Blue Oak		6,9					15	2661	4a
2662	Blue Oak	9						13	2662	4a
2663	Blue Oak		4,14					15	2663	4a
2664	Blue Oak	9						13	2664	4a
2665	Live Oak				7 at 53			19	2665	4a
2667	Blue Oak		4,9					12	2667	4a
2668	Blue Oak		4 at 11					9	2668	4a
2669	Blue Oak	12						15	2669	4a
2670	Blue Oak	16						15	2670	4a
2671	Blue Oak	6						10	2671	4a
2672	Blue Oak	11						13	2672	4a
2673	Blue Oak			12				13	2673	4a
2674	Blue Oak					8		12	2674	4a
2675	Blue Oak				3 at 18			14	2675	4a
2676	Blue Oak			8				8	2676	4a
2678	Blue Oak			15				14	2678	4a
2679	Blue Oak	8						10	2679	4a
2680	Blue Oak	16						15	2680	4a
2681	Blue Oak	10						17		4a
2682	Blue Oak	10						17		4a
2683	Blue Oak	10						17		4a
2841	Live Oak	10						17		4a
2912	Live Oak	10						17		4a
2924	Blue Oak	10						17		4a
2925	Blue Oak	10						17		4a
2927	Blue Oak	10						17		4a
2928	Live Oak	10						17		4a
2929	Blue Oak	10						17		4a
2930	Blue Oak	10						17		4a
2931	Blue Oak	10						17		4a
2948	Live Oak	10						17		4a

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
2949	Live Oak	10						17		4a
2950	Live Oak	10						17		4a
[illegible]	[illegible]	[illegible]						[illegible]		[illegible]
2961	Blue Oak	10						17		4a
2962	Blue Oak	10						17		4a
2963	Blue Oak	10						17		4a
2964	Live Oak	10						17		4a
2975	Live Oak	10						17		4a
2977	Live Oak	10						17		4a
2978	Blue Oak	10						17		4a
2979	Live Oak	10						17		4a
2982	Blue Oak	10						17		4a
2983	Live Oak	10						17		4a
2984	Live Oak	10						17		4a
2985	Blue Oak	10						17		4a
2986	Blue Oak	10						17		4a
2987	Live Oak	10						17		4a
2989	Live Oak	10						17		4a
2990	Live Oak	10						17		4a
2991	Live Oak	10						17		4a
2992	Blue Oak	10						17		4a
2993	Blue Oak	10						17		4a
2994	Live Oak	10						17		4a
2997	Live Oak	10						17		4a
3101	Blue Oak	10						17		4a
3102	Blue Oak	10						17		4a
3159	Blue Oak	10						17		4a
3194	Blue Oak	10						17		4a
3195	Blue Oak	10						17		4a
3258	Blue Oak	10						17		4a
3404	Live Oak	10						17		4a
3699	Live Oak	10						17		4a
3788	Live Oak	10						17		4a
4456	Live Oak	10						17		4a
4649	Live Oak	10						17		4a
4831	Live Oak	10						17		4a
5321	Live Oak	10						17		4a
5707	Live Oak	10						17		4a
5732	Live Oak	10						17		4a
5933	Blue Oak	10						17		4a
6447	Live Oak	10						17		4a
6977	Blue Oak	10						17		4a
7094	Blue Oak	13						18	7094	4a
7094	Blue Oak	11						13	7095	4a
7096	Blue Oak			10				15	7096	4a
7097	Blue Oak	16						22	7097	4a
7098	Blue Oak						8,9	12	7098	4a
7099	Blue Oak					14		16	7099	4a
7252	Live Oak	5						14	7252	4a
7253	Blue Oak	8						14	7253	4a

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Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
7254	Blue Oak					8		10	7254	4a
7255	Live Oak						4 at 19	13	7255	4a
7256	Blue Oak	7						12	7256	4a
7257	Blue Oak					25		24	7257	4a
7258	Blue Oak	6						8	7258	4a
7259	Blue Oak	8						12	7259	4a
7260	Blue Oak					14		13	7260	4a
7261	Blue Oak			8				10	7261	4a
7262	Blue Oak					9		15	7262	4a
7263	Blue Oak					11		13	7263	4a
7264	Blue Oak	8						12	7264	4a
7265	Blue Oak					10		13	7265	4a
7266	Blue Oak	9						15	7266	4a
7267	Blue Oak	12						17	7267	4a
7268	Blue Oak	10						16	7268	4a
7271	Blue Oak	8						8	7271	4a
7272	Blue Oak	5						6	7272	4a
7274	Blue Oak			11				17	7274	4a
7275	Blue Oak					14		15	7275	4a
7294	Blue Oak	9						13	7294	4a
7295	Blue Oak	16						20	7295	4a
7296	Blue Oak					14		14	7296	4a
7297	Blue Oak	8						15	7297	4a
7298	Blue Oak	7						11	7298	4a
7501	Blue Oak	10						17		4a
7512	Blue Oak	10						17		4a
7520	Blue Oak	10						17		4a
7561	Blue Oak	10						17		4a
7610	Live Oak	10						17		4a
7621	Live Oak	10						17		4a
7622	Live Oak	10						17		4a
7623	Live Oak	10						17		4a
7624	Live Oak	10						17		4a
7625	Live Oak	10						17		4a
7774	Live Oak	10						17		4a
7805	Live Oak	10						17		4a
7809	Live Oak	10						17		4a
7839	Live Oak	10						17		4a
7874	Valley Oak	10						17		4a
7880	Live Oak	10						17		4a
7903	Valley Oak	10						17		4a
8001	Live Oak	10						17		4a
8002	Blue Oak	10						17		4a
8003	Live Oak	10						17		4a
8004	Live Oak	10						17		4a
8006	Live Oak	10						17		4a
8007	Live Oak	10						17		4a
8009	Blue Oak	10						17		4a
8010	Blue Oak	10						17		4a
8011	Blue Oak	10						17		4a

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Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
8012	Blue Oak	10						17		4a
8013	Blue Oak	10						17		4a
8014	Blue Oak	10						17		4a
8015	Blue Oak	10						17		4a
8016	Live Oak	10						17		4a
8017	Live Oak	10						17		4a
9366	Blue Oak	8						8	9366	4a
9367	Blue Oak					15		14	9367	4a
9368	Blue Oak					14		19	9368	4a
9369	Blue Oak	11						16	9369	4a
9370	Blue Oak	8						11	9370	4a
9421	Blue Oak	9						12	9421	4a
9422	Blue Oak	17						20	9422	4a
9423	Blue Oak	14						26	9423	4a
9424	Blue Oak			13				16	9424	4a
9455	Blue Oak	11						13	9455	4a
9456	Blue Oak	6						13	9456	4a
10544	Blue Oak	9						13	10544	4a
10545	Blue Oak	9						9	10545	4a
10547	Blue Oak	10						15	10547	4a
10963	Blue Oak		4 at 20					14	10963	4a
10964	Blue Oak						4,11	11	10964	4a
10988	Blue Oak	6						14	10988	4a
10993	Blue Oak	9						15	10993	4a
11301	Blue Oak	5						10	11307	4a
11304	Live Oak						3,4	14	11304	4a
11305	Blue Oak	5						6	11305	4a
11306	Blue Oak		5,6					11	11306	4a
11308	Live Oak	6						17	11308	4a
11309	Live Oak	5						15	11309	4a
11527	Live Oak		5,6					15	11527	4a
11528	Live Oak		3,4					10	11528	4a
11663	Live Oak			8				15	11663	4a
11664	Blue Oak	5						12	11664	4a
11666	Blue Oak	5						11	11666	4a
11667	Blue Oak	5						9	11667	4a
11674	Blue Oak	5						12	11674	4a
11675	Blue Oak	6						15	11675	4a
11717	Blue Oak	5						6	11717	4a
11718	Blue Oak	10						15	11718	4a
11719	Live Oak	8						11	11719	4a
11720	Live Oak						3 at 20	12	11720	4a
11721	Live Oak	6						13	11721	4a
11722	Blue Oak	5						9	11722	4a
11723	Blue Oak	8						15	11723	4a
11724	Live Oak				5,5			12	11724	4a
11727	Blue Oak	6						12	11727	4a
11731	Live Oak						5,5	11	11731	4a
11732	Blue Oak			14				17	11732	4a
11733	Blue Oak	8						13	11733	4a

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Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
11734	Blue Oak	7						11	11734	4a
11736	Live Oak	8						16	11736	4a
11737	Blue Oak	5						11	11737	4a
11738	Live Oak						5 at 26	19	11738	4a
11739	Blue Oak	8						13	11739	4a
11740	Live Oak					5		10	11740	4a
11741	Blue Oak	7						11	11741	4a
11742	Live Oak	5						11	11742	4a
11743	Live Oak	6						10	11743	4a
11744	Live Oak						3 at 18	12	11744	4a
11745	Blue Oak	7						8	11745	4a
11747	Blue Oak	10						14	11747	4a
11748	Blue Oak	6						12	11748	4a
11749	Blue Oak	8						13	11749	4a
11750	Blue Oak	8						11	11750	4a
11751	Blue Oak	5						12	11751	4a
11752	Valley Oak	10						15	11752	4a
11753	Live Oak					7		17	11753	4a
11754	Live Oak						8,8	16	11754	4a
11835	Blue Oak	6						10	11835	4a
11836	Blue Oak	6						11	11836	4a
11837	Blue Oak	10						17	11837	4a
11838	Blue Oak					6		11	11838	4a
15758	Blue Oak	11						15	15758	4a
15759	Live Oak				3,5			12	15759	4a
16125	Blue Oak	7						7	16125	4a
16126	Blue Oak					6		6	16126	4a
16127	Blue Oak	6						5	16127	4a
16128	Blue Oak						4,5	6	16128	4a
16129	Blue Oak		6,11					14	16129	4a
16130	Live Oak	12						16	16130	4a
16131	Blue Oak	8						12	16131	4a
16132	Blue Oak	6						8	16132	4a
16133	Live Oak		5 at 27					15	16133	4a
16134	Blue Oak	6						6	16134	4a
16135	Blue Oak	15						17	16135	4a
16136	Blue Oak					14		15	16136	4a
16137									16137	4a
16138	Blue Oak	13						16	16138	4a
16139	Blue Oak					11		15	16139	4a
16140	Blue Oak	11						14	16140	4a
16141	Blue Oak	10						10	16141	4a
16142	Blue Oak	13						16	16142	4a
16152	Blue Oak		4,6					6	16152	4a
16153	Blue Oak		10,10					15	16153	4a
16154	Blue Oak	11						12	16154	4a
16155	Blue Oak	7						6	16155	4a
16156	Blue Oak	7						10	16156	4a
16157	Blue Oak	15						16	16157	4a
16158	Blue Oak	9						10	16158	4a

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Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
16164	Blue Oak			12				13	16164	4a
16165	Blue Oak	12						16	16165	4a
16171	Blue Oak			11				12	16171	4a
16172	Blue Oak	10						13	16172	4a
16173	Blue Oak			7				10	16173	4a
16174	Blue Oak		6,10					14	16174	4a
16175	Blue Oak					6		10	16175	4a
16176	Blue Oak			16				18	16176	4a
16177	Blue Oak			8				12	16177	4a
16178	Blue Oak	7						8	16178	4a
16179	Blue Oak			11				13	16179	4a
16180	Blue Oak	15						17	16180	4a
18867	Blue Oak	13						15	18867	4a
18875	Blue Oak	6						8	18875	4a
18876	Blue Oak		7,13					14	18876	4a
18878	Blue Oak	6						10	18878	4a
18880	Blue Oak	6						6	18880	4a
18881	Blue Oak	13						15	18881	4a
18882	Blue Oak	12						13	18882	4a
28937	Blue Oak		12,13					17	28937	4a
28938	Blue Oak	9						14	28938	4a
28939	Blue Oak	11						13	28939	4a
28940	Blue Oak	9						14	28940	4a
28942	Blue Oak	11						12	28942	4a
28943	Blue Oak	12						17	28943	4a
28944	Blue Oak	10						15	28944	4a
28945	Blue Oak	8						10	28945	4a
28946	Blue Oak			11				16	28946	4a
28947	Blue Oak	12						17	28947	4a
28948	Blue Oak					14		13	28948	4a
28949	Blue Oak	8						10	28949	4a
28950	Blue Oak					11		12	28950	4a
28951	Blue Oak	12						13	28951	4a
28955	Blue Oak					15		13	28955	4a
28956	Blue Oak			14				18	28956	4a
28957	Blue Oak					14		15	28957	4a
28958	Blue Oak	13						13	28958	4a
28959	Blue Oak	8						6	28959	4a
28960	Blue Oak	6						11	28960	4a
28961	Blue Oak	5						8	28961	4a
28962	Blue Oak	7						8	28962	4a
28963	Blue Oak		5,5					14	28963	4a
28964	Blue Oak						5,6	8	28964	4a
28965	Blue Oak	10						13	28965	4a
28969	Blue Oak	13						15	28969	4a
28970	Blue Oak	10						11	28970	4a
28971	Blue Oak		6,6					12	28971	4a
28972	Blue Oak		3,5					10	28972	4a
28973	Blue Oak					5		13	28973	4a

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Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
28974	Blue Oak					6		14	28974	4a
28975	Blue Oak		6,6					14	28975	4a
28976	Blue Oak		10,10					14	28976	4a
28977	Blue Oak					10		12	28977	4a
28978	Blue Oak					14		15	28978	4a
28979	Blue Oak	12						15	28979	4a
28980	Blue Oak	11						10	28980	4a
28981	Live Oak		6,6					10	28981	4a
28982	Blue Oak			15				16	28982	4a
28983	Blue Oak	7						9	28983	4a
28984	Blue Oak		5 at 20					12	28984	4a
28985	Blue Oak	10						14	28985	4a
28986	Blue Oak	7						11	28986	4a
28987	Blue Oak	7						12	28987	4a
28988	Blue Oak	10						10	28988	4a
28989	Blue Oak	15						16	28989	4a
28990	Blue Oak	18						15	28990	4a
28991	Blue Oak	14						16	28991	4a
28992	Blue Oak			13				15	28992	4a
28993	Blue Oak	13						16	28993	4a
28994	Blue Oak	9						12	28994	4a
28995	Blue Oak		3 at 15					12	28995	4a
28996	Blue Oak	15						15	28996	4a
28997	Blue Oak	12						13	28997	4a
28998	Blue Oak	13						16	28998	4a
28999	Blue Oak		8,9					15	28999	4a
29000	Blue Oak			18				16	29000	4a
29001	Blue Oak	10						15	29001	4a
29002	Blue Oak	10						15	29002	4a
29003	Blue Oak	6						11	29003	4a
29004	Blue Oak					12		9	29004	4a
29010	Blue Oak	5						6	29010	4a
29011	Blue Oak		6,6					12	29011	4a
29012	Blue Oak	16						16	29012	4a
29013	Blue Oak					16		14	29013	4a
29014	Blue Oak	15						18	29014	4a
29015	Blue Oak	10						12	29015	4a
29016	Blue Oak		5,5					6	29016	4a
29017	Blue Oak	7						8	29017	4a
29018	Blue Oak	6						5	29018	4a
29023	Blue Oak		8,9					13	29023	4a
29024	Live Oak						6 at 42	16	29024	4a
29025	Live Oak						3 at 22	18	29025	4a
29026	Live Oak						3 at 27	17	29026	4a
29027	Blue Oak	15						20	29027	4a
29028	Blue Oak		7,9					11	29028	4a
29029	Blue Oak					7		8	29029	4a
29030	Blue Oak	14						15	29030	4a
29031	Blue Oak	9						17	29031	4a
29032	Blue Oak	8						10	29032	4a

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Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
29033	Blue Oak		3,8					10	29033	4a
29034	Blue Oak				5,6			8	29034	4a
29036	Blue Oak					16		18	29036	4a
29037	Blue Oak					10		15	29037	4a
29038	Blue Oak			15				20	29038	4a
29039	Blue Oak	6						11	29039	4a
29040	Blue Oak					8		10	29040	4a
29041	Blue Oak			5				6	29041	4a
29042	Blue Oak		3 at 14					12	29042	4a
29043	Blue Oak					14		16	29043	4a
29044	Blue Oak	16						18	29044	4a
29046	Blue Oak	10						17	29046	4a
29047	Blue Oak	10						14	29047	4a
29053	Blue Oak	17						18	29053	4a
29055	Blue Oak	9						8	29055	4a
29197	Blue Oak		11,12					16	29197	4a
29198	Blue Oak		4,6					8	29198	4a
29199	Blue Oak	14						13	29199	4a
29200	Blue Oak		9,11					16	29200	4a
29201	Blue Oak	15						16	29201	4a
29202	Blue Oak		16,16					20	29202	4a
29203	Blue Oak		6,9					11	29203	4a
29204	Blue Oak						8,10	15	29204	4a
29205	Blue Oak						9,13	16	29205	4a
29207	Blue Oak	16						15	29207	4a
29232	Blue Oak		11,11					16	29232	4a
29235	Blue Oak	6						6	29235	4a
29237	Blue Oak	6						6	29237	4a
29238	Blue Oak		6,8					12	29238	4a
29239	Blue Oak	10						15	29239	4a
29240	Blue Oak						8,8	13	29240	4a
29241	Blue Oak					6		5	29241	4a
29242	Blue Oak					10		6	29242	4a
29243	Blue Oak	9						15	29243	4a
29244	Blue Oak	5						5	29244	4a
29287	Blue Oak			11				12	29287	4a
29288	Blue Oak					20		17	29288	4a
29289	Blue Oak	6						6	29289	4a
29290	Blue Oak	13						13	29290	4a
29291	Blue Oak	10						6	29291	4a
29292	Blue Oak						8,9	12	29292	4a
29293	Blue Oak	11						12	29293	4a
29294	Blue Oak		3,6					9	29294	4a
29295	Blue Oak			11				15	29295	4a
29296	Blue Oak	7						8	29296	4a
29297	Blue Oak	8						11	29297	4a
29298	Blue Oak		5,5					8	29298	4a
29299	Live Oak			5				6	29299	4a
29309	Blue Oak						7,8	9	29309	4a

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
29325	Blue Oak					6		9	29325	4a
29326	Blue Oak	7						10	29326	4a
29327	Blue Oak			9				11	29327	4a
29328	Blue Oak	10						11	29328	4a
29329	Blue Oak					7		12	29329	4a
29330	Blue Oak	7						8	29330	4a
29331	Blue Oak	16						14	29331	4a
29332	Blue Oak	6						15	29332	4a
29333	Blue Oak					15		10	29333	4a
29334	Blue Oak		6,12					15	29334	4a
29335	Blue Oak	10						11	29335	4a
29336	Blue Oak					10		11	29336	4a
29337	Blue Oak		5,7					14	29337	4a
29338	Live Oak					6		10	29338	4a
29339	Live Oak					6		13	29339	4a
29340	Blue Oak					14		16	29340	4a
29341	Blue Oak	7						10	29341	4a
29342	Blue Oak	8						14	29342	4a
29343	Blue Oak			8				9	29343	4a
29344	Blue Oak	9						13	29344	4a
29345	Blue Oak					24		14	29345	4a
29346	Blue Oak			13				15	29346	4a
29347	Blue Oak		5,8					12	29347	4a
29348	Blue Oak	6						6	29348	4a
29349	Blue Oak					14		12	29349	4a
29350	Blue Oak	7						7	29350	4a
29351	Blue Oak	10						10	29351	4a
29357	Blue Oak	6						6	29357	4a
31123	Blue Oak	10						13	31123	4a
31125	Blue Oak	11						13	31125	4a
31126	Blue Oak	9						13	31126	4a
31127	Blue Oak	13						14	31127	4a
31128	Blue Oak	13						15	31128	4a
31129	Blue Oak	7						12	31129	4a
31131	Blue Oak			12				13	31131	4a
31132	Blue Oak	17						18	31132	4a
31133	Blue Oak	10						15	31133	4a
31135	Blue Oak	9						13	31135	4a
31136	Blue Oak	12						13	31136	4a
31137	Blue Oak		5,10					16	31137	4a
31138	Blue Oak	11						15	31138	4a
31139	Blue Oak	12						15	31139	4a
31140	Blue Oak	17						23	31140	4a
31141	Blue Oak		3,5					6	31141	4a
31142	Blue Oak	7						7	31142	4a
31143	Blue Oak		3 at 27					18	31143	4a
31144	Blue Oak	17						21	31144	4a
31145	Blue Oak	7						7	31145	4a
31146	Blue Oak			9				17	31146	4a
31147	Blue Oak	16						20	31147	4a

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
31148	Blue Oak		8,8					15	31148	4a
31149	Blue Oak					12		16	31149	4a
31151	Blue Oak	6						10	31151	4a
31152	Blue Oak			15				16	31152	4a
31153	Blue Oak	11						14	31153	4a
31154	Blue Oak		3 at 23					18	31154	4a
31156	Blue Oak	15						15	31156	4a
31158	Blue Oak	11						15	31158	4a
31159	Blue Oak					13		14	31159	4a
31160	Blue Oak		3 at 30					18	31160	4a
31161	Blue Oak		6,6					10	31161	4a
31162	Blue Oak				8,17			17	31162	4a
31163	Blue Oak						3 at 13	9	31163	4a
31164	Blue Oak			8				8	31164	4a
31165	Blue Oak	9						17	31165	4a
31166	Blue Oak	14						17	31166	4a
31167	Blue Oak	10						17	31167	4a
31168	Blue Oak		9,9					16	31168	4a
31169	Blue Oak	14						20	31169	4a
31170	Blue Oak		7,8					15	31170	4a
31171	Blue Oak						3 at 26	20	31171	4a
31174	Blue Oak	13						15	31174	4a
31175	Blue Oak	6						9	31175	4a
31177	Blue Oak	16						17	31177	4a
31178	Blue Oak						3,5	6	31178	4a
31179	Blue Oak	19						21	31179	4a
31180	Blue Oak	12						16	31180	4a
31181	Blue Oak	9						13	31181	4a

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
31182	Blue Oak	14						13	31182	4a
31183	Blue Oak	8						11	31183	4a
31184	Blue Oak	7						8	31184	4a
31188	Blue Oak		12,14					15	31188	4a
31190	Blue Oak					12		12	31190	4a
31191	Blue Oak	6						10	31191	4a
31192	Blue Oak		3,5					9	31192	4a
31193									31193	4a
31194	Live Oak				4,6			7	31194	4a
31195	Live Oak	8						10	31195	4a
31196	Blue Oak		10,10					16	31196	4a
31197	Blue Oak		4 at 21					14	31197	4a
31198	Blue Oak	18						18	31198	4a
31199	Blue Oak	13						15	31199	4a
31200	Blue Oak					13		14	31200	4a
31201	Blue Oak	8						12	31201	4a
31202	Blue Oak					31		25	31202	4a
31203	Blue Oak					14		15	31203	4a
31204	Blue Oak	13						14	31204	4a
31205	Blue Oak	11						10	31205	4a
31206	Blue Oak	5						4	31206	4a
31207	Blue Oak	16						17	31207	4a
31208	Blue Oak	10						11	31208	4a
31209	Blue Oak	9						10	31209	4a
31210									31210	4a
31211	Blue Oak	6						9	31211	4a
31212	Blue Oak					5		5	31212	4a
31214	Live Oak	8						9	31214	4a
31215	Live Oak				3 at 17			12	31215	4a
31216	Live Oak					5		4	31216	4a
31217	Live Oak						4 at 23	16	31217	4a
31218	Blue Oak	8						9	31218	4a
31219	Blue Oak	7						10	31219	4a
31220	Live Oak						4,6	8	31220	4a
31221	Blue Oak	6						7	31221	4a
31222	Live Oak					5		10	31222	4a
31307	Live Oak					5		12	31307	4a
31308	Live Oak	7						15	31308	4a
31309	Live Oak	5						12	31309	4a
31310	Live Oak		7,8					18	31310	4a
31311	Live Oak		5,5					18	31311	4a
31313	Live Oak	6						18	31313	4a
31314	Live Oak		4 at 18					20	31314	4a
31315	Live Oak		8 at 40					20	31315	4a
31316	Live Oak			7				17	31316	4a
31317	Live Oak				3 at 24			20	31317	4a
31329	Live Oak		5,11					22	31329	4a
31330	Live Oak						4 at 19	17	31330	4a
31331	Live Oak					9		17	31331	4a
31332	Live Oak		4 at 28					21	31332	4a

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
31333	Live Oak		4 at 21					17	31333	4a
31334	Live Oak		5,6					16	31334	4a
[illegible]	[illegible]		[illegible]					[illegible]	[illegible]	[illegible]
31336	Live Oak	5						15	31336	4a
31337	Live Oak	6						13	31337	4a
31338	Live Oak		5,6					22	31338	4a
31348	Live Oak					6		6	31348	4a
31349	Live Oak						3 at 27	20	31349	4a
31350	Blue Oak					10		7	31350	4a
31351	Live Oak				6,7			15	31351	4a
31363									31363	4a
31366	Blue Oak		6,7					11	31366	4a
31367	Blue Oak	6						10	31367	4a
31377	Live Oak					6		14	31377	4a
31378	Live Oak						5 at 34	22	31378	4a
31379	Blue Oak	6						13	31379	4a
31380	Live Oak						8,8	19	31380	4a
31381	Live Oak				8,8			20	31381	4a
31390	Live Oak						4,6	12	31390	4a
31391	Live Oak	7						13	31391	4a
31392	Live Oak					10		17	31392	4a
31436	Live Oak			9				17	31436	4a
31437	Blue Oak	6						14	31437	4a
31458	Blue Oak		5,6					14	31458	4a
31459	Blue Oak		5,9					10	31459	4a
31461	Live Oak						7,8	16	31461	4a
31463	Blue Oak	5						6	31463	4a
31464	Blue Oak	6						5	31464	4a
31465	Live Oak						6 at 25	15	31465	4a
31466	Blue Oak		4,6					5	31466	4a
31467	Blue Oak		3 at 12					11	31467	4a
31468	Blue Oak	4						5	31468	4a
31469	Blue Oak	8						9	31469	4a
31479	Live Oak				6,10			17	31479	4a
31484	Blue Oak		4,4					5	31484	4a
31485	Blue Oak	7						7	31485	4a
31486	Blue Oak	6						5	31486	4a
31487	Blue Oak	5						7	31487	4a
31488	Blue Oak	6						6	31488	4a
31489	Blue Oak		5,5					6	31489	4a
31490	Blue Oak		5,6					7	31490	4a
31491									31491	4a
31492	Live Oak					5		8	31492	4a
31493	Blue Oak					6		4	31493	4a
31494	Blue Oak		3 at 12					8	31494	4a
31498	Blue Oak		5,5					15	31498	4a
31499	Live Oak		6 at 32					17	31499	4a
31501	Blue Oak	6						7	31501	4a
31502	Blue Oak		10,10					16	31502	4a
31503	Blue Oak			8				13	31503	4a

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
31504	Blue Oak			11				16	31504	4a
31505	Blue Oak	9						12	31505	4a
31506	Blue Oak	8						13	31506	4a
31507	Blue Oak	6						13	31507	4a
31508	Blue Oak					10		16	31508	4a
31509	Blue Oak	7						12	31509	4a
31510	Blue Oak	13						15	31510	4a
31511	Blue Oak		2,9					9	31511	4a
31512	Blue Oak	7						7	31512	4a
31513	Blue Oak		4 at 26					16	31513	4a
31514	Blue Oak		3 at 29					17	31514	4a
31515	Blue Oak	8						9	31515	4a
31516	Blue Oak		6,9					13	31516	4a
31517	Blue Oak	7						10	31517	4a
31518	Blue Oak	5						6	31518	4a
31519	Blue Oak	8						14	31519	4a
31520	Blue Oak	11						14	31520	4a
31521	Blue Oak	8						10	31521	4a
31522	Blue Oak	5						8	31522	4a
31523	Blue Oak	9						13	31523	4a
31524	Blue Oak	15						17	31524	4a
31525	Blue Oak					5		5	31525	4a
31526	Blue Oak		5,5					6	31526	4a
31527	Blue Oak		4 at 20					12	31527	4a
31528	Blue Oak	5						5	31528	4a
31529	Blue Oak	7						12	31529	4a
31530	Blue Oak	8						12	31530	4a
31531	Blue Oak	14						15	31531	4a
31532	Live Oak			6				13	31532	4a
31587	Blue Oak	5						4	31587	4a
31604	Blue Oak		7,8					13	31604	4a
31605	Blue Oak	8						12	31605	4a
31606	Blue Oak	5						9	31606	4a
31631	Live Oak		4,6					10	31631	4a
31632	Blue Oak					6		8	31632	4a
31633	Blue Oak	7						13	31633	4a
31634	Live Oak				4,7			18	31634	4a
31635	Blue Oak		3 at 20					16	31635	4a
31637	Live Oak			6				15	31637	4a
31638	Live Oak					5		16	31638	4a
31639	Live Oak	5						10	31639	4a
31642	Live Oak						6,6	10	31642	4a
31643	Live Oak		5 at 40					17	31643	4a
31644	Blue Oak			8				10	31644	4a
31645	Blue Oak	6						8	31645	4a
31646	Blue Oak	5						13	31646	4a
31647	Blue Oak	9						12	31647	4a
31648	Live Oak				3 at 15			14	31648	4a
31649	Live Oak	8						15	31649	4a
31650	Blue Oak					26		18	31650	4a

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4a

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
31651	Blue Oak	14						16	31651	4a

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City of Rocklin, CA

Tree Summary - Phase 4b

(All data available on Trees)

Number and Caliper Inches of Trees Removed

Tree Species	Number of Fair trees Removed	Caliper Inches of Fair Trees Removed	Caliper Inches of Fair Multi-Stem Trees Removed	Number of Fair/Poor trees Removed	Caliper Inches of Fair/Poor Trees Removed	Caliper Inches of Multi-Stem Fair/Poor Trees Removed	Number of Poor trees Removed	Caliper Inches of Poor Trees Removed	Caliper Inches of Poor Multi-Stem Trees Removed
Blue Oak	161	1403	598	9	80	36	18	223	16
Live Oak	250	765	3673	41	152	636	45	159	508
Valley Oak	29	321	112				1	12	
Misc	4	68							
Total	444	2557	4383	50	232	672	64	394	524

	Number of trees Removed	Caliper Inches of Trees Removed	Caliper Inches of Multi-Stem Trees Removed	Total Caliper Inches of Trees Removed
Fair Trees	444	2557	4383	6940
Fair / Poor Trees	50	232	672	904
Fair & Fair / Poor Trees	**494**	2789	5055	**7844**
Poor Trees	**64**	394	524	**918**

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4b

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
9	Blue Oak		4 at 20					15	50786	4b
10	Blue Oak	12						14	50785	4b
11	Blue Oak	9						12	50784	4b
12	Blue Oak	9						12	50782	4b
13	Blue Oak		9,8					14	50780	4b
14	Blue Oak	8						8	50781	4b
15	Blue Oak					15		15	50787	4b
16	Blue Oak	17						20	50788	4b
34									50760	4b
39	Blue Oak	7						8	50767	4b
40	Blue Oak		9,7					8	50766	4b
42	Blue Oak	18						19	50762	4b
43	Blue Oak	8						9	50765	4b
44	Blue Oak	8						12	50764	4b
45	Blue Oak	14						14	50763	4b
50	Blue Oak	14						15	50	4b
51	Blue Oak	8						12	51	4b
52	Blue Oak	14						15	52	4b
53	Blue Oak	11						12	53	4b
54	Blue Oak	14						17	54	4b
55	Blue Oak		5,6					10	50768	4b
56	Blue Oak		3 at 20					18	50769	4b
57	Blue Oak	14						15	57	4b
58	Blue Oak	11						12	50771	4b
59	Blue Oak	7						8	50772	4b
60	Blue Oak	8						8	50773	4b
61	Blue Oak	6						6	50770	4b
62	Blue Oak	21						20	50774	4b
63	Blue Oak		6,7					10	50775	4b
64	Blue Oak	12						12	50779	4b
65	Blue Oak		11,11					14	50778	4b
66	Blue Oak	25						20	50776	4b
67	Blue Oak	12						10	67	4b
68	Blue Oak		9,11					14	68	4b
69	Blue Oak	19						22	69	4b
70	Blue Oak	14						15	70	4b
71	Blue Oak	19						18	71	4b
72	Live Oak	12						14	72	4b
73	Blue Oak	6						6	73	4b
74	Blue Oak					6		6	74	4b
75	Blue Oak	9						9	75	4b
76	Blue Oak		10,8					12	76	4b
77	Blue Oak		12,14					17	77	4b
78	Blue Oak	8						12	78	4b
79	Blue Oak	12						15	79	4b
80	Blue Oak					26		31	80	4b
81	Blue Oak	15						15	81	4b
82	Blue Oak	9						10	82	4b
83	Blue Oak	17						18	83	4b
84	Valley Oak					12		12	84	4b

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4b

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
85	Blue Oak	17						18	85	4b
86	Blue Oak	14						16	86	4b
87	Blue Oak	10						10	87	4b
88	Blue Oak	7						6	88	4b
89	Blue Oak	17						20	89	4b
90	Blue Oak	17						16	90	4b
91	Live Oak				3 at 35			22	91	4b
92	Live Oak	8						10	92	4b
93	Live Oak		4 at 36					18	93	4b
94	Live Oak		3 at 27					20	94	4b
95	Live Oak		3 at 14					12	95	4b
96	Blue Oak	15						25	96	4b
97	Live Oak	8						10	97	4b
98	Live Oak					8		12	98	4b
99	Live Oak					6		10	99	4b
100	Live Oak			10				16	100	4b
101	Live Oak			10				10	101	4b
102	Live Oak		3 at 22					20	102	4b
103	Live Oak				4 at 24			20	103	4b
104	Live Oak		8,10					17	104	4b
105	Live Oak	16						14	105	4b
106	Live Oak	10						16	106	4b
107	Live Oak		7,8					12	107	4b
110	Blue Oak		6,7					14	110	4b
111	Blue Oak	6						9	111	4b
112	Live Oak		4 at 26					16	112	4b
113	Blue Oak	15						16	113	4b
114	Live Oak	7						15	114	4b
115	Live Oak	12						12	115	4b
116	Live Oak		5 at 30					18	116	4b
117	Live Oak		3 at 19					10	117	4b
118	Live Oak	6		6				13	118	4b
122	Blue Oak	10						15	122	4b
123	Live Oak	7						17	123	4b
124	Live Oak		4 at 17					16	124	4b
125	Live Oak		3 at 22					18	125	4b
126	Live Oak			10				14	126	4b
127	Blue Oak					11		8	127	4b
128	Blue Oak			7				7	128	4b
129	Live Oak	14						21	129	4b
130	Live Oak	16						21	130	4b
140	Live Oak	8						22	140	4b
141	Blue Oak	13						20	141	4b
142	Blue Oak	24						26	142	4b
143	Blue Oak					15		17	143	4b
144	Live Oak		9,10					24	144	4b
283	Blue Oak	14						16	283	4b
284	Blue Oak					15		16	284	4b
285	Blue Oak			19				17	285	4b
286	Blue Oak	16						15	286	4b

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4b

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
288	Blue Oak	19						20	288	4b
289	Blue Oak	22						19	289	4b
291	Blue Oak					18		16	291	4b
292	Blue Oak	14						14	292	4b
293	Blue Oak	13						14	293	4b
294	Blue Oak					12		15	294	4b
295	Blue Oak		7,10					14	295	4b
805	Blue Oak	14						16	805	4b
3433	Blue Oak	6						6	3433	4b
3434	Blue Oak					8		5	3434	4b
3435	Blue Oak	10						10	3435	4b
3436	Blue Oak	5						9	3436	4b
3436									50783	4b
3437	Live Oak		9,10					16	3437	4b
3439	Live Oak			10				14	3439	4b
3440	Live Oak				7,8			16	3440	4b
3441	Blue Oak	12						16	3441	4b
3442	Live Oak		10,19					20	3442	4b
3443	Live Oak		8,10					15	3443	4b
3444	Live Oak			7				20	3444	4b
3445	Live Oak				3 at 20			17	3445	4b
3446	Live Oak						3 at 24	22	3446	4b
3447	Live Oak		9,11					15	3447	4b
3448	Live Oak		7,9					20	3448	4b
3449	Live Oak		6,6					16	3449	4b
3451	Live Oak	16						21	3451	4b
3452	Blue Oak	10						12	3452	4b
3453	Live Oak		6,8					14	3453	4b
3454	Live Oak		7 at 34					14	3454	4b
3455	Blue Oak	12						18	3455	4b
3456	Blue Oak		3 at 24					16	3456	4b
3457	Blue Oak	6						6	3457	4b
3458	Blue Oak	9						8	3458	4b
3463	Blue Oak					11		8	3463	4b
3464	Blue Oak		6,7					10	3464	4b
3466	Blue Oak	19						24	3466	4b
3484	Live Oak						7 at 36	15	3484	4b
3507	Blue Oak					15		24	3507	4b
3508	Live Oak		3 at 16					14	3508	4b
3517	Live Oak	6						8	3517	4b
3595	Live Oak		3 at 10					15	3595	4b
3596	Live Oak	7						13	3596	4b
3611	Live Oak		6 at 30					15	3611	4b
3612	Blue Oak	7						13	3612	4b
3613	Blue Oak		6,6					10	3613	4b
3614	Blue Oak	8						12	3614	4b
3615	Live Oak		3 at 18					17	3615	4b
3631	Live Oak		7,10					17	3631	4b
3632	Live Oak		3,6					14	3632	4b
3634	Live Oak		7,10					16	3634	4b

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4b

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
3635	Live Oak		3 at 24					18	3635	4b
3636	Blue Oak		7,9					18	3636	4b
3637	Live Oak		5 at 30					15	3637	4b
3638	Live Oak		4 at 21					9	3638	4b
3639	Live Oak		8 at 49					18	3639	4b
3640	Blue Oak		3 at 18					16	3640	4b
3641	Live Oak				4 at 18			14	3641	4b
3642	Live Oak		8,12					16	3642	4b
3643	Live Oak						3 at 20	21	3643	4b
3644	Blue Oak	10						12	3644	4b
3645	Live Oak		6,6					12	3645	4b
3646	Blue Oak	6						8	3646	4b
3647	Live Oak		7,10					14	3647	4b
3648	Blue Oak	15						20	3648	4b
3657	Blue Oak	9						21	3657	4b
3658	Blue Oak	18						18	3658	4b
3659	Live Oak		8 at 15					20	3659	4b
3660	Live Oak		5 at 30					20	3660	4b
3661	Live Oak		5 at 34					15	3661	4b
3662	Blue Oak	11						12	3662	4b
3663	Blue Oak		6,7					8	3663	4b
3664	Blue Oak	14						12	3664	4b
3695	Live Oak		3 at 21					10	50686	4b
3696	Live Oak		7,7					15	50685	4b
3700	Live Oak	14						14	50684	4b
3701	Live Oak		4 at 13					12	50683	4b
3702	Live Oak		5,7					12	50682	4b
3703	Live Oak	7						15	50681	4b
3704	Valley Oak	15						22	3704	4b
3705	Live Oak		7,7					13	3705	4b
3706	Live Oak		8,6					16	3706	4b
3707	Live Oak						6,6	14	3707	4b
3708	Live Oak		7 at 38					15	50696	4b
3716	Blue Oak	15						22	3716	4b
3717	Blue Oak	9						10	3717	4b
3718	Valley Oak		4 at 18					16	3718	4b
3719	Live Oak		5 at 22					18	3719	4b
3728	Live Oak				6,8			14	3728	4b
3729	Live Oak	7						8	3729	4b
3828	Live Oak		5 at 32					20	3828	4b
3833	Live Oak	6						11	3833	4b
3834	Live Oak	6						10	3834	4b
3836	Live Oak	6						13	3836	4b
3837	Live Oak		4 at 22					16	3837	4b
3838	Live Oak	7						12	3838	4b
3844	Live Oak		8,9					18	3844	4b
3845	Live Oak						7 at 32	15	3845	4b
3846	Valley Oak	11						12	3846	4b
3847	Blue Oak		5,6					9	3847	4b
3848	Live Oak			17				16	3848	4b

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4b

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
3849	Blue Oak	10						15	3849	4b
3850	Live Oak		4 at 34					20	3850	4b
3851	Live Oak		4 at 30					16	3851	4b
3852	Live Oak		3 at 21					12	3852	4b
3853	Live Oak		3,7					15	3853	4b
3854	Live Oak	9						12	3854	4b
3855	Live Oak		10,12					20	3855	4b
3856	Live Oak		3 at 18					20	3856	4b
3858	Live Oak		3 at 36					22	3858	4b
3859	Live Oak		8 at 70					20	3859	4b
3860	Live Oak		4 at 30					15	3860	4b
3861	Live Oak		7,7					12	3861	4b
3862	Live Oak		4 at 24					16	3862	4b
3863	Live Oak		6,9					15	3863	4b
3864	Live Oak	8						15	3864	4b
3865	Live Oak		5 at 40					17	3865	4b
3866	Live Oak	11						16	3866	4b
3874	Live Oak						10,10	25	3874	4b
3875	Live Oak		3 at 18					15	3875	4b
3882	Live Oak	7						18	3882	4b
3981	Live Oak		4 at 19					16	3981	4b
3982	Live Oak		7,10					20	3982	4b
3983	Blue Oak	7						11	3983	4b
3984	Live Oak	8						15	3984	4b
3985	Live Oak					8		20	3985	4b
3995	Live Oak	11						13	3995	4b
3996	Live Oak		3 at 18					19	3996	4b
3997	Live Oak		4,6					13	3997	4b
3998	Live Oak	17						16	3998	4b
3999	Valley Oak	11						14	3999	4b
4000	Live Oak		5 at 12					13	4000	4b
4001	Live Oak		3 at 19					22	4001	4b
4002	Live Oak		6,7					20	4002	4b
4003	Live Oak	9						14	4003	4b
4004	Live Oak	6						12	4004	4b
4009	Live Oak	11						17	4009	4b
4010	Live Oak		4,6					13	4010	4b
4011	Live Oak		5 at 18					15	4011	4b
4012	Blue Oak	6						18	4012	4b
4013	Live Oak	9						15	4013	4b
4014	Live Oak		5 at 18					17	4014	4b
4045	Live Oak	8						15	4045	4b
4047	Live Oak		8,10					14	4047	4b
4048	Live Oak	10						14	4048	4b
4052	Live Oak						3 at 22	18	4052	4b
4053	Live Oak	14						17	4053	4b
4054	Blue Oak	13						16	4054	4b
4069									4069	4b
4206	Live Oak		4 at 24					16	4206	4b
4207	Blue Oak	6						12	4207	4b

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4b

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
4234	Live Oak		7 at 40					20	4234	4b
4240	Blue Oak	7						12	4240	4b
4241	Live Oak		4, 7					10	4241	4b
4242	Blue Oak	15						20	4242	4b
4243	Live Oak		7 at 36					16	4243	4b
4244	Live Oak		3 at 10					8	4244	4b
4245	Live Oak		3 at 20					15	4245	4b
4246	Live Oak		7 at 35					18	4246	4b
7813	Live Oak	8						15	7813	4b
7814	Live Oak	6						18	7814	4b
7815	Live Oak		3 at 32					19	7815	4b
7816	Blue Oak	9						15	7816	4b
7817	Blue Oak	13						16	7817	4b
7818	Blue Oak	17						20	7818	4b
7819	Valley Oak	18						21	7819	4b
7820	Live Oak		4 at 23					19	7820	4b
7840	Blue Oak	19						22	7840	4b
7842	Valley Oak		6,8					16	7842	4b
7843	Blue Oak				4 at 18			14	7843	4b
7856	Blue Oak	8						12	7856	4b
7857	Live Oak				3 at 20			15	7857	4b
7858	Blue Oak	8						12	7858	4b
7861	Valley Oak		13,14					23	7861	4b
7862	Live Oak		3 at 23					20	7862	4b
7863	Live Oak				3 at 27			22	7863	4b
7866	Live Oak		3 at 13					16	7866	4b
7867	Live Oak		3 at 24					18	7867	4b
7868	Valley Oak	20						15	7868	4b
7869	Live Oak		3 at 14					12	7869	4b
7876	Live Oak				4 at 16			15	7876	4b
7877	Blue Oak	7						10	7877	4b
7878	Live Oak		3 at 19					18	7878	4b
7879	Blue Oak				8,10			13	7879	4b
7881	Live Oak			26				27	7881	4b
7882	Live Oak						7,26	24	7882	4b
7883	Live Oak		3 at 18					17	7883	4b
7884	Blue Oak	13						17	7884	4b
7885	Blue Oak	7						15	7885	4b
7886	Blue Oak	7						10	7886	4b
7887	Live Oak		4 at 28					23	7887	4b
7888	Live Oak		5,6					16	7888	4b
7889	Valley Oak	30						34	7889	4b
7890	Blue Oak			10				14	7890	4b
7893	Valley Oak	11						17	7893	4b
7894	Valley Oak	12						15	7894	4b
7900	Live Oak		6 at 35					20	7900	4b
7901	Live Oak	65						28	7901	4b
7902	Live Oak					25		18	7902	4b
8018	Live Oak	10						17		4b
8019	Live Oak	10						17		4b

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4b

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
8022	Live Oak	10						17		4b
8023	Live Oak	10						17		4b
8025	Live Oak	10						17		4b
8029	Live Oak	10						17		4b
8030	Live Oak	10						17		4b
8031	Live Oak	10						17		4b
8032	Live Oak	10						17		4b
8033	Live Oak	10						17		4b
8034	Blue Oak	10						17		4b
8035	Live Oak	10						17		4b
8036	Blue Oak	10						17		4b
8038	Live Oak	10						17		4b
8039	Blue Oak	10						17		4b
8040	Blue Oak	10						17		4b
8041	Live Oak	10						17		4b
8042	Blue Oak	10						17		4b
8045	Blue Oak	10						17		4b
8046	Live Oak	10						17		4b
8047	Live Oak	10						17		4b
8048	Blue Oak	10						17		4b
8051	Blue Oak	10						17		4b
8053	Blue Oak	10						17		4b
8056	Live Oak	10						17		4b
8062	Live Oak	10						17		4b
8065	Live Oak	10						17		4b
8066	Blue Oak	10						17		4b
8067	Blue Oak	10						17		4b
8072	Blue Oak	10						17		4b
8075	Live Oak	10						17		4b
8076	Live Oak	10						17		4b
8084	Live Oak	10						17		4b
8093	Live Oak	10						17		4b
8096	Live Oak	10						17		4b
8097	Blue Oak	10						17		4b
8098	Live Oak	10						17		4b
8099	Live Oak	10						17		4b
8100	Blue Oak	10						17		4b
8101	Live Oak	10						17		4b
8103	Blue Oak	10						17		4b

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Removed Oak Tree Inventory - Phase 4b

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
8104	Blue Oak	10						17		4b
8106	Live Oak	10						17		4b
8107	Live Oak	10						17		4b
8109	Blue Oak	10						17		4b
8111	Blue Oak	10						17		4b
8113	Live Oak	10						17		4b
8115	Blue Oak	10						17		4b
8119	Live Oak	10						17		4b
8120	Live Oak	10						17		4b
8121	Live Oak	10						17		4b
8123	Live Oak	10						17		4b
8128	Live Oak	10						17		4b
8129	Live Oak	10						17		4b
8132	Live Oak	10						17		4b
8133	Live Oak	10						17		4b
8135	Live Oak	10						17		4b
8136	Live Oak	10						17		4b
8141	Live Oak	10						17		4b
8153	Live Oak	10						17		4b
8156	Live Oak	10						17		4b
8165	Live Oak	10						17		4b
8168	Live Oak	10						17		4b
8175	Live Oak	10						17		4b
8179	Live Oak	10						17		4b
8197	Live Oak	10						17		4b
8199	Blue Oak	10						17		4b
8214	Live Oak	10						17		4b
8215	Live Oak	10						17		4b
8221	Live Oak	10						17		4b
8225	Live Oak	10						17		4b
8809	Live Oak		5 at 26					20	8809	4b
8822	Live Oak		8 at 36					15	8822	4b
8823	Live Oak		5 at 35					20	8823	4b
8832	Blue Oak		4,6					8	8832	4b
8833	Blue Oak		10,11					15	8833	4b
8834	Blue Oak	8						8	8834	4b
8835	Blue Oak		5 at 23					14	8835	4b
8837	Blue Oak		5,5					6	8837	4b
8840	Live Oak		3,7					14	8840	4b
8841	Blue Oak		4 at 16					8	8841	4b
8842	Blue Oak	7						9	8842	4b
8843	Blue Oak		4 at 16					12	8843	4b
8844	Live Oak		4 at 24					15	8844	4b
8845	Live Oak		3 at 14					14	8845	4b
8846	Live Oak		6 at 26					15	8846	4b
8847	Blue Oak		3 at 11					10	8847	4b
8849	Live Oak						18,26	15	8849	4b
8850	Blue Oak		5 at 38					16	8850	4b
8851	Live Oak		7 at 49					18	8851	4b
8852	Blue Oak	14						15	8852	4b

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Removed Oak Tree Inventory - Phase 4b

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
8853	Live Oak	19						21	8853	4b
8855	Live Oak		4 at 21					15	8855	4b
8856	Live Oak					18		17	8856	4b
8857	Live Oak		3,7					12	8857	4b
8858	Live Oak	18						15	8858	4b
8859	Live Oak		3 at 13					14	8859	4b
8861	Blue Oak	8						12	8861	4b
8862	Blue Oak		5,7					10	8862	4b
8863	Blue Oak	16						17	8863	4b
8864	Live Oak		5,6					13	8864	4b
8865	Live Oak		3 at 17					15	8865	4b
8866	Live Oak		3 at 18					13	8866	4b
8867	Valley Oak	6						10	8867	4b
8868	Valley Oak		3 at 12					10	8868	4b
8869	Live Oak		4 at 32					20	8869	4b
8870	Live Oak	10						17	8870	4b
8871	Valley Oak	8						14	8871	4b
8872	Valley Oak	16						20	8872	4b
8873	Valley Oak	14						15	8873	4b
8993	Valley Oak	13						17	8993	4b
8994	Blue Oak	8						15	8994	4b
8995	Blue Oak	11						14	8995	4b
10883	Valley Oak	28						33	10883	4b
10896	Valley Oak	8						15	10896	4b
11319	Live Oak		4 at 22					16	11319	4b
11320	Live Oak			22				26	11320	4b
11454	Live Oak	9						17	11454	4b
11455	Blue Oak	5						15	11455	4b
11458	Blue Oak	14						21	11458	4b
11459	Blue Oak		6,7					15	11459	4b
11460	Blue Oak		4 at 19					13	11460	4b
11461	Blue Oak	4						8	11461	4b
11462	Blue Oak	4						11	11462	4b
11463	Blue Oak	9						11	11463	4b
11464	Blue Oak	6						9	11464	4b
11465	Blue Oak		5,7					15	11465	4b
11474	Live Oak		4,6					15	11474	4b
11475	Live Oak	7						16	11475	4b
11476	Live Oak		5,7					15	11476	4b
11477	Live Oak		3 at 24					21	11477	4b
11478	Blue Oak					15		19	11478	4b
11479	Live Oak		4 at 17					17	11479	4b
11480	Blue Oak	5						11	11480	4b
11628	Live Oak					9		19	11628	4b
11630	Live Oak	10						18	11630	4b
11631	Live Oak	5						12	11631	4b
11632	Live Oak	11						17	11632	4b
11633	Blue Oak	16						20	11633	4b
11958	Valley Oak	14						19	11958	4b
11959	Blue Oak	7						15	11959	4b

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4b

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
11960	Live Oak	7						16	11960	4b
11979	Valley Oak	9						15	11979	4b
11980	Live Oak		6,7					16	11980	4b
11981	Live Oak		5,6					13	11981	4b
11982	Live Oak	12						15	11982	4b
11983	Valley Oak	8						16	11983	4b
11984	Live Oak						4,9	15	11984	4b
11985	Live Oak		3,4					10	11985	4b
11986	Live Oak	6						13	11986	4b
11988	Live Oak	12						15	11988	4b
11989	Live Oak					14		19	11989	4b
11993	Valley Oak	22						31	11993	4b
15091	Live Oak				7 at 56			21	15091	4b
15377	Live Oak	5						13	15377	4b
15378	Live Oak					4		14	15378	4b
15521	Blue Oak	7						14	15521	4b
15522	Blue Oak		5,6					12	15522	4b
15523	Live Oak		3 at 19					18	15523	4b
15524	Live Oak						5,5	16	15524	4b
15525	Live Oak		3 at 19					16	15525	4b
15526	Live Oak				3 at 16			13	15526	4b
15527	Live Oak						4,5	18	15527	4b
15528	Live Oak				4 at 27			24	15528	4b
15529	Live Oak	7						18	15529	4b
15530	Live Oak						5,8	16	15530	4b
15531	Live Oak	8						16	15531	4b
15532	Live Oak	5						16	15532	4b
15533	Live Oak		3 at 16					15	15533	4b
15534	Live Oak		4,8					17	15534	4b
15535	Live Oak	7						15	15535	4b
15536	Live Oak	5						13	15536	4b
15537	Live Oak		4 at 22					15	15537	4b
15538	Live Oak	7						20	15538	4b
15539	Live Oak	7						18	15539	4b
15540	Live Oak					4		12	15540	4b
15541	Live Oak		5,6					14	15541	4b
15542	Live Oak				3 at 15			16	15542	4b
15543	Live Oak	6						13	15543	4b
15544	Live Oak				5 at 22			16	15544	4b
15545	Live Oak	5						13	15545	4b
15546	Live Oak		3 at 18					17	15546	4b
15547	Live Oak		3 at 15					16	15547	4b
15548	Live Oak		5,6					12	15548	4b
15549	Live Oak				3 at 16			17	15549	4b
15550	Live Oak		4,8					16	15550	4b
15551	Live Oak	5						14	15551	4b
15552	Live Oak						5,6	17	15552	4b
15556	Live Oak	25						27	15556	4b
15557	Live Oak		3 at 19					20	15557	4b
15558	Live Oak					5		16	15558	4b

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Removed Oak Tree Inventory - Phase 4b

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
15559	Live Oak					5		13	15559	4b
15560	Live Oak		5 at 38					25	15560	4b
15561	Live Oak					7		20	15561	4b
15562	Live Oak						3 at 16	18	15562	4b
15563	Live Oak			7				17	15563	4b
15564	Live Oak	6						18	15564	4b
15565	Live Oak		3 at 17					20	15565	4b
15566	Live Oak		3 at 24					22	15566	4b
15567	Live Oak				5,9			16	15567	4b
15568	Live Oak				3 at 18			24	15568	4b
15569	Live Oak				3 at 10			18	15569	4b
15570	Live Oak		3 at 16					15	15570	4b
15571	Live Oak	9						16	15571	4b
15572	Blue Oak			6				14	15572	4b
15573	Blue Oak			16				17	15573	4b
15659	Live Oak			9				12	15659	4b
15667	Live Oak			6				13	15667	4b
15668	Live Oak	8						13	15668	4b
15669	Live Oak					7		12	15669	4b
15670	Live Oak			6				16	15670	4b
15671	Live Oak				3,7			16	15671	4b
15672	Live Oak		6,8					16	15672	4b
15673	Live Oak			6				18	15673	4b
15674	Live Oak		4,9					18	15674	4b
15679	Live Oak				6 at 30			22	15679	4b
15680	Live Oak						4,6	17	15680	4b
15681	Live Oak					5		14	15681	4b
15711	Live Oak					4		15	15711	4b
15712	Live Oak						4,4	6	15712	4b
15713	Live Oak					5		13	15713	4b
15714	Live Oak	5						12	15714	4b
15715	Live Oak	8						16	15715	4b
15716	Live Oak		6,7					18	15716	4b
15811	Valley Oak	17						22	15811	4b
15870	Blue Oak	8						12	15870	4b
15871	Blue Oak	9						10	15871	4b
15872	Live Oak					7		12	15872	4b
18004	Valley Oak	10						16	18004	4b
18228	Live Oak		4 at 20					17	18228	4b
18231	Live Oak						11,12	20	18231	4b
18294	Live Oak				4 at 36			18	18294	4b
18383	Live Oak					18		19	18383	4b
18384	Blue Oak	6						7	18384	4b
18385	Blue Oak	9						14	18385	4b
18386	Valley Oak	7						10	18386	4b
18387	Blue Oak	9						15	18387	4b
18388	Live Oak		6 at 62					22	18388	4b
18389	Live Oak		3 at 23					17	18389	4b
18390	Live Oak	8						19	18390	4b
18391	Blue Oak	6						6	18391	4b

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4b

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
18394	Blue Oak	8						12	18394	4b
18454	Live Oak				12 at 53			17	18454	4b
18455	Live Oak						5,6	12	18455	4b
18456	Valley Oak		3,7					12	18456	4b
18459	Live Oak		7 at 51					20	18459	4b
18965	Live Oak						5,6	17	18965	4b
18967	Blue Oak					12		21	18967	4b
18968	Live Oak		5,7					16	18968	4b
18969	Live Oak						4,6	15	18969	4b
18970	Live Oak	6						14	18970	4b
18971	Live Oak		5,6					14	18971	4b
18972	Live Oak	8						15	18972	4b
18973	Live Oak		3 at 15					13	18973	4b
18974	Blue Oak	7						16	18974	4b
18975	Live Oak	5						15	18975	4b
42556	Valley Oak		15,16					22	42556	4b
42558	Valley Oak	13						15	42558	4b
50695									50695	4b
50777	Blue Oak	18						23	50777	4b

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Clover Valley Partners

Clover Valley

City of Rocklin, CA

Tree Summary - Phase 4c

(All data available on Trees)

Number and Caliper Inches of Trees Removed

Tree Species	Number of Fair trees Removed	Caliper Inches of Fair Trees Removed	Caliper Inches of Fair Multi-Stem Trees Removed	Number of Fair/Poor trees Removed	Caliper Inches of Fair/Poor Trees Removed	Caliper Inches of Multi-Stem Fair/Poor Trees Removed	Number of Poor trees Removed	Caliper Inches of Poor Trees Removed	Caliper Inches of Poor Multi-Stem Trees Removed
Blue Oak	747	6262	2855	62	581	347	116	1199	334
Interior Live Oak	1		28	2	12	18			
Live Oak	252	516	4448	49	119	727	53	176	744
Valley Oak	14	117	80						
Misc	10	160							
Total	1024	7055	7411	113	712	1092	169	1375	1078

	Number of trees Removed	Caliper Inches of Trees Removed	Caliper Inches of Multi-Stem Trees Removed	Total Caliper Inches of Trees Removed
Fair Trees	1024	7055	7411	14466
Fair / Poor Trees	113	712	1092	1804
Fair & Fair / Poor Trees	**1137**	7767	8503	**16270**
Poor Trees	**169**	1375	1078	**2453**

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
296	Blue Oak					7		8	296	4c
297	Blue Oak		10					9	297	4c
299	Blue Oak	11						16	299	4c
300	Blue Oak					11		15	300	4c
301	Blue Oak	16						21	301	4c
302	Blue Oak	10						15	302	4c
303	Blue Oak	11						17	303	4c
304	Blue Oak	11						16	304	4c
305	Blue Oak					17		18	305	4c
306	Blue Oak	21						21	306	4c
307	Blue Oak	12						13	307	4c
313	Blue Oak	17						25	313	4c
315	Blue Oak					21		23	315	4c
316	Blue Oak	8						18	316	4c
317	Blue Oak	11						13	317	4c
318	Blue Oak					15		11	318	4c
319	Blue Oak	16						18	319	4c
320	Blue Oak	15						18	320	4c
339	Blue Oak	10						17	339	4c
340	Blue Oak					18		20	340	4c
345	Blue Oak		5,6					8	345	4c
346	Blue Oak	8						12	346	4c
347	Blue Oak	16						17	347	4c
348	Blue Oak	10						13	348	4c
349	Blue Oak				13,21			20	349	4c
351	Blue Oak	7						8	351	4c
353	Live Oak		7 at 30					15	353	4c
355	Blue Oak	14						11	355	4c
356	Blue Oak	12						16	356	4c
357	Blue Oak	30						24	357	4c
358	Blue Oak						9,11	16	358	4c
359	Blue Oak	16						21	359	4c
360	Blue Oak		16,17					20	360	4c
361	Blue Oak	10						13	361	4c
362	Blue Oak		11,15					21	362	4c
363	Blue Oak	14						18	363	4c
364	Blue Oak	11						12	364	4c
365	Blue Oak	15						18	365	4c
366	Blue Oak	17						19	366	4c
367	Blue Oak					7		8	367	4c
368	Blue Oak	6						8	368	4c
370	Blue Oak					17		18	370	4c
371	Blue Oak		7,7					13	371	4c
372	Blue Oak	23						22	372	4c
373	Blue Oak		10,10					17	373	4c
374	Live Oak						5 at 22	14	374	4c
375	Live Oak						5,12	17	375	4c
376	Blue Oak	18						20	376	4c
377	Blue Oak		12,14					20	377	4c
378	Blue Oak	20						20	378	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
379	Live Oak		3 at 19					17	379	4c
380	Blue Oak	12						16	380	4c
381	Blue Oak	13						14	381	4c
382	Blue Oak	22						22	382	4c
383	Blue Oak	18						18	383	4c
387	Blue Oak	8						13	387	4c
388	Live Oak		3 at 9					11	388	4c
389	Blue Oak	10						13	389	4c
390	Blue Oak	9						13	390	4c
391	Blue Oak			9				11	391	4c
399	Blue Oak	12						15	399	4c
400	Blue Oak	19						20	400	4c
401	Blue Oak		3 at 18					20	401	4c
402	Live Oak					10		15	402	4c
403	Blue Oak	18						25	403	4c
404	Blue Oak	10						15	404	4c
405	Blue Oak					7		13	405	4c
406	Blue Oak	11						16	406	4c
407	Blue Oak			15				18	407	4c
408	Blue Oak	7						12	408	4c
409	Blue Oak	11						15	409	4c
426	Blue Oak		4 at 46					25	426	4c
427	Blue Oak	19						18	427	4c
428	Blue Oak					20		18	428	4c
429	Blue Oak	13						16	429	4c
430	Blue Oak	6						11	430	4c
431	Blue Oak	10						13	431	4c
432	Blue Oak					12		17	432	4c
433	Blue Oak	6						11	433	4c
434	Blue Oak	19						20	434	4c
435	Blue Oak	14						16	435	4c
436	Blue Oak	14						18	436	4c
437	Blue Oak					12		10	437	4c
438	Blue Oak		7,7					16	438	4c
439	Blue Oak					18		20	439	4c
440	Blue Oak	13						15	440	4c
441	Blue Oak	14						15	441	4c
442	Blue Oak	21						22	442	4c
443	Blue Oak		3 at 24					17	443	4c
444	Blue Oak	17						20	444	4c
445	Blue Oak	22						21	445	4c
446	Blue Oak		6 at 41					17	446	4c
447	Blue Oak	11						14	447	4c
448	Blue Oak	8						10	448	4c
449	Live Oak	6						10	449	4c
450	Blue Oak	13						15	450	4c
451	Blue Oak	20						26	451	4c
452	Blue Oak	14						18	452	4c
453	Blue Oak	11						18	453	4c
454	Live Oak		3 at 26					20	454	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
455	Blue Oak	13						17	455	4c
456	Blue Oak					13		15	456	4c
465	Live Oak					13		18	465	4c
466	Live Oak				6 at 55			28	466	4c
469	Blue Oak	6						12	469	4c
470	Live Oak		3 at 29					18	470	4c
471	Blue Oak					14		16	471	4c
472	Blue Oak					19		24	472	4c
473	Live Oak	8						15	473	4c
474	Blue Oak					15		15	474	4c
475	Live Oak		10,17					25	475	4c
476	Live Oak	7						18	476	4c
477	Live Oak	10						15	477	4c
478	Blue Oak		4,6					15	478	4c
479	Blue Oak					17		21	479	4c
480	Live Oak		7 at 62					23	480	4c
481	Live Oak		4 at 18					16	481	4c
482	Blue Oak	11						19	482	4c
483	Blue Oak			19				22	483	4c
484	Blue Oak					18		15	484	4c
485	Blue Oak	8						6	485	4c
486	Blue Oak	8						7	486	4c
487	Blue Oak	11						12	487	4c
488	Blue Oak	8						9	488	4c
489	Blue Oak	16						21	489	4c
490	Blue Oak	8						14	490	4c
491	Blue Oak	14						21	491	4c
492	Blue Oak	11						13	492	4c
493	Blue Oak	17						18	493	4c
494	Blue Oak					16		12	494	4c
495	Blue Oak	6						13	495	4c
496	Live Oak		3 at 20					18	496	4c
497	Blue Oak	11						15	497	4c
498	Blue Oak		5,7					12	498	4c
500	Blue Oak			7				8	500	4c
501	Blue Oak	10						12	501	4c
502	Blue Oak	8						15	502	4c
503	Blue Oak	8						15	503	4c
504	Live Oak		3 at 22					19	504	4c
505	Live Oak				4 at 22			20	505	4c
506	Blue Oak	22						25	506	4c
507	Live Oak		6 at 30					15	507	4c
508	Blue Oak	24						26	508	4c
509	Blue Oak	9						13	509	4c
510	Blue Oak		5,5					10	510	4c
511	Blue Oak					7		10	511	4c
512	Blue Oak	7						12	512	4c
513	Live Oak		4 at 34					20	513	4c
514	Blue Oak	7						12	514	4c
515	Blue Oak	6						15	515	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
516	Blue Oak	9						15	516	4c
517	Blue Oak	8						14	517	4c
518	Blue Oak	8						10	518	4c
519	Blue Oak	8						9	519	4c
520	Blue Oak	9						14	520	4c
521	Blue Oak		8,11					19	521	4c
522	Blue Oak	9						16	522	4c
523	Blue Oak			12				14	523	4c
524	Blue Oak	18						20	524	4c
525	Blue Oak	7						12	525	4c
526	Blue Oak	7						11	526	4c
527	Blue Oak	12						14	527	4c
528	Live Oak					12		13	528	4c
529	Blue Oak	16						18	529	4c
530	Blue Oak					14		17	530	4c
531	Blue Oak		7 at 20					15	531	4c
532	Blue Oak	7						12	532	4c
533	Blue Oak					6		10	533	4c
534	Blue Oak					9		14	534	4c
535	Blue Oak	6						11	535	4c
536	Blue Oak	9						13	536	4c
537	Blue Oak	10						16	537	4c
539	Blue Oak	15						18	539	4c
540	Blue Oak	7						15	540	4c
541	Blue Oak		10,13					17	541	4c
542	Blue Oak					10		10	542	4c
543	Blue Oak		15,17					20	543	4c
544	Blue Oak					9		14	544	4c
545	Live Oak						3 at 15	16	545	4c
546	Live Oak				4 at 13			12	546	4c
548	Blue Oak	17						19	548	4c
549	Blue Oak		3 at 30					20	549	4c
550	Blue Oak			60				19	550	4c
551	Blue Oak	13						17	551	4c
552	Blue Oak	14						20	552	4c
553	Blue Oak	7						10	553	4c
554	Blue Oak		3 at 14					15	554	4c
555	Blue Oak	8						12	555	4c
556	Blue Oak	13						18	556	4c
557	Blue Oak		3 at 26					18	557	4c
558	Blue Oak			13				18	558	4c
559	Blue Oak	7						10	559	4c
560	Blue Oak	6						10	560	4c
561	Live Oak	8						15	561	4c
562	Blue Oak			14				20	562	4c
563	Live Oak						10,12	19	563	4c
564	Live Oak		8 at 35					18	564	4c
565	Live Oak		3 at 15					15	565	4c
566	Blue Oak	7						13	566	4c
567	Blue Oak	8						12	567	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
568	Blue Oak						9,11	16	568	4c
569	Blue Oak	18						24	569	4c
570	Live Oak		9 at 54					20	570	4c
571	Blue Oak	18						26	571	4c
572	Blue Oak	16						17	572	4c
573	Blue Oak					20		19	573	4c
574	Live Oak		7,7					15	574	4c
575	Live Oak		4 at 24					15	575	4c
576	Live Oak						10,20	16	576	4c
577	Blue Oak			16				13	577	4c
578	Live Oak		3 at 23					13	578	4c
579	Live Oak		8,10					16	579	4c
580	Live Oak		7,10					15	580	4c
581	Blue Oak	6						10	581	4c
582	Live Oak		4 at 20					15	582	4c
583	Blue Oak	14						14	583	4c
584	Blue Oak	10						16	584	4c
585	Blue Oak	13						15	585	4c
585	Blue Oak					15		16	586	4c
587	Blue Oak	13						18	587	4c
588	Blue Oak	6						8	588	4c
589	Blue Oak		7,8					12	589	4c
590	Blue Oak	7						8	590	4c
591	Blue Oak	24						22	591	4c
592	Blue Oak	16						22	592	4c
593	Blue Oak	12						18	593	4c
594	Blue Oak	16						20	594	4c
595	Blue Oak	9						16	595	4c
596	Blue Oak	12						17	596	4c
597	Blue Oak	14						18	597	4c
598	Blue Oak	10						17	598	4c
600	Blue Oak	15						19	600	4c
601	Blue Oak	23						25	601	4c
603	Blue Oak	6						13	603	4c
604	Blue Oak	11						17	604	4c
605	Blue Oak	14						20	605	4c
606	Blue Oak	13						18	606	4c
607	Blue Oak	13						16	607	4c
608	Blue Oak	7						12	608	4c
609	Live Oak	10						14	609	4c
610	Live Oak						4 at 40	25	610	4c
611	Live Oak		4,7					14	611	4c
612	Live Oak	11						18	612	4c
613	Blue Oak	16						20	613	4c
614	Live Oak		8 at 48					27	614	4c
615	Live Oak		5 at 38					18	615	4c
616	Live Oak						4 at 16	12	616	4c
618	Blue Oak		5 at 41					19	618	4c
619	Blue Oak				12,15			19	619	4c
620	Live Oak		8 at 33					14	620	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
621	Live Oak					11		23	621	4c
622	Live Oak			13				20	622	4c
623	Blue Oak		3,7					14	623	4c
624	Live Oak					6		17	624	4c
625	Blue Oak	14						18	625	4c
627	Blue Oak		14,19					27	627	4c
628	Live Oak		4 at 11					10	628	4c
629	Blue Oak	11						15	629	4c
630	Blue Oak	12						18	630	4c
631	Blue Oak		5 at 17					12	631	4c
632	Blue Oak	7						12	632	4c
633	Live Oak					6		15	633	4c
634	Blue Oak	12						15	634	4c
635	Blue Oak	7						15	635	4c
636	Blue Oak	12						16	636	4c
639	Live Oak					14		12	639	4c
640	Blue Oak		6,6					15	640	4c
641	Blue Oak	14						15	641	4c
642	Live Oak				7 at 39			15	642	4c
643	Blue Oak		15,16					21	643	4c
645	Blue Oak	15						18	645	4c
646	Blue Oak	14						15	646	4c
647									647	4c
648	Blue Oak	13						18	648	4c
649	Blue Oak			17				20	649	4c
650	Blue Oak	8						13	650	4c
651	Blue Oak					7		10	651	4c
652	Blue Oak		6,11					14	652	4c
653	Blue Oak		6,8					16	653	4c
654	Blue Oak		3 at 18					15	654	4c
655	Blue Oak	17						22	655	4c
656	Blue Oak		7,8					15	656	4c
657	Live Oak		12,15					23	657	4c
658	Blue Oak	13						17	658	4c
659	Blue Oak	15						18	659	4c
660	Blue Oak		4,6					8	660	4c
661	Blue Oak	12						19	661	4c
662	Blue Oak	13						18	662	4c
663	Live Oak		4 at 31					17	663	4c
664	Live Oak		8 at 71					28	664	4c
665	Blue Oak	13						14	665	4c
666	Blue Oak					11		10	666	4c
667	Blue Oak	14						16	667	4c
669	Blue Oak	16						17	669	4c
670	Blue Oak	19						24	670	4c
671	Blue Oak	11						14	671	4c
672	Live Oak	14						17	672	4c
673	Blue Oak					21		18	673	4c
674	Blue Oak			10				14	674	4c
675	Blue Oak	10						13	675	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
676	Blue Oak	9						12	676	4c
677	Blue Oak					10		6	677	4c
678	Blue Oak	13						15	678	4c
679	Blue Oak				3 at 18			16	679	4c
680	Blue Oak	8						12	680	4c
681	Blue Oak		8,11					20	681	4c
682	Blue Oak					13		14	682	4c
683	Blue Oak	12						16	683	4c
684	Blue Oak	14						19	684	4c
685	Blue Oak			19				27	685	4c
686	Blue Oak			17				20	686	4c
687	Blue Oak					13		17	687	4c
689	Blue Oak	13						18	689	4c
690	Blue Oak	9						17	690	4c
692	Blue Oak	11						16	692	4c
693	Blue Oak	10						12	693	4c
695	Blue Oak	23						26	695	4c
696	Blue Oak	13						15	696	4c
697	Blue Oak	12						15	697	4c
698	Blue Oak	15						18	698	4c
700	Blue Oak	11						15	700	4c
701	Blue Oak	20						18	701	4c
702	Blue Oak					10		12	702	4c
703	Blue Oak	27						27	703	4c
704	Blue Oak		3 at 25					17	704	4c
705	Blue Oak			8				6	705	4c
706	Blue Oak	8						15	706	4c
707	Blue Oak	7						12	707	4c
708	Blue Oak	10						15	708	4c
709	Blue Oak	6						15	709	4c
710	Blue Oak	14						22	710	4c
711	Blue Oak	10						15	711	4c
712	Blue Oak	32						30	712	4c
713	Blue Oak	14						16	713	4c
714	Blue Oak	6						17	714	4c
715	Blue Oak					16		16	715	4c
716	Blue Oak	16						19	716	4c
717	Blue Oak					12		14	717	4c
718	Blue Oak	15						17	718	4c
719	Blue Oak					30		20	719	4c
720	Blue Oak					14		10	720	4c
721	Blue Oak	15						16	721	4c
722	Blue Oak		13					14	722	4c
723	Blue Oak		5,6					10	723	4c
724	Blue Oak	9						9	724	4c
725	Blue Oak	16						16	725	4c
726	Blue Oak	15						15	726	4c
727	Blue Oak	10						11	727	4c
728	Blue Oak	17						21	728	4c
729	Blue Oak	12						12	729	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
730	Blue Oak	8						13	730	4c
731	Blue Oak						5 at 45	16	731	4c
732	Blue Oak		6,13					17	732	4c
733	Blue Oak				17,18			21	733	4c
734	Blue Oak		11,15					20	734	4c
735	Blue Oak					15		17	735	4c
736	Blue Oak		7,8					15	736	4c
737	Blue Oak					11		14	737	4c
738	Blue Oak	19						22	738	4c
739	Blue Oak	25						27	739	4c
741	Blue Oak	10						11	741	4c
742	Blue Oak	8						9	742	4c
743	Blue Oak		6,9					14	743	4c
744	Blue Oak	12						14	744	4c
745	Blue Oak		6,8					12	745	4c
746	Blue Oak		3 at 29					15	746	4c
747	Blue Oak		3 at 28					16	747	4c
748	Live Oak					9		13	748	4c
750	Blue Oak	16						21	750	4c
751	Blue Oak	15						15	751	4c
752	Blue Oak	14						16	752	4c
755	Blue Oak	20						22	755	4c
756	Blue Oak	31						29	756	4c
757	Blue Oak		21					20	757	4c
758	Blue Oak	13						13	758	4c
759	Blue Oak	8						10	759	4c
760	Blue Oak	18						23	760	4c
761	Blue Oak	7						8	761	4c
764	Blue Oak					11		13	50841	4c
766	Blue Oak	7						8	766	4c
768	Blue Oak	16						23	768	4c
769	Blue Oak		8,16					21	769	4c
770	Blue Oak	9						12	770	4c
771	Blue Oak	8						12	771	4c
772	Blue Oak	8						10	50840	4c
773	Live Oak						6,7	16	50839	4c
776									50836	4c
777									50835	4c
779									50833	4c
780	Blue Oak	15						15	50847	4c
787	Blue Oak		5,6					10	50834	4c
788	Blue Oak					7		5	50848	4c
789	Blue Oak	17						19	50849	4c
790	Blue Oak	10						12	50850	4c
791	Live Oak		33					30	50852	4c
792	Blue Oak	6						5	50853	4c
793	Blue Oak	11						12	50854	4c
794	Blue Oak	22						23	50842	4c
795	Blue Oak	16						17	50843	4c
796	Blue Oak		14					15	50844	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
797	terior Live Oak						40	22	50845	4c
798	Blue Oak		22					19	50846	4c
799	Blue Oak	15						25	50856	4c
800	Blue Oak				17			15	50855	4c
807	terior Live Oak		5,6,8,9					27	50813	4c
814	Blue Oak	15						23	50809	4c
824	Blue Oak	20						26	50801	4c
825	Blue Oak	9						15	50800	4c
826	Blue Oak		5,9,10					18	50799	4c
827	Blue Oak					11		13	50798	4c
828	Blue Oak	15						20	50797	4c
829	Blue Oak	12						16	50794	4c
830	Blue Oak	14						20	50795	4c
831	Blue Oak	13						15	831	4c
833	Blue Oak	6						12	833	4c
834	Blue Oak	6						6	834	4c
835	Blue Oak	7						10	835	4c
839	Blue Oak			11				15	839	4c
840	Blue Oak	12						16	840	4c
841	Live Oak		4 at 23					17	841	4c
842	Blue Oak	8						14	842	4c
843	Blue Oak			15				28	844	4c
845	Blue Oak	10						14	845	4c
846	Blue Oak	8						16	846	4c
847	Blue Oak	21						28	847	4c
848	Blue Oak	16						16	848	4c
849	Blue Oak		6,6					15	849	4c
850	Blue Oak	11						18	850	4c
851	Blue Oak		11,11					18	851	4c
854	Blue Oak			9				16	854	4c
855	Blue Oak		4 at 33					21	855	4c
857	Blue Oak	7						13	857	4c
859	Live Oak		6,7					15	859	4c
860	Blue Oak	7						14	860	4c
861	Blue Oak	6						8	861	4c
862	Blue Oak	14						20	862	4c
863	Blue Oak	13						16	863	4c
864	Blue Oak	15						14	864	4c
865	Blue Oak			19				19	865	4c
866	Blue Oak		3 at 27					18	866	4c
869	Blue Oak		6,7					9	869	4c
870	Blue Oak					7		8	870	4c
872	Blue Oak	7						10	872	4c
873	Blue Oak	11						12	873	4c
874	Blue Oak	7						10	874	4c
879	Blue Oak	13						13	879	4c
881	Blue Oak				5,6			12	881	4c
882	Blue Oak				7,7			13	882	4c
883	Blue Oak		6 at 23					14	883	4c
884	Blue Oak	8						10	884	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
885	Blue Oak			10				15	885	4c
886	Blue Oak				13,14			19	886	4c
887	Blue Oak						6,10	12	887	4c
888	Blue Oak	10						10	888	4c
889	Blue Oak	13						16	889	4c
890	Blue Oak	11						11	890	4c
891	Blue Oak					9		16	891	4c
892	Blue Oak	11						10	892	4c
893	Blue Oak	8						10	893	4c
894	Blue Oak	6						13	894	4c
895	Blue Oak	8						14	895	4c
896	Blue Oak	7						9	896	4c
897	Blue Oak			9				12	897	4c
898	Blue Oak	9						14	898	4c
899	Blue Oak	10						15	899	4c
900	Blue Oak		6,8					14	900	4c
901	Live Oak		8 at 15					19	901	4c
902	Blue Oak		3 at 12					13	902	4c
903	Blue Oak	11						16	903	4c
904	Blue Oak	11						17	904	4c
905	Blue Oak					7		6	905	4c
906	Blue Oak	13						16	906	4c
907	Blue Oak						11,11	19	907	4c
908	Blue Oak	11						16	908	4c
909	Blue Oak	12						17	909	4c
910	Blue Oak	10						16	910	4c
911	Blue Oak	14						17	911	4c
918	Blue Oak	7						13	918	4c
919	Blue Oak		6,7					15	919	4c
920	Blue Oak		4 at 30					18	920	4c
921	Blue Oak		6,8					13	921	4c
922	Blue Oak		7,7					12	922	4c
923	Blue Oak	11						16	923	4c
924	Blue Oak			12				17	924	4c
925	Blue Oak		3 at 16					9	925	4c
929	Blue Oak	6						5	929	4c
934	Blue Oak	7						15	934	4c
955	Blue Oak	19						18	955	4c
956	Blue Oak		7,8					14	956	4c
957	Blue Oak		4,6					10	957	4c
958	Blue Oak	10						13	958	4c
959	Blue Oak	8						9	959	4c
960	Blue Oak	11						16	960	4c
961	Live Oak				5,5			13	961	4c
962	Blue Oak		3 at 18					17	962	4c
963	Live Oak		7 at 28					14	963	4c
964	Blue Oak		4,7					13	964	4c
965	Blue Oak	12						19	965	4c
966	Blue Oak	12						16	966	4c
967	Blue Oak		5,6					10	967	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
968	Blue Oak			10				15	968	4c
969	Blue Oak					9		10	969	4c
970	Blue Oak					10		17	970	4c
971	Live Oak						3 at 12	12	971	4c
972	Blue Oak	8						15	972	4c
973	Blue Oak	6						7	973	4c
974	Blue Oak	7						10	974	4c
975	Blue Oak					11		5	975	4c
976	Blue Oak			9				13	976	4c
977	Blue Oak	13						14	977	4c
978	Blue Oak					7		12	978	4c
979	Blue Oak			9				12	979	4c
980	Blue Oak					6		13	980	4c
981	Blue Oak						6,10	16	981	4c
983	Blue Oak	7						14	983	4c
984	Blue Oak	8						12	984	4c
985	Blue Oak	7						15	985	4c
986	Blue Oak		6,6					11	986	4c
987	Blue Oak			7				12	987	4c
988	Blue Oak	10						10	988	4c
989	Live Oak						5,6	12	989	4c
990	Blue Oak		5 at 28					14	990	4c
991	Blue Oak	8						12	991	4c
992	Live Oak						8 at 38	17	992	4c
993	Live Oak		8 at 50					18	993	4c
994	Live Oak		5 at 20					12	994	4c
995	Blue Oak		5,6					16	995	4c
996	Live Oak		4 at 22					14	996	4c
997	Blue Oak	6						8	997	4c
998	Live Oak		3 at 16					12	998	4c
999	Live Oak		4 at 14					12	999	4c
1000	Blue Oak		9,9					17	1000	4c
1001	Live Oak				4 at 23			17	1001	4c
1002	Blue Oak	6						13	1002	4c
1003	Blue Oak	7						14	1003	4c
1004	Blue Oak	10						16	1004	4c
1005	Live Oak		3 at 14					17	1005	4c
1006	Live Oak						6 at 24	14	1006	4c
1007	Blue Oak	6						11	1007	4c
1008	Live Oak		5 at 15					14	1008	4c
1014	Blue Oak	18						21	1014	4c
1015	Live Oak		3 at 13					15	1015	4c
1016	Live Oak		3 at 16					18	1016	4c
1018	Blue Oak	7						10	1018	4c
1019	Blue Oak	10						16	1019	4c
1020	Blue Oak		6,6					14	1020	4c
1021	Blue Oak					10		13	1021	4c
1022	Blue Oak	9						10	1022	4c
1023	Blue Oak	11						13	1023	4c
1024	Live Oak		7 at 37					19	1024	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
1027	Live Oak		4 at 23					15	1027	4c
1029	Blue Oak	7						15	1029	4c
1030	Blue Oak	7						13	1030	4c
1031	Blue Oak					14		17	1031	4c
1032	Live Oak		6,6					12	1032	4c
1033	Blue Oak	11						15	1033	4c
1034	Blue Oak		4,6					13	1034	4c
1035	Live Oak				7 at 30			16	1035	4c
1036	Blue Oak	6						10	1036	4c
1037	Blue Oak	10						15	1037	4c
1038	Blue Oak	6						12	1038	4c
1039	Live Oak		6 at 32					18	1039	4c
1040	Blue Oak	6						11	1040	4c
1041	Live Oak		5 at 22					16	1041	4c
1042	Live Oak				4 at 16			14	1042	4c
1045	Live Oak		6 at 18					14	1045	4c
1051	Blue Oak		5,5					13	1051	4c
1052	Blue Oak					12		8	1052	4c
1053	Blue Oak	8						13	1053	4c
1054	Blue Oak	9						16	1054	4c
1055	Blue Oak	11						15	1055	4c
1056	Blue Oak	7						13	1056	4c
1057	Blue Oak					8		14	1057	4c
1058	Blue Oak	6						15	1058	4c
1059	Blue Oak	5						8	1059	4c
1060	Blue Oak		5,7					17	1060	4c
1061	Blue Oak	8						12	1061	4c
1062	Blue Oak	7						13	1062	4c
1063	Blue Oak		3 at 21					15	1063	4c
1065	Blue Oak	7						10	1065	4c
1066	Blue Oak					6		8	1066	4c
1067	Blue Oak	12						13	1067	4c
1068	Blue Oak	6						8	1068	4c
1069	Blue Oak	8						10	1069	4c
1070	Blue Oak	6						8	1070	4c
1071	Blue Oak	5						7	1071	4c
1072	Blue Oak	10						10	1072	4c
1073	Blue Oak	8						12	1073	4c
1074	Blue Oak	8						11	1074	4c
1075	Blue Oak	7						10	1075	4c
1076	Blue Oak	12						16	1076	4c
1077	Blue Oak		7,8					13	1077	4c
1088	Blue Oak	6						10	1088	4c
1096	Blue Oak		6,8					15	1096	4c
1097	Blue Oak		3 at 14					10	1097	4c
1098	Blue Oak		3 at 18					15	1098	4c
1099	Blue Oak			11				17	1099	4c
1100	Blue Oak		4 at 15					12	1100	4c
1101	Blue Oak					11		17	1101	4c
1102	Blue Oak	7						8	1102	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
1103	Blue Oak		7,10					13	1103	4c
1104	Blue Oak		3 at 18					12	1104	4c
1105	Blue Oak	11						18	1105	4c
1106	Blue Oak	14						16	1106	4c
1107	Blue Oak		7,12					15	1107	4c
1108	Blue Oak		3 at 17					15	1108	4c
1109	Blue Oak					14		17	1109	4c
1110	Blue Oak	8						13	1110	4c
1111	Blue Oak				3,6			12	1111	4c
1112	Blue Oak		6,6					12	1112	4c
1116	Blue Oak			15				13	1116	4c
1117	Blue Oak		4,6					10	1117	4c
1118	Blue Oak			12				17	1118	4c
1119	Blue Oak			11				13	1119	4c
1121	Blue Oak		8,9					16	1121	4c
1122	Blue Oak	16						20	1122	4c
1123	Live Oak		5 at 49					17	1123	4c
1124	Blue Oak	11						17	1124	4c
1125	Blue Oak	13						17	1125	4c
1126	Blue Oak	15						15	1126	4c
1130	Blue Oak	9						10	1130	4c
1131	Blue Oak	12						17	1131	4c
1132	Blue Oak		6,7					12	1132	4c
1133	Blue Oak		7,10					16	1133	4c
1134	Blue Oak	6						15	1134	4c
1135	Blue Oak		6,6					16	1135	4c
1136	Blue Oak	14						20	1136	4c
1137	Blue Oak	14						16	1137	4c
1138	Blue Oak	10						17	1138	4c
1139	Blue Oak	18						17	1139	4c
1205	Live Oak						3 at 21	16	1205	4c
1207	Live Oak						5 at 24	15	1207	4c
1251	Live Oak	8						12	1251	4c
1252	Blue Oak	14						16	1252	4c
1258	Blue Oak	17						17	1258	4c
1260	Live Oak		5 at 32					22	1260	4c
1272	Live Oak			13				17	1272	4c
2464	Live Oak				5 at 20			10	2464	4c
2465	Blue Oak					13		17	2465	4c
2466	Blue Oak					10		12	2466	4c
2467	Blue Oak	8						10	2467	4c
2468	Blue Oak	8						10	2468	4c
2475	Live Oak		6 at 30					15	2475	4c
2476	Blue Oak		3 at 10					12	2476	4c
2477	Blue Oak	8						9	2477	4c
2478	Blue Oak	14						17	2478	4c
2479	Blue Oak	14						15	2479	4c
2481	Blue Oak	16						19	2481	4c
2482	Blue Oak		6,12					19	2482	4c
2483	Blue Oak	15						18	2483	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
2484	Blue Oak						10,13	18	2484	4c
2485	Blue Oak	14						20	2485	4c
2495	Blue Oak			9				15	2495	4c
2496	Blue Oak	13						16	2496	4c
2761	Blue Oak					15		17	2761	4c
2764	Blue Oak	14						19	2764	4c
3450	Live Oak		4,9					18	50796	4c
3493	Live Oak		3 at 16					15	50851	4c
3523	Live Oak						2,10	20	50810	4c
3726	Live Oak	7						14	50832	4c
4426	Blue Oak	8						11	4426	4c
4456	Blue Oak	6						11	4456	4c
4501	Blue Oak	6						7	4501	4c
4503	Blue Oak		8,9					13	4503	4c
4513	Blue Oak	7						15	4513	4c
5955	Blue Oak		8,8					17	5955	4c
5956	Blue Oak	9						13	5956	4c
5957	Blue Oak	16						24	5957	4c
5958	Blue Oak	12						17	5958	4c
5959	Blue Oak	16						25	5959	4c
5960	Blue Oak		6,9					18	5960	4c
5961	Blue Oak	14						17	5961	4c
5962	Blue Oak	19						26	5962	4c
5963	Blue Oak	6						12	5963	4c
5964	Live Oak						4 at 35	22	5964	4c
5965	Blue Oak		6,6					14	5965	4c
5966	Blue Oak					18		25	5966	4c
5967									5967	4c
5967									50023	4c
5968	Live Oak		5,6					12	5968	4c
5969	Blue Oak	5						8	5969	4c
6008	Blue Oak	7						8	6008	4c
6009	Live Oak		8 at 42					17	6009	4c
6010	Live Oak		8,10					16	6010	4c
6572	Live Oak		6,8					12	6572	4c
6573	Blue Oak	7						11	6573	4c
6574	Blue Oak	8						10	6574	4c
6582	Blue Oak		5,11					23	6582	4c
6583	Live Oak		7 at 25					18	6583	4c
6584	Live Oak	9						10	6584	4c
6585	Blue Oak	6						9	6585	4c
6586	Blue Oak	5						9	6586	4c
6631	Live Oak						5,6	18	6631	4c
6632	Live Oak		5 at 17					16	6632	4c
6649	Blue Oak		11,14					24	6649	4c
6650	Live Oak				4 at 20			17	6650	4c
6651	Blue Oak					9		16	6651	4c
6652	Live Oak						3 at 17	18	6652	4c
6653	Live Oak	8						11	6653	4c
6654	Blue Oak	6						10	6654	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
6661	Live Oak		3 at 14					17	6661	4c
6664	Live Oak	7						18	6664	4c
6665	Live Oak	7						20	6665	4c
6666	Live Oak		3,7					16	6666	4c
6667	Live Oak		4 at 19					21	6667	4c
6668	Live Oak		3,5					14	6668	4c
6669	Live Oak	6						10	6669	4c
6670	Blue Oak	7						12	6670	4c
6671	Blue Oak		7,10					16	6671	4c
6672	Blue Oak	9						15	6672	4c
6673	Live Oak		7,10					14	6673	4c
6674	Live Oak	7						12	6674	4c
6675	Live Oak	7						17	6675	4c
6677	Blue Oak				10,11			17	6677	4c
6683	Blue Oak		6,10					18	6683	4c
6684	Blue Oak			13				20	6684	4c
6685	Blue Oak		5,10					19	6685	4c
6686	Live Oak		4 at 20					16	6686	4c
6687	Live Oak					7		15	6687	4c
6688	Live Oak		6,7					16	6688	4c
6689	Blue Oak	7						17	6689	4c
6690	Live Oak			12				18	6690	4c
6691	Live Oak					6		18	6691	4c
6693	Live Oak		3 at 29					19	6693	4c
6696	Live Oak		3,6					14	6696	4c
6697	Live Oak						6,12	16	6697	4c
6741	Blue Oak	8						15	6741	4c
6778	Blue Oak	10						17	6778	4c
6779	Blue Oak	6						10	6779	4c
6780	Blue Oak	6						14	6780	4c
6783	Live Oak		5 at 34					18	6783	4c
6784	Live Oak		3 at 24					19	6784	4c
6802	Live Oak		6 at 33					18	6802	4c
6803	Blue Oak	7						10	6803	4c
6804	Blue Oak		4,6					9	6804	4c
6805	Live Oak		5 at 30					13	6805	4c
6806	Blue Oak	12						15	6806	4c
6807	Blue Oak		7,8					14	6807	4c
6808	Blue Oak					11		12	6808	4c
6809	Blue Oak						13,15	22	6809	4c
6810	Blue Oak			18				20	6810	4c
6830	Blue Oak		5,8					12	6830	4c
6831	Blue Oak	16						17	6831	4c
6832	Blue Oak			16				17	6832	4c
6833	Blue Oak	7						10	6833	4c
6834	Blue Oak	8						11	6834	4c
6835	Blue Oak					8		15	6835	4c
6836	Blue Oak	6						6	6836	4c
6837	Live Oak		8,10					17	6837	4c
6838	Live Oak		5 at 30					18	6838	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
6839	Live Oak	6						10	6839	4c
6840	Blue Oak	6						12	6840	4c
6841	Live Oak		4 at 21					12	6841	4c
6842	Live Oak		10 at 54					16	6842	4c
6843	Live Oak		3 at 17					16	6843	4c
6844	Live Oak	6						16	6844	4c
6856	Live Oak		4 at 20					15	6856	4c
6857	Blue Oak	21						21	6857	4c
6861	Blue Oak		6,6					8	6861	4c
6862	Live Oak		4 at 26					15	6862	4c
6863	Blue Oak	6						8	6863	4c
6864	Live Oak		5,8					13	6864	4c
6865	Live Oak						3 at 12	12	6865	4c
6866	Blue Oak		4,7					14	6866	4c
6867	Blue Oak	8						10	6867	4c
6868	Blue Oak	13						15	6868	4c
6869	Blue Oak		5,5					12	6869	4c
6870	Blue Oak	7						12	6870	4c
6871	Blue Oak		5,6					9	6871	4c
6872	Blue Oak	9						15	6872	4c
6873	Blue Oak	13						15	6873	4c
6874	Blue Oak		8,8					13	6874	4c
6875	Blue Oak		3 at 25					19	6875	4c
6876	Live Oak		4 at 34					17	6876	4c
6877	Live Oak		3 at 16					14	6877	4c
6878	Live Oak		3 at 22					16	6878	4c
6882	Blue Oak		3 at 26					16	6882	4c
6883	Live Oak		5 at 42					17	6883	4c
6884	Live Oak		4 at 15					12	6884	4c
6885	Blue Oak	9						13	6885	4c
6887	Blue Oak	5						6	6887	4c
6888	Blue Oak				5,6			10	6888	4c
6889	Live Oak				3 at 14			13	6889	4c
6890	Live Oak		3,5					13	6890	4c
6891	Blue Oak		4 at 18					13	6891	4c
6892	Blue Oak	10						12	6892	4c
6893	Blue Oak	7						14	6893	4c
6894	Blue Oak	8						12	6894	4c
6895	Blue Oak	6						9	6895	4c
6896	Blue Oak					11		15	6896	4c
6897	Blue Oak			8				9	6897	4c
6898	Live Oak		3 at 16					14	6898	4c
6899	Live Oak						3 at 28	15	6899	4c
6900	Live Oak		3 at 13					15	6900	4c
6901	Live Oak	6						13	6901	4c
6902	Blue Oak	5						12	6902	4c
6903	Blue Oak	6						10	6903	4c
6905	Blue Oak	5						6	6905	4c
6914	Live Oak		3 at 13					12	6914	4c
6920	Blue Oak	12						16	6920	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
6921	Blue Oak					7		8	6921	4c
6922	Blue Oak	14						17	6922	4c
6923	Blue Oak	12						14	6923	4c
6924	Blue Oak	6						9	6924	4c
6925	Blue Oak	5						10	6925	4c
6926	Blue Oak					5		8	6926	4c
6927	Blue Oak		7,8					10	6927	4c
6928	Blue Oak	6						8	6928	4c
6929	Live Oak	4						11	6929	4c
6930	Live Oak	4						13	6930	4c
6931	Live Oak		4,6					13	6931	4c
6932	Blue Oak		3 at 11					8	6932	4c
6933	Blue Oak					12		17	6933	4c
6934	Blue Oak		4,5					12	6934	4c
6935	Blue Oak	9						14	6935	4c
6936	Blue Oak	9						13	6936	4c
6937	Blue Oak			12				16	6937	4c
6938	Blue Oak	8						13	6938	4c
6939	Blue Oak	13						18	6939	4c
6940	Blue Oak	12						16	6940	4c
6941	Blue Oak	5						9	6941	4c
6942	Blue Oak	6						12	6942	4c
6943	Blue Oak	7						13	6943	4c
6944	Blue Oak	9						13	6944	4c
6945	Blue Oak	11						15	6945	4c
6946	Blue Oak	12						15	6946	4c
6947	Blue Oak		5,7					10	6947	4c
6948	Blue Oak	13						14	6948	4c
6949	Blue Oak	11						14	6949	4c
6953	Blue Oak		6,6					10	6953	4c
6958	Blue Oak	13						20	6958	4c
6959	Blue Oak	14						22	6959	4c
6960	Blue Oak	8						15	6960	4c
6961	Blue Oak	9						14	6961	4c
6962	Blue Oak	6						7	6962	4c
6963	Blue Oak		3,6					8	6963	4c
6964	Blue Oak				3,5			10	6964	4c
6965	Blue Oak					12		18	6965	4c
6966	Blue Oak					16		20	6966	4c
6967	Blue Oak	5						7	6967	4c
6968	Blue Oak					7		10	6968	4c
6969	Blue Oak		6,7					13	6969	4c
6970	Blue Oak					18		19	6970	4c
6971	Blue Oak	9						15	6971	4c
6972	Live Oak			4				6	6972	4c
6973	Blue Oak	12						18	6973	4c
6974	Blue Oak					13		14	6974	4c
6975	Blue Oak	5						8	6975	4c
6976	Blue Oak					5		9	6976	4c
6982	Blue Oak		3,5					8	6982	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
6983	Blue Oak	8						8	6983	4c
6984	Blue Oak	8						10	6984	4c
6985	Blue Oak	11						14	6985	4c
6986	Blue Oak	10						13	6986	4c
6987	Blue Oak	12						16	6987	4c
6988	Blue Oak					9		8	6988	4c
6989	Blue Oak		8,8					12	6989	4c
6990	Blue Oak	5						6	6990	4c
6991	Blue Oak	13						17	6991	4c
6992	Blue Oak	7						12	6992	4c
6993	Blue Oak	8						13	6993	4c
6994	Blue Oak	7						6	6994	4c
6995	Blue Oak				9,14			18	6995	4c
6997	Blue Oak		3,7					8	6997	4c
7000	Blue Oak		15,17					18	7000	4c
7001	Blue Oak	6						7	7001	4c
7002	Blue Oak		8,8					16	7002	4c
7003	Blue Oak	6						7	7003	4c
7004	Blue Oak	11						15	7004	4c
7008	Blue Oak	8						14	7008	4c
7009	Blue Oak	5						6	7009	4c
7010	Blue Oak	5						8	7010	4c
7011	Blue Oak	8						13	7011	4c
7012	Blue Oak		4,8					13	7012	4c
7017	Blue Oak	6						7	7017	4c
7020	Blue Oak						6,6	10	7020	4c
7021	Blue Oak					14		19	7021	4c
7022	Blue Oak	9						12	7022	4c
7023	Blue Oak	15						20	7023	4c
7024	Blue Oak		11,12					17	7024	4c
7025	Blue Oak	22						20	7025	4c
7026	Blue Oak		9,9					16	7026	4c
7027	Blue Oak		3,5					8	7027	4c
7028	Blue Oak						6,8	17	7028	4c
7033	Blue Oak					19		22	7033	4c
7035	Blue Oak		6,8					11	7035	4c
7036	Live Oak		18					16	7036	4c
7495	Live Oak		6,10					20	7495	4c
7498	Live Oak		4 at 35					26	7498	4c
7501	Blue Oak	11						13	7501	4c
7505	Blue Oak	7						7	7505	4c
8226	Live Oak	10						17		4c
8227	Live Oak	10						17		4c
8228	Live Oak	10						17		4c
8229	Blue Oak	10						17		4c
8230	Live Oak	10						17		4c
8231	Live Oak	10						17		4c
8232	Live Oak	10						17		4c
8234	Live Oak	10						17		4c
8235	Live Oak	10						17		4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
8236	Blue Oak	10						17		4c
8237	Blue Oak	10						17		4c
8238	Blue Oak	10						17		4c
8239	Live Oak	10						17		4c
8240	Live Oak	10						17		4c
8241	Live Oak	10						17		4c
8242	Live Oak	10						17		4c
8243	Live Oak	10						17		4c
8244	Live Oak	10						17		4c
8245	Live Oak	10						17		4c
8246	Live Oak	10						17		4c
8247	Live Oak	10						17		4c
8248	Live Oak	10						17		4c
8249	Live Oak	10						17		4c

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Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
8250	Live Oak	10						17		4c
8251	Live Oak	10						17		4c
8252	Live Oak	10						17		4c
8253	Live Oak	10						17		4c
8255	Blue Oak	10						17		4c
8256	Live Oak	10						17		4c
8257	Live Oak	10						17		4c
8258	Live Oak	10						17		4c
8259	Live Oak	10						17		4c
8260	Blue Oak	10						17		4c
8261	Live Oak	10						17		4c
8262	Live Oak	10						17		4c
8263	Live Oak	10						17		4c
8264	Live Oak	10						17		4c
8265	Live Oak	10						17		4c
8266	Live Oak	10						17		4c
8267	Live Oak	10						17		4c
8268	Live Oak	10						17		4c
8269	Live Oak	10						17		4c
8270	Live Oak	10						17		4c
8272	Live Oak	10						17		4c
8273	Live Oak	10						17		4c
8274	Blue Oak	10						17		4c
8275	Live Oak	10						17		4c
8276	Blue Oak	10						17		4c
8277	Blue Oak	10						17		4c
8279	Live Oak	10						17		4c
8281	Live Oak	10						17		4c
8288	Blue Oak	10						17		4c
8294	Blue Oak	10						17		4c
8295	Live Oak	10						17		4c
8295	Live Oak	10						17		4c
8297	Blue Oak	10						17		4c
8299	Live Oak	10						17		4c
8303	Live Oak	10						17		4c
8311	Live Oak	10						17		4c
8312	Live Oak	10						17		4c
8313	Blue Oak	10						17		4c
8317	Blue Oak	10						17		4c
8318	Blue Oak	10						17		4c
8319	Live Oak	10						17		4c
8321	Blue Oak	10						17		4c
8322	Blue Oak	10						17		4c
8323	Live Oak	10						17		4c
8325	Live Oak	10						17		4c
8326	Blue Oak	10						17		4c
8329	Live Oak	10						17		4c
8331	Live Oak	10						17		4c
8334	Live Oak	10						17		4c
8335	Live Oak	10						17		4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
8336	Blue Oak	10						17		4c
8337	Live Oak	10						17		4c
8341	Live Oak	10						17		4c
8345	Live Oak	10						17		4c
8346	Live Oak	10						17		4c
8349	Live Oak	10						17		4c
8350	Live Oak	10						17		4c
8351	Live Oak	10						17		4c
8352	Live Oak	10						17		4c
8353	Blue Oak	10						17		4c
8355	Live Oak	10						17		4c
8356	Blue Oak	10						17		4c
8357	Blue Oak	10						17		4c
8359	Live Oak	10						17		4c
8360	Live Oak	10						17		4c
8363	Live Oak	10						17		4c
8365	Live Oak	10						17		4c
8366	Valley Oak	10						17		4c
8367	Blue Oak	10						17		4c
8375	Blue Oak	10						17		4c
8376	Blue Oak	10						17		4c
8377	Blue Oak	10						17		4c
8379	Blue Oak	10						17		4c
8388	Live Oak	10						17		4c
8390	Live Oak	10						17		4c
8394	Live Oak	10						17		4c
8395	Live Oak	10						17		4c
8396	Live Oak	10						17		4c
8397	Live Oak	10						17		4c
8399	Blue Oak	10						17		4c
8400	Live Oak	10						17		4c
8410	Live Oak	10						17		4c
8411	Live Oak	10						17		4c
8412	Live Oak	10						17		4c
8413	Live Oak	10						17		4c
8414	Live Oak	10						17		4c
8416	Live Oak	10						17		4c
8419	Live Oak	10						17		4c
8420	Live Oak	10						17		4c
8422	Live Oak	10						17		4c
8423	Live Oak	10						17		4c
8424	Live Oak	10						17		4c
8426	Live Oak	10						17		4c
8429	Live Oak	10						17		4c
8430	Live Oak	10						17		4c
8431	Live Oak	10						17		4c
8435	Live Oak	10						17		4c
8436	Live Oak	10						17		4c
8437	Live Oak	10						17		4c
8438	Live Oak	10						17		4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
8442	Live Oak	10						17		4c
8446	Live Oak	10						17		4c
8448	Live Oak	10						17		4c
8450	Blue Oak	10						17		4c
8453	Live Oak	10						17		4c
8455	Live Oak	10						17		4c
8456	Live Oak	10						17		4c
8458	Blue Oak	10						17		4c
8460	Live Oak	10						17		4c
8464	Blue Oak	10						17		4c
8467	Blue Oak	10						17		4c
8477	Live Oak	10						17		4c
8479	Blue Oak	10						17		4c
8483	Live Oak	10						17		4c
8488	Blue Oak	10						17		4c
8488	Live Oak	10						17		4c
8489	Live Oak	10						17		4c
8490	Live Oak	10						17		4c
8491	Live Oak	10						17		4c
8674	Valley Oak	10						17		4c
8685	Blue Oak	10						17		4c
8770	Live Oak	10						17		4c
8811	Live Oak	10						17		4c
8812	Live Oak	10						17		4c
8874	Valley Oak	10						17		4c
9096	Blue Oak	10						17		4c
9097	Blue Oak	10						17		4c
9324	Blue Oak	10						15	9324	4c
9325	Blue Oak					7		8	9325	4c
9326	Blue Oak	13						17	9326	4c
9327	Blue Oak					12		14	9327	4c
9328	Blue Oak					14		18	9328	4c
9329	Live Oak		5 at 30					20	9329	4c
9331	Blue Oak	6						8	9331	4c
9332	Blue Oak	18						24	9332	4c
9333	Blue Oak		5,5					8	9333	4c
9334	Blue Oak	7						12	9334	4c
9335	Blue Oak					20		23	9335	4c
9344	Blue Oak	15						20	9344	4c
9345	Blue Oak	16						20	9345	4c
9346	Blue Oak		6,11					18	9346	4c
9347	Blue Oak	8						10	9347	4c
9348	Blue Oak			12				13	9348	4c
9349	Blue Oak	10						12	9349	4c
9350	Blue Oak	13						15	9350	4c
9351	Blue Oak	13						14	9351	4c
9352	Blue Oak		14,14					21	9352	4c
9353	Blue Oak	10						12	9353	4c
9354	Blue Oak		6,6					15	9354	4c
9355	Live Oak		3 at 19					20	9355	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
9356	Live Oak				4 at 24			20	9356	4c
9357	Blue Oak	12						18	9357	4c
9358	Blue Oak	14						19	9358	4c
9359	Blue Oak					7		9	9359	4c
9360	Blue Oak					10		10	9360	4c
9361	Blue Oak	8						16	9361	4c
9362	Blue Oak	8						15	9362	4c
9363	Blue Oak	8						15	9363	4c
10688	Live Oak	10						17		4c
10997	Blue Oak		4,6					10	10997	4c
10998	Blue Oak	18						11	10998	4c
10999	Blue Oak						13,14	19	10999	4c
11013	Live Oak						3 at 19	18	11013	4c
11014									11014	4c
11014									50043	4c
11018	Blue Oak		3 at 24					17	11018	4c
11090	Live Oak		5,6					15	11090	4c
11092	Blue Oak					16		15	11092	4c
11093	Blue Oak	9						12	11093	4c
11094	Blue Oak	12						17	11094	4c
11095	Blue Oak	9						10	11095	4c
11096	Blue Oak	8						13	11096	4c
11097	Blue Oak	14						20	11097	4c
11098	Blue Oak				3,6			10	11098	4c
11099	Live Oak	6						8	11099	4c
11100	Blue Oak					6		6	11100	4c
11101	Live Oak		8 at 27					18	11101	4c
11113	Blue Oak	17						19	11113	4c
11114	Blue Oak	4						10	11114	4c
11115	Live Oak		3 at 29					18	11115	4c
11149	Blue Oak					8		12	11149	4c
11316	Blue Oak	10						17		4c
11863	Live Oak	10						17		4c
11933	Live Oak	10						17		4c
11934	Valley Oak	10						17		4c
11935	Valley Oak	10						17		4c
11936	Valley Oak	10						17		4c
11937	Live Oak	10						17		4c
11938	Valley Oak	10						17		4c
11939	Live Oak	10						17		4c
11940	Valley Oak	10						17		4c
11941	Valley Oak	10						17		4c
11942	Valley Oak	10						17		4c
11943	Valley Oak	10						17		4c
11944	Valley Oak	10						17		4c
11945	Valley Oak	10						17		4c
11946	Valley Oak	10						17		4c
14002	Live Oak		7,8					14	14002	4c
14004	Live Oak			8				18	14004	4c
14005	Blue Oak		4 at 40					23	14005	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
14007	Live Oak			12				19	14007	4c
14008	Blue Oak	8						16	14008	4c
14009	Live Oak			11				20	14009	4c
14010	Blue Oak					8		15	14010	4c
14011	Blue Oak	16						28	14011	4c
14045	Live Oak					9		22	14045	4c
14046	Live Oak						11,13	22	14046	4c
14816	Blue Oak	6						12	14816	4c
14817	Blue Oak	9						15	14817	4c
14832	Blue Oak	5						6	14832	4c
14833	Blue Oak	11						17	14833	4c
14834	Live Oak		5 at 24					18	14834	4c
14835	Blue Oak	6						6	14835	4c
14836	Blue Oak	9						14	14836	4c
14837	Blue Oak				12,12			22	14837	4c
14838	Blue Oak	13						20	14838	4c
14839	Blue Oak	5						10	14839	4c
14840	Blue Oak	10						12	14840	4c
14841	Blue Oak		6,7					13	14841	4c
14842	Blue Oak	11						14	14842	4c
14843	Blue Oak	16						19	14843	4c
14844	Blue Oak			15				22	14844	4c
14931	Blue Oak	6						15	14931	4c
14932	Blue Oak	10						17	14932	4c
14933	Live Oak		3 at 24					18	14933	4c
14943	Blue Oak		4,5					15	14943	4c
14944	Live Oak		8,9					14	14944	4c
14945	Live Oak		5 at 32					22	14945	4c
14946	Live Oak	5						18	14946	4c
14947	Live Oak		4 at 17					18	14947	4c
14948	Live Oak						8,10	20	14948	4c
14949	Blue Oak		3 at 23					16	14949	4c
14950	Blue Oak	10						16	14950	4c
14951	Blue Oak		11,12					16	14951	4c
14952	Blue Oak	5						8	14952	4c
14953	Blue Oak				4 at 27			15	14953	4c
14954	Blue Oak		5,5					12	14954	4c
14955	Blue Oak	12						15	14955	4c
14956	Blue Oak	12						15	14956	4c
14957	Blue Oak	5						9	14957	4c
14958	Blue Oak	13						24	14958	4c
14959	Blue Oak		4,5					8	14959	4c
14960	Blue Oak	5						7	14960	4c
14961									14961	4c
14962	Blue Oak	4						6	14962	4c
14963	Blue Oak	4						10	14963	4c
14964	Blue Oak	5						6	14964	4c
14965	Blue Oak	5						10	14965	4c
14966	Blue Oak	5						6	14966	4c
14967	Blue Oak		2,4					8	14967	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
14968	Blue Oak	5						8	14968	4c
14974	Blue Oak			12				17	14974	4c
14975	Blue Oak	4						5	14975	4c
14976	Blue Oak		3 at 7					6	14976	4c
14977	Live Oak		8 at 40					16	14977	4c
14978	Blue Oak			6				10	14978	4c
14979	Live Oak		5 at 15					8	14979	4c
14980	Blue Oak	7						8	14980	4c
14982	Blue Oak	14						22	14982	4c
14983	Blue Oak	5						7	14983	4c
14984	Blue Oak	5						8	14984	4c
14988	Blue Oak		5,5					10	14988	4c
14989	Blue Oak	5						6	14989	4c
18137	Live Oak		3 at 18					16	18137	4c
18138	Blue Oak	9						14	18138	4c
18139	Blue Oak		10,11					17	18139	4c
18140	Blue Oak		4 at 20					16	18140	4c
18141	Blue Oak	5						10	18141	4c
18142	Live Oak	4						10	18142	4c
18143	Live Oak	5						12	18143	4c
18144	Live Oak				4,6			15	18144	4c
18145	Live Oak				5 at 27			16	18145	4c
18146	Live Oak		6 at 43					15	18146	4c
18147	Blue Oak		5,6					14	18147	4c
18148	Blue Oak	7						14	18148	4c
18149	Live Oak		4,6					15	18149	4c
18150	Live Oak		4,4					10	18150	4c
18151	Blue Oak	5						10	18151	4c
18152	Blue Oak	6						9	18152	4c
18153	Blue Oak	10						14	18153	4c
18154	Live Oak	6						15	18154	4c
18155	Blue Oak		4,6					10	18155	4c
18156	Blue Oak	10						8	18156	4c
18157	Live Oak		4 at 25					16	18157	4c
18158	Live Oak		4 at 25					16	18158	4c
18159	Blue Oak		6,8					12	18159	4c
18160	Blue Oak		4 at 24					15	18160	4c
18187	Live Oak		9,10					17	18187	4c
18208	Live Oak				3,4			10	18208	4c
18643	Live Oak		14 at 71					21	18643	4c
18644	Blue Oak	10						17	18644	4c
18654	Blue Oak	7						10	18654	4c
18655	Live Oak		12 at 60					20	18655	4c
18656	Blue Oak						5,5	17	18656	4c
18657	Blue Oak	11						14	18657	4c
18658	Blue Oak					11		13	18658	4c
18659	Live Oak					6		13	18659	4c
18660	Blue Oak		10,12					20	18660	4c
18661	Live Oak					7		13	18661	4c
18662	Blue Oak	6						13	18662	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
18663	Blue Oak		4 at 32					16	18663	4c
18664	Blue Oak	8						14	18664	4c
23089	Blue Oak					8		17	23089	4c
29490	Blue Oak		7,8					16	29490	4c
29491	Blue Oak		3 at 19					16	29491	4c
29512	Blue Oak						5,6	13	29512	4c
29513	Blue Oak					10		5	29513	4c
29514	Blue Oak			9				16	29514	4c
35908									35908	4c
40314	Blue Oak	10						12	40314	4c
40341	Blue Oak			16				21	40341	4c
40342	Blue Oak	15						17	40342	4c
40343	Blue Oak	31						38	40343	4c
40344	Blue Oak	9						12	40344	4c
40350	Blue Oak						5,11	12	40350	4c
47020	Blue Oak	18						17	47020	4c
47022	Blue Oak					10		15	47022	4c
47023	Blue Oak	9						13	47023	4c
47024	Blue Oak	13						14	47024	4c
47025	Blue Oak	6						7	47025	4c
47026	Blue Oak	13						18	47026	4c
47027	Blue Oak					24		22	47027	4c
47028	Blue Oak	8						10	47028	4c
47029	Live Oak				3,6			16	47029	4c
47030	Live Oak		7 at 42					20	47030	4c
47037	Live Oak				3 at 13			16	47037	4c
47045	Live Oak				3 at 18			20	47045	4c
47046	Live Oak						3 at 22	17	47046	4c
47047	Live Oak						3 at 21	20	47047	4c
47048	Blue Oak	7						11	47048	4c
47051	Live Oak				4 at 16			18	47051	4c
47052	Live Oak	8						15	47052	4c
47064	Live Oak					16		18	47064	4c
47065	Live Oak		3 at 16					18	47065	4c
47066	Live Oak				3 at 13			14	47066	4c
47069	Blue Oak	16						20	47069	4c
47083	Blue Oak	9						14	47083	4c
47125	Blue Oak	6						8	47125	4c
47126	Live Oak		6 at 23					15	47126	4c
47127	Blue Oak					15		18	47127	4c
47133	Blue Oak	15						18	47133	4c
47134	Blue Oak		7,8					17	47134	4c
47135	Blue Oak	17						22	47135	4c
47136	Blue Oak	10						11	47136	4c
47137	Blue Oak					7		16	47137	4c
47138	Blue Oak	11						17	47138	4c
47139	Blue Oak						3,7	13	47139	4c
47140	Blue Oak	6						12	47140	4c
47141	Blue Oak	7						13	47141	4c
47142	Blue Oak	7						10	47142	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
47143	Blue Oak	9						14	47143	4c

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4c

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
47144	Live Oak					15		20	47144	4c
47145	Blue Oak	12						17	47145	4c
47146	Live Oak				3 at 8			10	47146	4c
47147	Live Oak				7,8			16	47147	4c
47148	Live Oak				3 at 11			16	47148	4c
47149	Live Oak		6 at 26					20	47149	4c
47150	Live Oak				5 at 49			20	47150	4c
47151	Live Oak	7						17	47151	4c
47152	Live Oak					12		16	47152	4c
47153	Live Oak					11		16	47153	4c
47154	Blue Oak	9						15	47154	4c
47155	Live Oak		5,5					17	47155	4c
47156	Live Oak						6,10	15	47156	4c
47157	Live Oak		3 at 15					20	47157	4c
47158	Live Oak		4 at 25					20	47158	4c
47159	Live Oak				3 at 17			20	47159	4c
47160	Live Oak						3 at 20	21	47160	4c
47161	Blue Oak	5						13	47161	4c
47162	Live Oak						3 at 22	18	47162	4c
47163	Live Oak		2,5					17	47163	4c
47164	Blue Oak	6						12	47164	4c
47165	Blue Oak	6						7	47165	4c
47166	Blue Oak	8						12	47166	4c
47167	Blue Oak					5		8	47167	4c
47168	Blue Oak	7						10	47168	4c
47169	Live Oak			6				15	47169	4c
47170	Live Oak			13				18	47170	4c
47171	Live Oak		4 at 23					22	47171	4c
47172	Live Oak						4 at 33	20	47172	4c
47173	Live Oak				3 at 23			17	47173	4c
47174	Live Oak	5						10	47174	4c
47175	Blue Oak			10				17	47175	4c
47176	Blue Oak					14		16	47176	4c
47177	Live Oak						6 at 30	22	47177	4c
47178	Blue Oak	5						11	47178	4c
47179	Live Oak				4 at 11			16	47179	4c
47238	Blue Oak	16						24	47238	4c
47239	Blue Oak						9,10	17	47239	4c
47243	Blue Oak	24						25	47243	4c
47387	Blue Oak	12						17	47387	4c
50451	terior Live Oak			12				22	50451	4c

Clover Valley Partners

Clover Valley

City of Rocklin, CA

Tree Summary - Phase 4d

(All data available on Trees)

Stantec

Number and Caliper Inches of Trees Removed

Tree Species	Number of Fair trees Removed	Caliper Inches of Fair Trees Removed	Caliper Inches of Fair Multi-Stem Trees Removed	Number of Fair/Poor trees Removed	Caliper Inches of Fair/Poor Trees Removed	Caliper Inches of Multi-Stem Fair/Poor Trees Removed	Number of Poor trees Removed	Caliper Inches of Poor Trees Removed	Caliper Inches of Poor Multi-Stem Trees Removed
Blue Oak	58	296	389	1	14				
Interior Live Oak	1		10						
Live Oak	288	439	5668	16	20	324	20	38	292
Valley Oak	19	160	144						
Misc	2	40							
Total	368	935	6211	17	34	324	20	38	292

	Number of trees Removed	Caliper Inches of Trees Removed	Caliper Inches of Multi-Stem Trees Removed	Total Caliper Inches of Trees Removed
Fair Trees	368	935	6211	7146
Fair / Poor Trees	17	34	324	358
Fair & Fair / Poor Trees	**385**	969	6535	**7504**
Poor Trees	**20**	38	292	**330**

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4d

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
6112	Blue Oak		8,8					16	6112	4d
6113	Live Oak		3 at 11					13	6113	4d
6114	Live Oak		6 at 34					16	6114	4d
6115	Live Oak		6 at 40					19	6115	4d
6116	Live Oak		6 at 10					19	6116	4d
6117	Live Oak		3,5					15	6117	4d
6118	Live Oak		6,7					15	6118	4d
6119	Valley Oak	11						20	6119	4d
6120	Live Oak						4,4	13	6120	4d
6121	Blue Oak	7						12	6121	4d
6122	Live Oak		3 at 19					17	6122	4d
6123	Live Oak		3 at 10					15	6123	4d
6124	Live Oak		7 at 18					16	6124	4d
6125	Live Oak		4 at 12					12	6125	4d
6126	Live Oak		4 at 14					13	6126	4d
6130	Live Oak	6						12	6130	4d
6145	Live Oak		4 at 25					20	6145	4d
6146	Live Oak		5,6					18	6146	4d
6147	Live Oak				15 at 45			17	6147	4d
6148	Blue Oak	8						17	6148	4d
6149	Live Oak	7						19	6149	4d
6150	Live Oak	6						14	6150	4d
6151	Live Oak		3 at 16					22	6151	4d
6152	Live Oak		3 at 18					20	6152	4d
6153	Live Oak		4 at 33					25	6153	4d
6175	Live Oak		5 at 24					20	6175	4d
6177	Live Oak	5						10	6177	4d
6178	Live Oak		5 at 29					18	6178	4d
6179	Live Oak	9						14	6179	4d
6180	Live Oak	5						12	6180	4d
6181	Live Oak		3 at 13					15	6181	4d
6182	Live Oak		5 at 16					15	6182	4d
6183	Valley Oak		3 at 19					15	6183	4d
6184	Blue Oak		6,7					16	6184	4d
6185	Live Oak		4 at 26					14	6185	4d
6186	Live Oak		5 at 36					16	6186	4d
6187	Live Oak		9,9					15	6187	4d
6188	Live Oak		4 at 20					16	6188	4d
6189	Blue Oak	5						12	6189	4d
6190	Live Oak		5,8					15	6190	4d
6191	Live Oak				5,9			14	6191	4d
6192	Live Oak		4 at 12					10	6192	4d
6194	Live Oak				5,6			16	6194	4d
6205	Live Oak						3 at 12	18	6205	4d
6206	Live Oak		4 at 26					23	6206	4d
6207	Live Oak		6 at 30					15	6207	4d
6208	Live Oak		3 at 21					17	6208	4d
6209	Live Oak		4 at 25					17	6209	4d
6237	Live Oak		7 at 47					22	6237	4d
6238	Blue Oak	10						17	6238	4d

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4d

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
6334	Live Oak		7 at 33					16	6334	4d
6335	Blue Oak		3 at 17					15	6335	4d
6336	Live Oak		7 at 26					16	6336	4d
6337	Live Oak		13 at 57					19	6337	4d
6338	Live Oak	5						14	6338	4d
6339	Blue Oak			14				18	6339	4d
6340	Live Oak						10 at 74	27	6340	4d
6341	Live Oak		3 at 24					19	6341	4d
6342	Live Oak		6 at 30					18	6342	4d
6343	Live Oak	7						12	6343	4d
6344	Blue Oak		3 at 30					22	6344	4d
6345	Blue Oak		8,13					18	6345	4d
6346	Blue Oak	12						17	6346	4d
6353	Blue Oak	13						17	6353	4d
6362	Live Oak		8 at 46					19	6362	4d
6363	Live Oak		3 at 17					16	6363	4d
6364	Blue Oak		7,7					12	6364	4d
6365	Blue Oak	10						15	6365	4d
6366	Blue Oak		4 at 23					14	6366	4d
6367	Blue Oak		7,7					12	6367	4d
6419	Live Oak		13 at 70					23	6419	4d
6420	Blue Oak	9						12	6420	4d
6423	Live Oak		7 at 42					23	6423	4d
6424	Live Oak		7,7					16	6424	4d
6425	Live Oak		4 at 31					26	6425	4d
6426	Live Oak		6,10					18	6426	4d
6427	Live Oak		8 at 27					14	6427	4d
6428	Live Oak		7,8					17	6428	4d
6429	Live Oak		8,10					14	6429	4d
6430	Live Oak	12						15	6430	4d
6431	Live Oak		4,6					14	6431	4d
6432	Live Oak	8						17	6432	4d
6433	Live Oak		3 at 27					19	6433	4d
6455	Live Oak		7 at 45					18	6455	4d
6462	Live Oak		3 at 18					17	6462	4d
6463	Live Oak		8,10					18	6463	4d
6464	Blue Oak		8,9					16	6464	4d
6465	Live Oak		5 at 30					20	6465	4d
6466	Live Oak		4 at 27					20	6466	4d
6467	Live Oak		4 at 32					20	6467	4d
6468	Live Oak	9						16	6468	4d
6495	Live Oak			6				12	6495	4d
6496	Live Oak	10						15	6496	4d
6497	Live Oak		6,7					8	6497	4d
6498	Live Oak	9						13	6498	4d
6499	Live Oak		5,6					13	6499	4d
6500	Live Oak		4,7					12	6500	4d
6501	Live Oak		12,14					17	6501	4d
6502	Live Oak		5 at 16					12	6502	4d
6503	Live Oak	6						8	6503	4d

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4d

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
6504	Live Oak				5,7			14	6504	4d
6505	Live Oak		7,10					16	6505	4d
6506	Live Oak	9						13	6506	4d
6507	Live Oak		7,8,9					18	6507	4d
6508	Live Oak					7		16	6508	4d
6509	Live Oak					7		15	6509	4d
6510	Live Oak					11		13	6510	4d
6511									6511	4d
6514	Live Oak		7,10					13	6514	4d
6515	Live Oak	7						14	6515	4d
6516	Live Oak	7						9	6516	4d
6517	Live Oak		6,7					13	6517	4d
6518	Live Oak	9						12	6518	4d
6519	Live Oak		7,8					13	6519	4d
6520	Live Oak		5,6					12	6520	4d
6521	Live Oak					8		8	6521	4d
6522	Live Oak	6						6	6522	4d
6523	Live Oak				4 at 20			13	6523	4d
6524	Live Oak		3,3					12	6524	4d
6525	Live Oak		6,8,8					13	6525	4d
6526	Live Oak		7,9					13	6526	4d
6527	Live Oak						3 at 18	12	6527	4d
6528	Live Oak		6,6					18	6528	4d
6529	Live Oak		6,6					12	6529	4d
6530	Live Oak						7	10	6530	4d
6531	Blue Oak	6						6	6531	4d
6532	Live Oak		5 at 20					14	6532	4d
6533	Live Oak		5 at 25					22	6533	4d
6534	Live Oak		3 at 16					12	6534	4d
6535	Live Oak		4 at 22					21	6535	4d
6536	Live Oak		3 at 12					13	6536	4d
6537	Live Oak		3 at 12					13	6537	4d
6538	Live Oak	7						10	6538	4d
6539	Blue Oak	6						6	6539	4d
6540	Live Oak		5 at 16					19	6540	4d
6541	Live Oak	10						12	6541	4d
6542	Live Oak	7						9	6542	4d
6543	Live Oak		6,6					8	6543	4d
6544	Live Oak		7,8					13	6544	4d
6545	Live Oak						5 at 16	12	6545	4d
6546	Live Oak						7,7	12	6546	4d
6547	Live Oak		6,6					9	6547	4d
6548	Live Oak		3 at 10					8	6548	4d
6553	Blue Oak	6						8	6553	4d
6568	Blue Oak	10						12	6568	4d
6643	Live Oak	12						17	6643	4d
6644	Live Oak	9						16	6644	4d
6645	Live Oak		8,10					18	6645	4d
6646	Live Oak	11						13	6646	4d
6647	Live Oak		7,10					18	6647	4d

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4d

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
8516	Blue Oak	12						14	8516	4d
8518	Live Oak				3 at 16			17	8518	4d
8519	Live Oak		4 at 23					20	8519	4d
8520	Live Oak	6						14	8520	4d
8521	Live Oak		4 at 20					19	8521	4d
8522	Live Oak		4,6					14	8522	4d
8523	Live Oak		4 at 23					14	8523	4d
8524	Live Oak		5 at 24					12	8524	4d
8525	Live Oak		3 at 18					14	8525	4d
8541	Blue Oak		5,7					15	8541	4d
8544	Live Oak		13 at 83					19	8544	4d
8545	Blue Oak	12						13	8545	4d
8547	Live Oak		7 at 42					26	8547	4d
8548	Live Oak		3 at 15					15	8548	4d
8549	Live Oak		4 at 26					20	8549	4d
8550	Live Oak		7,18					25	8550	4d
8551	Live Oak	10						15	8551	4d
8552	Live Oak		3 at 18					18	8552	4d
8553	Live Oak		3 at 24					20	8553	4d
8556	Live Oak		6 at 41					18	8556	4d
8557	Live Oak		4 at 23					15	8557	4d
8558	Live Oak		3 at 15					16	8558	4d
8559	Live Oak		5 at 30					18	8559	4d
8560	Live Oak		6,7					18	8560	4d
8561	Live Oak		5,10					17	8561	4d
8562	Live Oak		6 at 29					19	8562	4d
8563	Live Oak		3 at 16					15	8563	4d
8564	Blue Oak	10						17	8564	4d
8565	Valley Oak		9,2					17	8565	4d
8566	Live Oak		9 at 57					18	8566	4d
8568	Live Oak		3 at 20					17	8568	4d
8569	Live Oak		3 at 23					20	8567	4d
8578	Live Oak		5 at 15					11	8578	4d
8579	Blue Oak		7,8					12	8579	4d
8580	Live Oak		7 at 43					18	8580	4d
8581	Blue Oak	7						8	8581	4d
8582	Blue Oak		6,7					11	8582	4d
8588	Live Oak		3 at 21					17	8588	4d
8625	Live Oak		5 at 36					22	8625	4d
8626	Live Oak		8 at 48					23	8626	4d
8627	Live Oak		4 at 24					20	8627	4d
8628	Live Oak		6 at 22					17	8628	4d
8629	Live Oak		3 at 18					16	8629	4d
8630	Live Oak		4 at 15					18	8630	4d
8631	Live Oak		3 at 22					20	8631	4d
8632	Live Oak		3 at 17					18	8632	4d
8633	Live Oak		5 at 19					19	8633	4d
8634	Live Oak		5 at 40					23	8634	4d
8635	Live Oak		8 at 41					25	8635	4d
8638	Blue Oak	10						12	8638	4d

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4d

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
8639	Live Oak	7						8	8639	4d
8640	Live Oak		6,6					9	8640	4d
8641	Live Oak		6,6					12	8641	4d
8642	Blue Oak	8						12	8642	4d
8644	Live Oak		5 at 28					14	8644	4d
8645	Live Oak		7,12					16	8645	4d
8646	Live Oak						5 at 20	13	8646	4d
8647	Live Oak						4 at 24	15	8647	4d
8648	Blue Oak		7 at 28					8	8643	4d
8648	Live Oak	7						14	8648	4d
8649	Live Oak		4 at 18					13	8649	4d
8650	Live Oak		5 at 25						8650	4d
8651	Live Oak		6,9,14					18	8651	4d
8652	Live Oak		3 at 28					21	8652	4d
8653	Live Oak		3 at 20					16	8653	4d
8654	Live Oak		3 at 16					12	8654	4d
8655	Live Oak		9,13					16	8655	4d
8656	Live Oak	12						16	8656	4d
8657	Live Oak		5 at 24					20	8657	4d
8658	Live Oak	7						12	8658	4d
8659	Live Oak		5 at 23					16	8659	4d
8660	Live Oak			8				12	8660	4d
8662	Live Oak						5 at 10	8	8662	4d
8666	Valley Oak	23						30	8666	4d
8668	Valley Oak	21						24	8668	4d
11947	Valley Oak	10						17		4d
11948	Valley Oak	10						17		4d
11949	Valley Oak	10						17		4d
11950	Valley Oak	10						17		4d
11951	Valley Oak	10						17		4d
11952	Valley Oak	10						17		4d
11953	Valley Oak	10						17		4d
11954	Valley Oak	10						17		4d
11955	Valley Oak	10						17		4d
14014	Live Oak		7,15					18	14014	4d
14015	Live Oak	15						17	14015	4d
14016	Live Oak	19						24	14016	4d
14017	Live Oak		10,13					18	14017	4d
14018	Live Oak		3 at 41					22	14018	4d
14019	Valley Oak	11						15	14019	4d
14020	Live Oak	15						19	14020	4d
14021	Live Oak		3 at 24					20	14021	4d
14089	Live Oak		3 at 27					19	14089	4d
14090	Live Oak		4 at 30					27	14090	4d
14091	Live Oak		11 at 56					21	14091	4d
14092	Live Oak	5						8	14092	4d
14093	Live Oak		6,6					13	14093	4d
14094	Live Oak		7 at 38					22	14094	4d
14095	Live Oak	5						16	14095	4d
14096	Live Oak	7						16	14096	4d

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4d

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
14097	Valley Oak	18						26	14097	4d
14098	Live Oak	6						10	14098	4d
14099	Live Oak		3 at 14					15	14099	4d
14100	Live Oak	15						20	14100	4d
14101	Live Oak		3 at 15					20	14101	4d
14102	Live Oak	6						22	14102	4d
14103	Live Oak		3 at 20					19	14103	4d
14104	Live Oak		5 at 25					20	14104	4d
14105	Live Oak		7 at 25					20	14105	4d
14106	Live Oak		8 at 21					25	14106	4d
14115	Live Oak		3 at 15					17	14115	4d
14116	Live Oak		5 at 20					18	14116	4d
14118	Live Oak		8 at 41					20	35909	4d
14119	Live Oak		3 at 12					13	35910	4d
14120	Live Oak		5 at 23					16	14120	4d
14121	Live Oak		10 at 49					17	14121	4d
14122	Live Oak		7,7					15	14122	4d
14123	Live Oak		8 at 40					18	14123	4d
14124	Blue Oak		3 at 19					16	14124	4d
14125	Live Oak		4,4					8	14125	4d
14130	Live Oak		6,6					15	14130	4d
14131	Blue Oak		8,8					15	14131	4d
14132	Live Oak		3 at 20					15	14132	4d
14133	Live Oak	6						10	14133	4d
14135	Live Oak		4 at 46					30	14135	4d
14137	Live Oak	7						15	14137	4d
14143	Live Oak		10 at 43					22	14143	4d
14147	Blue Oak	12						18	14147	4d
14148	Blue Oak	10						11	14148	4d
14149	Live Oak		12 at 72					18	14149	4d
14150	Blue Oak		5,6					8	14150	4d
14151	Live Oak		4 at 28					19	14151	4d
14152	Blue Oak		3 at 16					12	14152	4d
14153	Live Oak		3 at 21					15	14153	4d
14154	Live Oak		7 at 49					22	14154	4d
14180	Blue Oak		4 at 32					19	14180	4d
14184	Live Oak	10						17		4d
14243	Valley Oak	11						16	14243	4d
14244	Live Oak		3 at 18					17	14244	4d
14248	Live Oak		11 at 61					28	14248	4d
14249	Live Oak		3 at 14					20	14249	4d
14250	Live Oak	6						16	14250	4d
14251	Live Oak						7 at 39	23	14251	4d
14252	Live Oak		8 at 57					24	14252	4d
14256	Live Oak		9 at 52					17	14256	4d
14257	Live Oak		5 at 27					22	14257	4d
14258	Blue Oak	8						16	14258	4d
14259	Live Oak		5 at 31					18	14259	4d
14260	Blue Oak	7						12	14260	4d
14261	Live Oak		4 at 32					25	14261	4d

Clover Valley Partners

Clover Valley

City of Rocklin, CA

Tree Summary - Phase 4e

(All data available on Trees)

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Number and Caliper Inches of Trees Removed

Tree Species	Number of Fair trees Removed	Caliper Inches of Fair Trees Removed	Caliper Inches of Fair Multi-Stem Trees Removed	Number of Fair/Poor trees Removed	Caliper Inches of Fair/Poor Trees Removed	Caliper Inches of Multi-Stem Fair/Poor Trees Removed	Number of Poor trees Removed	Caliper Inches of Poor Trees Removed	Caliper Inches of Poor Multi-Stem Trees Removed
Blue Oak	8	40	44						
Live Oak	39	115	373	9	9	97	4	10	55
Valley Oak	1	22							
Misc	3	39							
Total	51	216	417	9	9	97	4	10	55

	Number of trees Removed	Caliper Inches of Trees Removed	Caliper Inches of Multi-Stem Trees Removed	Total Caliper Inches of Trees Removed
Fair Trees	51	216	417	633
Fair / Poor Trees	9	9	97	106
Fair & Fair / Poor Trees	**60**	225	514	**739**
Poor Trees	**4**	10	55	**65**

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4e

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
3450									3450	4e
3493									3493	4e
3569	Blue Oak		3 at 13					17	3569	4e
3579	Live Oak					10		10	3579	4e
3726									3726	4e
3756	Blue Oak	8						12	3756	4e
3768	Live Oak		5 at 45					21	3768	4e
3813	Live Oak	9						18	3813	4e
3960	Live Oak	7						15	3960	4e
4046	Live Oak	6						12	4046	4e
4193	Live Oak				4 at 15			18	4193	4e
4223	Live Oak						4 at 31	18	4223	4e
9913	Blue Oak	9						16	9913	4e
9914	Live Oak	5						15	9914	4e
9915	Live Oak		6,6					17	9915	4e
9916	Blue Oak	5						9	9916	4e
9917	Blue Oak	8						14	9917	4e
9918	Live Oak		3,4					10	9918	4e
9919	Blue Oak		5 at 33					14	9919	4e
9920	Blue Oak	5						6	9920	4e
9921	Blue Oak	5						12	9921	4e
9922	Live Oak		5 at 26					18	9922	4e
9923	Live Oak		3 at 20					20	9923	4e
9924	Live Oak	7						10	9924	4e
9925	Live Oak				7 at 16			13	9925	4e
9926	Live Oak		3 at 12					17	9926	4e
9927	Live Oak	8						18	9927	4e
9928	Live Oak		4,7					14	9928	4e
9929	Live Oak		3 at 18					17	9929	4e
9930	Live Oak	5						10	9930	4e
9952	Live Oak				3 at 11			10	9952	4e
9953	Live Oak	6						11	9953	4e
9954	Live Oak		8,8					16	9954	4e
9955	Live Oak	9						15	9955	4e
9957	Live Oak				3 at 15			17	9957	4e
9959	Live Oak	8						18	9959	4e
9960	Live Oak				3 at 12			16	9960	4e
9964	Live Oak				3 at 10			16	9964	4e
9965	Live Oak	6						14	9965	4e
9966	Live Oak	5						13	9966	4e
9967	Live Oak	4						8	9967	4e
9968	Live Oak	6						6	9968	4e
9969	Live Oak						5,5	17	9969	4e
9970	Live Oak				4,5			16	9970	4e
9971	Live Oak		7 at 50					19	9971	4e
9972	Live Oak		4 at 20					15	9972	4e
9973	Live Oak		5 at 31					18	9973	4e
9986	Live Oak		4,5					10	9986	4e
9987	Live Oak		3 at 11					15	9987	4e
9988	Live Oak		3 at 13					14	9988	4e

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4e

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
9989	Live Oak		3 at 17					17	9989	4e
9990	Live Oak	10						16	9990	4e
9991	Live Oak	5						13	9991	4e
9992	Live Oak		4,6					17	9992	4e
9993	Live Oak	4						8	9993	4e
16391	Live Oak			9				20	16391	4e
19676	Live Oak	10						17		4e
19678	Live Oak	10						17		4e
19691	Live Oak	10						17		4e
19862	Live Oak	10						17		4e
19863	Live Oak	10						17		4e
19864	Live Oak	10						17		4e
20000	Valley Oak	10						17		4e
20009	Live Oak	10						17		4e

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Clover Valley Partners

Clover Valley

City of Rocklin, CA

Tree Summary - Phase 4f

(All data available on Trees)

Number and Caliper Inches of Trees Removed

Tree Species	Number of Fair trees Removed	Caliper Inches of Fair Trees Removed	Caliper Inches of Fair Multi-Stem Trees Removed	Number of Fair/Poor trees Removed	Caliper Inches of Fair/Poor Trees Removed	Caliper Inches of Multi-Stem Fair/Poor Trees Removed	Number of Poor trees Removed	Caliper Inches of Poor Trees Removed	Caliper Inches of Poor Multi-Stem Trees Removed
Blue Oak	500	4212	1903	67	545	409	114	1081	471
Live Oak	28	40	533	17	17	322	32	96	424
Valley Oak	1		24						
Misc	4	56							
Total	533	4308	2460	84	562	731	146	1177	895

	Number of trees Removed	Caliper Inches of Trees Removed	Caliper Inches of Multi-Stem Trees Removed	Total Caliper Inches of Trees Removed
Fair Trees	533	4308	2460	6768
Fair / Poor Trees	84	562	731	1293
Fair & Fair / Poor Trees	**617**	4870	3191	**8061**
Poor Trees	**146**	1177	895	**2072**

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4f

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
1180	Blue Oak				9,10			13	1180	4f
1181	Blue Oak			13				15	1181	4f
1182	Blue Oak	12						14	1182	4f
1183	Blue Oak					15		16	1183	4f
1184	Blue Oak				3 at 43			20	1184	4f
1185	Blue Oak	14						13	1185	4f
1186	Blue Oak		3 at 40					22	1186	4f
1187	Blue Oak	17						16	1187	4f
1188	Blue Oak	14						13	1188	4f
1189	Blue Oak		3 at 27					14	1189	4f
1190	Blue Oak	17						17	1190	4f
1191	Blue Oak				10,14			16	1191	4f
1192	Blue Oak	12						15	1192	4f
1194	Blue Oak	9						9	1194	4f
1195	Blue Oak						3 at 18	10	1195	4f
1196	Blue Oak	7						14	1196	4f
1197	Blue Oak	20						16	1197	4f
1198	Blue Oak	11						15	1198	4f
1199	Blue Oak	11						14	1199	4f
1401	Blue Oak		3 at 26					14	1401	4f
1403	Blue Oak						8,19	16	1403	4f
1404	Blue Oak	8						13	1404	4f
1405	Blue Oak			11				17	1405	4f
1406	Blue Oak	7						10	1406	4f
1407	Blue Oak	15						17	1407	4f
1408	Blue Oak					11		10	1408	4f
1409	Blue Oak						8,11	15	1409	4f
1410	Blue Oak			11				12	1410	4f
1411	Blue Oak	9						12	1411	4f
1412	Blue Oak					12		15	1412	4f
1413	Blue Oak				8,10			13	1413	4f
1414	Blue Oak			11				15	1414	4f
1415	Blue Oak	8						12	1415	4f
1416	Blue Oak	8						10	1416	4f
1417	Blue Oak	7						8	1417	4f
1418	Blue Oak					10		8	1418	4f
1419	Blue Oak	10						8	1419	4f
1420	Blue Oak	15						19	1420	4f
1422	Live Oak					17		12	1422	4f
1426	Live Oak						3 at 16	12	1426	4f
1427	Blue Oak	6						8	1427	4f
1439	Blue Oak		11,12					17	1439	4f
1440	Blue Oak	13						15	1440	4f
1441	Live Oak					8		11	1441	4f
1442	Blue Oak	10						10	1442	4f
1443	Live Oak		4 at 33					16	1443	4f
1444	Live Oak						8,8	13	1444	4f
1445	Live Oak						3 at 20	15	1445	4f
1451	Live Oak						3 at 24	16	1451	4f
1454	Blue Oak			12				10	1454	4f

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4f

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
1455	Blue Oak		8,10					15	1455	4f
1456	Blue Oak	10						11	1456	4f
1458	Blue Oak		5,7					14	1458	4f
1461	Blue Oak		3 at 25					12	1461	4f
1462	Live Oak				9 at 45			18	1462	4f
1463	Blue Oak		6,7					8	1463	4f
1464	Blue Oak	9						8	1464	4f
1465	Blue Oak			8				8	1465	4f
1466	Blue Oak					10		9	1466	4f
1467	Blue Oak		6,6					8	1467	4f
1468	Blue Oak		6,10					12	1468	4f
1469	Blue Oak	14						14	1469	4f
1470	Blue Oak					11		13	1470	4f
1471	Blue Oak	8						10	1471	4f
1472	Blue Oak					9		11	1472	4f
1473	Blue Oak	12						11	1473	4f
1474	Blue Oak		8,10					14	1474	4f
1475	Blue Oak			13				16	1475	4f
1476	Blue Oak		5 at 20					14	1476	4f
1477	Blue Oak	7						8	1477	4f
1478	Blue Oak			13				18	1478	4f
1479	Blue Oak					9		8	1479	4f
1480	Blue Oak			15				16	1480	4f
1481	Blue Oak					8		12	1481	4f
1482	Blue Oak	11						17	1482	4f
1483	Blue Oak			11				16	1483	4f
1484	Blue Oak					10		14	1484	4f
1485	Blue Oak					9		8	1485	4f
1486	Blue Oak					22		26	1486	4f
1488	Blue Oak	9						10	1488	4f
1489	Blue Oak			16				12	1489	4f
1490	Blue Oak					21		24	1490	4f
1491	Blue Oak	6						8	1491	4f
1492	Blue Oak	10						16	1492	4f
1493	Blue Oak					18		26	1493	4f
1494	Blue Oak	13						20	1494	4f
1495	Blue Oak	11						17	1495	4f
1496	Blue Oak	18						18	1496	4f
1497	Blue Oak		6,7					15	1497	4f
1498	Blue Oak	21						24	1498	4f
1499	Blue Oak						13,14	18	1499	4f
1500	Blue Oak	10						14	1500	4f
1501	Blue Oak	15						20	1501	4f
1502	Blue Oak	10						12	1502	4f
1503	Blue Oak	9						12	1503	4f
1504	Blue Oak	8						15	1504	4f
1505	Blue Oak	14						15	1505	4f
1506	Blue Oak	14						17	1506	4f
1507	Blue Oak	9						13	1507	4f

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4f

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
1508	Blue Oak	14						18	1508	4f
1509	Blue Oak		5,5					6	1509	4f
1510	Blue Oak						3 at 15	8	1510	4f
1511	Blue Oak				12,13			17	1511	4f
1512	Blue Oak	20						20	1512	4f
1513	Blue Oak		11,15					20	1513	4f
1514	Blue Oak	18						16	1514	4f
1515	Blue Oak				3 at 23			12	1515	4f
1516	Blue Oak	8						9	1516	4f
1517	Blue Oak	16						23	1517	4f
1518	Blue Oak			10				14	1518	4f
1519	Blue Oak			19				22	1519	4f
1520	Blue Oak						11,13	17	1520	4f
1521	Blue Oak				7,11			11	1521	4f
1522	Blue Oak	14						17	1522	4f
1523	Blue Oak	8						13	1523	4f
1524	Blue Oak	7						10	1524	4f
1525	Blue Oak	12						13	1525	4f
1526	Blue Oak	8						6	1526	4f
1527	Blue Oak	9						8	1527	4f
1528	Blue Oak		6,6					10	1528	4f
1529	Blue Oak			12				14	1529	4f
1530	Blue Oak	9						15	1530	4f
1531	Blue Oak	21						19	1531	4f
1532	Blue Oak	13						16	1532	4f
1533	Blue Oak	14						18	1533	4f
1534	Blue Oak	13						11	1534	4f
1535	Blue Oak		10,10					15	1535	4f
1536	Blue Oak				11,15			15	1536	4f
1537	Blue Oak		3 at 35					19	1537	4f
1538	Blue Oak	14						12	1538	4f
1539	Blue Oak	12						13	1539	4f
1540	Blue Oak	15						16	1540	4f
1541	Blue Oak			12				13	1541	4f
1542	Blue Oak	14						17	1542	4f
1543	Blue Oak					14		17	1543	4f
1544	Blue Oak					14		16	1544	4f
1545	Blue Oak					15		15	1545	4f
1546	Blue Oak	6						7	1546	4f
1547	Blue Oak					9		6	1547	4f
1548	Blue Oak					15		11	1548	4f
1549	Blue Oak					16		18	1549	4f
1550	Blue Oak	10						9	1550	4f
1551	Blue Oak	15						16	1551	4f
1552	Blue Oak	8						13	1552	4f
1553	Blue Oak	21						22	1553	4f
1554	Blue Oak	16						17	1554	4f
1555	Blue Oak	14						22	1555	4f
1556	Blue Oak		18					22	1556	4f
1557	Blue Oak		3 at 26					13	1557	4f

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4f

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
1558	Blue Oak	12						11	1558	4f
1559	Blue Oak	10						12	1559	4f
1561	Blue Oak	14						15	1561	4f
1562	Blue Oak					16		12	1562	4f
1563	Blue Oak	21						23	1563	4f
1564	Blue Oak			14				16	1564	4f
1565	Blue Oak			8				8	1565	4f
1566	Blue Oak					12		15	1566	4f
1567	Blue Oak	15						17	1567	4f
1568	Blue Oak				4,7			10	1568	4f
1569	Blue Oak	12						17	1569	4f
1570	Blue Oak	11						15	1570	4f
1571	Blue Oak		5,6					13	1571	4f
1572	Blue Oak	13						19	1572	4f
1573	Blue Oak						8,8	11	1573	4f
1574	Blue Oak	8						12	1574	4f
1575	Blue Oak	15						17	1575	4f
1576	Blue Oak	8						11	1576	4f
1577	Blue Oak	9						9	1577	4f
1578	Blue Oak	12						16	1578	4f
1579	Blue Oak		3 at 19					17	1579	4f
1580	Blue Oak	16						16	1580	4f
1581	Blue Oak	11						14	1581	4f
1582	Blue Oak		5,6					8	1582	4f
1583	Blue Oak	17						18	1583	4f
1584	Blue Oak	9						17	1584	4f
1585	Blue Oak					12		13	1585	4f
1586	Blue Oak	11						15	1586	4f
1587	Blue Oak	10						12	1587	4f
1588	Blue Oak		5,6					12	1588	4f
1589	Blue Oak	9						14	1589	4f
1590	Blue Oak	10						13	1590	4f
1591	Blue Oak					11		13	1591	4f
1592	Blue Oak	12						16	1592	4f
1593	Blue Oak						6,9	8	1593	4f
1594	Blue Oak		8,10					13	1594	4f
1595	Blue Oak	7						10	1595	4f
1596	Blue Oak	11						15	1596	4f
1597	Blue Oak	14						12	1597	4f
1598	Blue Oak	14						15	1598	4f
1599	Blue Oak	8						13	1599	4f
1600	Blue Oak	15						18	1600	4f
1601	Blue Oak					13		17	1601	4f
1602	Blue Oak			8				15	1602	4f
1603	Blue Oak	15						16	1603	4f
1604	Blue Oak		5,13					14	1604	4f
1605	Blue Oak			12				16	1605	4f
1606	Blue Oak	11						13	1606	4f
1607	Blue Oak		6,7					15	1607	4f

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4f

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
1608	Blue Oak					14		16	1608	4f
1609	Blue Oak		9,10					15	1609	4f
1610	Blue Oak						6,9	14	1610	4f
1611	Blue Oak	18						19	1611	4f
1612	Blue Oak	14						17	1612	4f
1613	Blue Oak	14						18	1613	4f
1614	Blue Oak						13,13	18	1614	4f
1615	Blue Oak					15		16	1615	4f
1616	Blue Oak	9						15	1616	4f
1617	Blue Oak		4 at 36					17	1617	4f
1620	Blue Oak						5,14	17	1620	4f
1621	Blue Oak	14						19	1621	4f
1622	Blue Oak		6,9					15	1622	4f
1623	Blue Oak		7,7					15	1623	4f
1635	Blue Oak	18						20	1635	4f
1643	Live Oak			6				13	1643	4f
1645	Blue Oak	10						15	1645	4f
1646	Blue Oak					14		17	1646	4f
1647	Blue Oak	18						20	1647	4f

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4f

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
1648	Blue Oak	12						16	1648	4f
1649	Live Oak						3 at 37	18	1649	4f
1652	Blue Oak		5,6					14	1652	4f
1653	Live Oak				4 at 20			17	1653	4f
1654	Live Oak		3 at 48					17	1654	4f
1655	Blue Oak	8						15	1655	4f
1656	Blue Oak			9				14	1656	4f
1657	Live Oak						13,13	16	1657	4f
1658	Blue Oak	13						16	1658	4f
1659	Blue Oak		3 at 18					15	1659	4f
1660	Blue Oak	14						18	1660	4f
1661	Blue Oak					16		19	1661	4f
1662	Blue Oak	7						8	1662	4f
1663	Blue Oak	8						12	1663	4f
1664	Blue Oak	9						10	1664	4f
1665	Blue Oak			10				14	1665	4f
1666	Blue Oak			13				15	1666	4f
1667	Blue Oak	10						15	1667	4f
1668	Blue Oak	9						14	1668	4f
1669	Live Oak					11		13	1669	4f
1670	Blue Oak					23		22	1670	4f
1671	Blue Oak	14						13	1671	4f
1672	Blue Oak	11						14	1672	4f
1673	Blue Oak					16		18	1673	4f
1674	Blue Oak	6						10	1674	4f
1675	Blue Oak		6,17					18	1675	4f
1677	Blue Oak	10						12	1677	4f
1678	Blue Oak		8,9					14	1678	4f
1679	Blue Oak	15						15	1679	4f
1680	Blue Oak			11				14	1680	4f
1681	Blue Oak	12						16	1681	4f
1682	Blue Oak	13						14	1682	4f
1683	Blue Oak	6						10	1683	4f
1684	Blue Oak		15,19					22	1684	4f
1685	Blue Oak				5,15			15	1685	4f
1686	Blue Oak	18						20	1686	4f
1687	Blue Oak	12						13	1687	4f
1688	Blue Oak	16						17	1688	4f
1689	Blue Oak					13		14	1689	4f
1690	Blue Oak	10						15	1690	4f
1691	Blue Oak	12						16	1691	4f
1692	Blue Oak	9						15	1692	4f
1693	Blue Oak	15						18	1693	4f
1694	Blue Oak		4,6					13	1694	4f
1695	Blue Oak	17						18	1695	4f
1696	Blue Oak				7,11			14	1696	4f
1697	Blue Oak	13						18	1697	4f
1698	Blue Oak	7						14	1698	4f
1699	Blue Oak	12						15	1699	4f

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4f

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
1700	Blue Oak	6						10	1700	4f
1701	Blue Oak	7						14	1701	4f
1702	Blue Oak	11						15	1702	4f
1703	Blue Oak	10						16	1703	4f
1704	Blue Oak		6,6					12	1704	4f
1705	Live Oak						12,15	18	1705	4f
1706	Blue Oak			11				16	1706	4f
1707	Blue Oak	11						15	1707	4f
1708	Blue Oak						6,8	14	1708	4f
1709	Blue Oak				6,8			14	1709	4f
1710	Blue Oak			10				15	1710	4f
1711	Blue Oak	11						16	1711	4f
1712	Blue Oak	9						12	1712	4f
1713	Blue Oak	9						13	1713	4f
1714	Blue Oak			9				14	1714	4f
1715	Blue Oak	7						13	1715	4f
1716	Blue Oak	9						13	1716	4f
1717	Blue Oak	9						13	1717	4f
1718	Blue Oak					12		17	1718	4f
1719	Blue Oak	14						16	1719	4f
1720	Blue Oak					13		15	1720	4f
1721	Blue Oak		8,9					15	1721	4f
1722	Blue Oak	14						17	1722	4f
1723	Blue Oak						4,6	10	1723	4f
1724	Blue Oak	15						16	1724	4f
1725	Blue Oak		3 at 16					14	1725	4f
1726	Blue Oak	13						18	1726	4f
1727	Blue Oak		3 at 18					13	1727	4f
1728	Blue Oak					14		6	1728	4f
1729	Blue Oak					19		15	1729	4f
1730	Blue Oak	14						16	1730	4f
1731	Blue Oak	14						16	1731	4f
1732	Live Oak		5,7					10	1732	4f
1733	Blue Oak	14						15	1733	4f
1734	Live Oak						5 at 27	15	1734	4f
1735	Blue Oak	8						6	1735	4f
1736	Blue Oak					19		17	1736	4f
1737	Live Oak				3 at 15			14	1737	4f
1738	Blue Oak					6		8	1738	4f
1739	Blue Oak	6						12	1739	4f
1740	Blue Oak		3 at 19					16	1740	4f
1741	Blue Oak	6						8	1741	4f
1742	Blue Oak		4 at 28					17	1742	4f
1743	Blue Oak		3,7					8	1743	4f
1744	Blue Oak						10,12	16	1744	4f
1745	Blue Oak	15						16	1745	4f
1746	Blue Oak	10						10	1746	4f
1747	Blue Oak		11,12					17	1747	4f
1748	Blue Oak	8						15	1748	4f
1749	Blue Oak					10		12	1749	4f

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4f

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
1750	Blue Oak			12				15	1750	4f
1751	Blue Oak	12						12	1751	4f
1753	Blue Oak	13						16	1753	4f
1754	Blue Oak	11						12	1754	4f
1755	Blue Oak	12						14	1755	4f
1756	Live Oak						5 at 32	17	1756	4f
1757	Blue Oak		5,8					13	1757	4f
1758	Blue Oak					12		14	1758	4f
1759	Blue Oak	6						10	1759	4f
1760	Live Oak				3 at 21			15	1760	4f
1761	Blue Oak	9						12	1761	4f
1762	Blue Oak			11				13	1762	4f
1763	Blue Oak		5 at 17					11	1763	4f
1764	Live Oak						4 at 17	12	1764	4f
1765	Blue Oak		3 at 18					15	1765	4f
1766	Live Oak						3 at 27	17	1766	4f
1767	Blue Oak					12		13	1767	4f
1768	Blue Oak	12						15	1768	4f
1769	Blue Oak					7		6	1769	4f
1770	Blue Oak	11						15	1770	4f
1771	Blue Oak					9		8	1771	4f
1772	Blue Oak	7						10	1772	4f
1773	Blue Oak	6						6	1773	4f
1774	Blue Oak	11						14	1774	4f
1775	Blue Oak	10						14	1775	4f
1776	Blue Oak	6						6	1776	4f
1779	Blue Oak	8						12	1779	4f
1781	Blue Oak					14		13	1781	4f
1782	Blue Oak	6						10	1782	4f
1783	Blue Oak			13				15	1783	4f
1784	Blue Oak	5						8	1784	4f
1785	Blue Oak	6						7	1785	4f
1786	Blue Oak	7						8	1786	4f
1787	Live Oak		10					11	1787	4f
1788	Blue Oak	6						6	1788	4f
1789	Blue Oak	6						13	1789	4f
1790	Live Oak					7		10	1790	4f
1791	Blue Oak					7		9	1791	4f
1792	Blue Oak	9						10	1792	4f
1793	Blue Oak						7,13	15	1793	4f
1794	Blue Oak	9						8	1794	4f
1795	Blue Oak	13						14	1795	4f
1796	Blue Oak	25						17	1796	4f
1797	Live Oak					9		13	1797	4f
1798	Blue Oak				14,17			18	1798	4f
1799	Blue Oak		10,10					18	1799	4f
1800	Blue Oak	12						16	1800	4f
1801	Blue Oak					11		6	1801	4f
1802	Blue Oak		3 at 18					15	1802	4f

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4f

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
1803	Blue Oak		4,5					10	1803	4f
1804	Blue Oak	5						9	1804	4f
1805	Blue Oak	9						13	1805	4f
1806	Blue Oak					9		13	1806	4f
1807	Blue Oak		8,9					12	1807	4f
1808	Blue Oak	9						13	1808	4f
1809	Blue Oak					16		17	1809	4f
1810	Blue Oak		4,8					10	1810	4f
1811	Blue Oak	9						14	1811	4f
1812	Blue Oak	11						16	1812	4f
1813	Blue Oak	7						13	1813	4f
1814	Blue Oak	10						13	1814	4f
1815	Blue Oak					10		12	1815	4f
1816	Blue Oak	7						9	1816	4f
1817	Blue Oak	6						10	1817	4f
1818	Blue Oak					14		9	1818	4f
1819	Blue Oak	10						16	1819	4f
1820	Blue Oak	14						16	1820	4f
1821	Live Oak		4 at 37					17	1821	4f
1822	Live Oak		5,7					15	1822	4f
1823	Blue Oak			10				15	1823	4f
1824	Blue Oak	11						13	1824	4f
1825	Blue Oak	11						13	1825	4f
1826	Blue Oak	11						12	1826	4f
1835	Blue Oak	8						10	1835	4f
1836	Blue Oak					9		7	1836	4f
1837	Blue Oak					19		13	1837	4f
1838	Blue Oak					15		13	1838	4f
1839	Blue Oak					7		10	1839	4f
1840	Blue Oak		4,12					15	1840	4f
1841	Blue Oak	9						10	1841	4f
1842	Blue Oak	13						16	1842	4f
1843	Blue Oak			8				8	1843	4f
1844	Blue Oak					8		13	1844	4f
1845	Blue Oak	7						14	1845	4f
1852	Blue Oak		6,9					14	1852	4f
1853	Blue Oak	7						10	1853	4f
1854	Live Oak						4 at 31	17	1854	4f
1855	Blue Oak	7						9	1855	4f
1898	Blue Oak	11						17	1898	4f
1899	Blue Oak	12						15	1899	4f
1900	Blue Oak					11		15	1900	4f
2101	Blue Oak	11						18	2101	4f
2102	Blue Oak	9						12	2102	4f
2103	Blue Oak		3 at 14					12	2103	4f
2104	Live Oak					6		9	2104	4f
2110	Blue Oak	10						15	2110	4f
2111	Blue Oak	16						17	2111	4f
2112	Blue Oak	10						13	2112	4f
2113	Blue Oak	9						12	2113	4f

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4f

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
2114	Blue Oak	13						17	2114	4f
7045	Blue Oak	19						22	7045	4f
7047	Blue Oak			24				22	7047	4f
7048	Blue Oak	13						16	7048	4f
7049	Blue Oak	17						18	7049	4f
7050	Blue Oak			16				11	7050	4f
7051	Blue Oak					15		15	7051	4f
7052	Live Oak		3 at 14					15	7052	4f
7053	Live Oak	5						11	7053	4f
7054	Blue Oak	19						22	7054	4f
20041	Blue Oak	10						17		4f
20046	Blue Oak	10						17		4f
20052	Blue Oak	10						17		4f
20062	Live Oak	10						17		4f
20064	Live Oak	10						17		4f
20093	Blue Oak	10						17		4f
20137	Live Oak	10						17		4f
20138	Live Oak	10						17		4f
20140	Valley Oak	10						17		4f
20163	Blue Oak	10						17		4f
20164	Live Oak	10						17		4f
20165	Blue Oak	10						17		4f
20166	Blue Oak	10						17		4f
20167	Blue Oak	10						17		4f
20168	Blue Oak	10						17		4f
20169	Blue Oak	10						17		4f
20193	Blue Oak	10						17		4f
20254	Live Oak	10						17		4f
20256	Blue Oak	10						17		4f

Clover Valley Arborist Report
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		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
20257	Live Oak	10						17		4f
20258	Live Oak	10						17		4f
20259	Live Oak	10						17		4f
20260	Live Oak	10						17		4f
20261	Live Oak	10						17		4f
20262	Blue Oak	10						17		4f
20263	Live Oak	10						17		4f
20264	Live Oak	10						17		4f
20269	Live Oak	10						17		4f
20274	Live Oak	10						17		4f
20275	Live Oak	10						17		4f
20276	Blue Oak	10						17		4f
20277	Blue Oak	10						17		4f
20278	Blue Oak	10						17		4f
20279	Blue Oak	10						17		4f
20280	Live Oak	10						17		4f
20281	Blue Oak	10						17		4f
20282	Blue Oak	10						17		4f
20288	Live Oak	10						17		4f
20293	Blue Oak	10						17		4f
20294	Live Oak	10						17		4f
20295	Blue Oak	10						17		4f
20296	Live Oak	10						17		4f
20297	Blue Oak	10						17		4f
20297	Blue Oak	10						17		4f
20298	Blue Oak	10						17		4f
20299	Blue Oak	10						17		4f
20300	Blue Oak	10						17		4f
20301	Blue Oak	10						17		4f
20302	Blue Oak	10						17		4f
20303	Blue Oak	10						17		4f
20304	Blue Oak	10						17		4f
20308	Blue Oak	10						17		4f
20310	Blue Oak	10						17		4f
20311	Blue Oak	10						17		4f
20320	Live Oak	10						17		4f
20321	Live Oak	10						17		4f
20432	Blue Oak	10						17		4f
20433	Blue Oak	10						17		4f
20434	Blue Oak	10						17		4f
20435	Blue Oak	10						17		4f
20436	Blue Oak	10						17		4f
20437	Blue Oak	10						17		4f
20438	Blue Oak	10						17		4f
20439	Blue Oak	10						17		4f
20667	Blue Oak	10						17		4f
20792	Live Oak	10						17		4f
21048	Blue Oak	10						17		4f
21313	Blue Oak	10						17		4f
21314	Blue Oak	10						17		4f

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4f

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
21316	Blue Oak	10						17		4f
21317	Blue Oak	10						17		4f
21321	Blue Oak	10						17		4f
21322	Blue Oak	10						17		4f
21324	Blue Oak	10						17		4f
21325	Blue Oak	10						17		4f
21326	Blue Oak	10						17		4f
21327	Blue Oak	10						17		4f
21328	Blue Oak	10						17		4f
21329	Blue Oak	10						17		4f
21330	Blue Oak	10						17		4f
21331	Blue Oak	10						17		4f
21332	Blue Oak	10						17		4f
21334	Blue Oak	10						17		4f
21335	Blue Oak	10						17		4f
21337	Blue Oak	10						17		4f
21338	Blue Oak	10						17		4f
21340	Blue Oak	10						17		4f
21341	Blue Oak	10						17		4f
21342	Blue Oak	10						17		4f
21343	Blue Oak	10						17		4f
21344	Blue Oak	10						17		4f
21345	Blue Oak	10						17		4f
21346	Blue Oak	10						17		4f
21347	Blue Oak	10						17		4f
21352	Blue Oak	10						17		4f
21353	Blue Oak	10						17		4f
21355	Blue Oak	10						17		4f
27664	Blue Oak	14						16	27664	4f
27665	Blue Oak	19						23	27665	4f
27666	Blue Oak						3 at 26	17	27666	4f
27667									27667	4f
27668									27668	4f
27669									27669	4f
27671	Blue Oak	14						16	27671	4f
27672	Blue Oak	15						18	27672	4f
27673									27673	4f
27674	Blue Oak	10						12	27674	4f
27675	Blue Oak		10,11					13	27675	4f
27676	Blue Oak		4 at 20					13	27676	4f
27677	Blue Oak		8,10					14	27677	4f
27678	Blue Oak					13		15	27678	4f
27679	Blue Oak		3 at 22					13	27679	4f
27680	Blue Oak		4,5					7	27680	4f
27681	Blue Oak						7,11	17	27681	4f
27682	Blue Oak		7,8					14	27682	4f
27683	Blue Oak	8						13	27683	4f
27684	Blue Oak		9,11					16	27684	4f
27685	Blue Oak	13						14	27685	4f

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4f

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
27724	Blue Oak		7,10					14	27724	4f
27725	Blue Oak	9						15	27725	4f
27726	Blue Oak	6						13	27726	4f
27727	Blue Oak		3 at 24					18	27727	4f
27728	Blue Oak	15						15	27728	4f
27729	Blue Oak	7						10	27729	4f
27730	Blue Oak	6						6	27730	4f
27731	Blue Oak	8						10	27731	4f
27733	Blue Oak	11						15	27733	4f
27734	Blue Oak					6		10	27734	4f
27735	Blue Oak	10						12	27735	4f
27736	Blue Oak					6		7	27736	4f
27737	Blue Oak	7						6	27737	4f
27738	Blue Oak	7						8	27738	4f
27739	Blue Oak	9						12	27739	4f
27740	Blue Oak	11						17	27740	4f
27741	Blue Oak		10,12					21	27741	4f
27742	Blue Oak	18						19	27742	4f
27745	Blue Oak					8		11	27745	4f
27746	Blue Oak	7						12	27746	4f
27758	Blue Oak				6,9			16	27758	4f
27759	Blue Oak	9						10	27759	4f
27760	Blue Oak		4,5					8	27760	4f
27811	Blue Oak			10				15	27811	4f
27812	Blue Oak			10				13	27812	4f
27813	Blue Oak						3,6	8	27813	4f
27820	Blue Oak						4,4	10	27820	4f
27822	Blue Oak		7,8					10	27822	4f
27823	Blue Oak	6						5	27823	4f
27824	Live Oak				3 at 21			15	27824	4f
27825	Blue Oak					14		16	27825	4f
27826	Blue Oak	12						16	27826	4f
27827	Blue Oak	15						20	27827	4f
27828	Blue Oak		6,11					14	27828	4f
27830	Blue Oak					12		14	27830	4f
27876	Blue Oak	10						13	27876	4f
27877	Blue Oak	11						12	27877	4f
27878	Blue Oak	5						7	27878	4f
27879	Blue Oak	20						19	27879	4f
27880	Blue Oak	16						19	27880	4f
27881	Blue Oak	14						15	27881	4f
27882	Live Oak		6 at 42					22	27882	4f
27895	Blue Oak		3 at 14					14	27895	4f
27896	Blue Oak		4 at 23					15	27896	4f
27897	Blue Oak						3 at 19	18	27897	4f
27918	Live Oak		4 at 23					17	27918	4f
27919	Blue Oak	15						19	27919	4f
27920	Blue Oak		3 at 16					13	27920	4f
27921	Live Oak		8 at 44					19	27921	4f
27922	Live Oak		3 at 18					17	27922	4f

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4f

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
27923	Live Oak		5 at 31					18	27923	4f
27924	Live Oak				3 at 22			18	27924	4f
27930	Blue Oak	5						13	27930	4f
27931	Blue Oak	11						17	27931	4f
27932	Blue Oak	6						15	27932	4f
27933	Blue Oak	12						16	27933	4f
27934	Blue Oak	5						10	27934	4f
27935	Blue Oak		5,6					13	27935	4f
27936	Blue Oak		3,5					14	27936	4f
27937	Blue Oak		10,10					18	27937	4f
27938	Blue Oak	5						11	27938	4f
27939	Blue Oak		9,12					15	27939	4f
27940	Blue Oak		5,5					15	27940	4f
27941	Blue Oak	16						20	27941	4f
27942	Blue Oak	26						25	27942	4f
27943	Blue Oak		6,10					15	27943	4f
27944	Blue Oak	24						25	27944	4f
27945	Blue Oak	19						21	27945	4f
27946	Blue Oak	16						19	27946	4f
27947	Blue Oak	8						15	27947	4f
27948	Blue Oak	18						18	27948	4f
27949	Blue Oak		7,8					15	27949	4f

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4f

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
27950	Blue Oak	11						17	27950	4f
27951	Blue Oak					11		17	27951	4f
27952	Blue Oak			12				16	27952	4f
27953	Blue Oak	14						17	27953	4f
27954	Blue Oak	14						16	27954	4f
27992	Blue Oak						3 at 18	12	27992	4f
27993	Blue Oak				3 at 31			18	27993	4f
27994	Blue Oak	12						12	27994	4f
28311	Blue Oak	21						23	28311	4f
28312	Blue Oak	15						17	28312	4f
28313	Blue Oak	17						15	28313	4f
28314	Live Oak						6,6	15	28314	4f
28315	Blue Oak	11						14	28315	4f
28316	Blue Oak	12						16	28316	4f
28317	Blue Oak	6						10	28317	4f
28318	Blue Oak	15						16	28318	4f
28319	Blue Oak					15		13	28319	4f
28327	Blue Oak	6						10	28327	4f
28328	Blue Oak					15		17	28328	4f
28336	Blue Oak		4,5					15	28336	4f
28337	Live Oak						5,5	12	28337	4f
28338	Live Oak				6 at 36			18	28338	4f
28339	Blue Oak	6						13	28339	4f
28340	Blue Oak	6						8	28340	4f
28341	Blue Oak	9						8	28341	4f
28342	Blue Oak		3 at 20					16	28342	4f
28343	Blue Oak		6,12					17	28343	4f
28344	Blue Oak	13						15	28344	4f
28345	Blue Oak	13						15	28345	4f
28346	Blue Oak		9,10					17	28346	4f
28347	Blue Oak	13						18	28347	4f
28348	Blue Oak	7						12	28348	4f
28349	Blue Oak					18		15	28349	4f
28574	Blue Oak	10						20	28574	4f
28575	Blue Oak		3 at 16					10	28575	4f
28576	Blue Oak	14						16	28576	4f
28577	Blue Oak	10						15	28577	4f
28578	Blue Oak	11						14	28578	4f
28579	Blue Oak		8,9					16	28579	4f
28580	Blue Oak		6,6					8	28580	4f
28581	Blue Oak			8				10	28581	4f
28582	Blue Oak					6		6	28582	4f
28583	Blue Oak	12						16	28583	4f
28584	Blue Oak	8						13	28584	4f
28585	Blue Oak					5		6	28585	4f
28586	Blue Oak		3 at 19					12	28586	4f
28587	Blue Oak	13						16	28587	4f
28588	Blue Oak	14						17	28588	4f
28589	Live Oak						8,10	13	28589	4f
28590	Blue Oak		6,7					12	28590	4f

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4f

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
28591	Blue Oak				5,5			12	28591	4f
28592	Live Oak						7,10	15	28592	4f
28595	Live Oak					6		5	28595	4f
28596	Live Oak				4 at 28			17	28596	4f
28597	Blue Oak	6						6	28597	4f
28598	Blue Oak						3 at 20	15	28598	4f
28599	Blue Oak	5						6	28599	4f
28600	Blue Oak		3 at 12					12	28600	4f
28601	Blue Oak		3 at 12					12	28601	4f
28602	Blue Oak	6						10	28602	4f
28603	Blue Oak					5		5	28603	4f
28654	Blue Oak	8						8	28654	4f
28655	Blue Oak	6						8	28655	4f
28656	Blue Oak	15						16	28656	4f
28657	Blue Oak	9						12	28657	4f
28658	Live Oak		3 at 14					14	28658	4f
28659	Blue Oak	5						6	28659	4f
28660	Blue Oak		5 at 26					14	28660	4f
28661	Live Oak					7		15	28661	4f
28662	Blue Oak		5 at 27					14	28662	4f
28688	Blue Oak					21		20	28688	4f
28696	Blue Oak						3 at 16	15	28696	4f
28698	Live Oak				7,8			13	28698	4f
28700	Live Oak				5 at 31			15	28700	4f
28701	Blue Oak			15				16	28701	4f
28702	Blue Oak	6						6	28702	4f
28703	Blue Oak		4,5					6	28703	4f
28704	Blue Oak	10						15	28704	4f
28705	Blue Oak	11						15	28705	4f
28706	Blue Oak	11						12	28706	4f
28718	Blue Oak	8						7	28718	4f
28719	Blue Oak	5						5	28719	4f
28720	Blue Oak			12				14	28720	4f
28721	Blue Oak	10						11	28721	4f
28722	Blue Oak	6						5	28722	4f
28723	Blue Oak		3 at 15					13	28723	4f
28724	Blue Oak					12		13	28724	4f
28725	Blue Oak					12		13	28725	4f
28726	Blue Oak		5,5					6	28726	4f
28727	Blue Oak	12						13	28727	4f
28728	Blue Oak	8						8	28728	4f
28729	Blue Oak	7						11	28729	4f
28730	Blue Oak	6						6	28730	4f
28731	Blue Oak	10						12	28731	4f
28732	Blue Oak	9						13	28732	4f
28733	Blue Oak	11						13	28733	4f
28734	Blue Oak	11						15	28734	4f
28735	Blue Oak	9						10	28735	4f
28736	Blue Oak	6						11	28736	4f

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4f

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
28737	Blue Oak		6,7					12	28737	4f
28738	Blue Oak	15						16	28738	4f
28739	Blue Oak			8				9	28739	4f
28740	Blue Oak	11						17	28740	4f
28741	Blue Oak	15						16	28741	4f
28742	Blue Oak	6						7	28742	4f
28745	Blue Oak	8						12	28745	4f
28746	Blue Oak	8						12	28746	4f
28747	Blue Oak				5,6			10	28747	4f
28748	Blue Oak	8						8	28748	4f
28749	Blue Oak	10						9	28749	4f
28750	Blue Oak		4,5					7	28750	4f
28751	Blue Oak		7,8					15	28751	4f
28758	Blue Oak	5						8	28758	4f
28759	Blue Oak					6		6	28759	4f
28760	Blue Oak					6		6	28760	4f
28761	Blue Oak				7,7			8	28761	4f
28762	Blue Oak	7						10	28762	4f
28763	Blue Oak		5,6					14	28763	4f
28764	Blue Oak	8						15	28764	4f
28765	Blue Oak			9				12	28765	4f
28766	Live Oak						3 at 21	20	28766	4f
28767	Blue Oak	8						13	28767	4f
28768	Blue Oak	7						12	28768	4f
28769	Blue Oak	7						12	28769	4f
28770	Blue Oak	5						9	28770	4f
28771	Blue Oak	6						10	28771	4f
28772	Blue Oak	6						10	28772	4f
28773	Blue Oak	9						12	28773	4f
28774	Live Oak		4 at 28					30	28774	4f
28775	Blue Oak		7,8					13	28775	4f
28796	Blue Oak	5						8	28796	4f
28798	Blue Oak	6						13	28798	4f
28799	Live Oak					5		14	28799	4f
28800	Live Oak		5 at 33					17	28800	4f
28858	Blue Oak	15						16	28858	4f
28859	Blue Oak		9,9					15	28859	4f
28860	Blue Oak	8						15	28860	4f
28861	Blue Oak			11				15	28861	4f
28862	Blue Oak						4 at 28	16	28862	4f
28863	Blue Oak	5						5	28863	4f

Stantec

Clover Valley Partners

Clover Valley

City of Rocklin, CA

Tree Summary - Phase 4g

(All data available on Trees)

Number and Caliper Inches of Trees Removed

Tree Species	Number of Fair trees Removed	Caliper Inches of Fair Trees Removed	Caliper Inches of Fair Multi-Stem Trees Removed	Number of Fair/Poor trees Removed	Caliper Inches of Fair/Poor Trees Removed	Caliper Inches of Multi-Stem Fair/Poor Trees Removed	Number of Poor trees Removed	Caliper Inches of Poor Trees Removed	Caliper Inches of Poor Multi-Stem Trees Removed
Blue Oak	33	198	168	5	34	11	4	42	11
Live Oak	125	203	2419	51	77	731	40	79	382
Valley Oak	6	74	45						
Misc	4	68							
Total	168	543	2632	56	111	742	44	121	393

	Number of trees Removed	Caliper Inches of Trees Removed	Caliper Inches of Multi-Stem Trees Removed	Total Caliper Inches of Trees Removed
Fair Trees	168	543	2632	3175
Fair / Poor Trees	56	111	742	853
Fair & Fair / Poor Trees	**224**	654	3374	**4028**
Poor Trees	**44**	121	393	**514**

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4g

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
7962	Live Oak						4,4	18	7962	4g
7963	Live Oak	8						13	7963	4g
7967	Live Oak				6,8			14	7967	4g
7981	Live Oak		4 at 18					16	7981	4g
7982	Blue Oak	7						12	7982	4g
7983	Live Oak				6 at 31			20	7983	4g
7984	Live Oak		3 at 21					20	7984	4g
7985	Live Oak	11						19	7985	4g
7986	Live Oak		4 at 36					24	7986	4g
7987	Live Oak		5,5					12	7987	4g
7988	Live Oak		7 at 59					19	7988	4g
17107									17107	4g
17108									17108	4g
17109	Live Oak		9,9					17	17109	4g
17110	Live Oak			7				13	17110	4g
17111	Live Oak		3 at 20					23	17111	4g
17112	Live Oak						4,6	15	17112	4g
17113	Live Oak	8						15	17113	4g
17114	Live Oak	6						20	17114	4g
17115	Live Oak		7,9					25	17115	4g
17116	Live Oak			7				13	17116	4g
17117	Live Oak			7				12	17117	4g
17118	Live Oak				6,9			20	17118	4g
17119	Live Oak				5,8			16	17119	4g
17120	Live Oak				4 at 19			20	17120	4g
17121	Live Oak				3 at 16			21	17121	4g
17122	Live Oak	7						16	17122	4g
17135	Live Oak				8 at 40			24	17135	4g
17136	Live Oak			5				24	17136	4g
17137	Live Oak	11						18	17137	4g
17138	Live Oak		3,5					15	17138	4g
17139	Live Oak						4,5	17	17139	4g
17140	Live Oak		2,4					8	17140	4g
17141	Live Oak		4 at 27					18	17141	4g
17142	Live Oak						5,6	15	17142	4g
17143	Live Oak				3 at 13			16	17143	4g
17144	Live Oak	6						15	17144	4g
17145	Live Oak	6						18	17145	4g
17146	Live Oak				4,6			17	17146	4g
17147	Live Oak			5				16	17147	4g
17148	Live Oak		5 at 30					24	17148	4g
17149	Live Oak						4,6	15	17149	4g
17150	Live Oak		3 at 21					25	17150	4g
17151	Live Oak		10,13					22	17151	4g
17154	Live Oak					5		14	17154	4g
17155	Live Oak				5 at 24			20	17155	4g
17156	Live Oak		6 at 31					16	17156	4g
17157	Live Oak			4				10	17157	4g
17158	Live Oak		3 at 22					20	17158	4g
17159	Live Oak				5,7			20	17159	4g

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4g

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
17160	Live Oak					5		18	17160	4g
17161	Live Oak					5		17	17161	4g
17181	Live Oak						3 at 15	16	17181	4g
17182	Live Oak						3 at 15	18	17182	4g
17183	Live Oak						6 at 21	18	17183	4g
17184	Live Oak				4 at 19			20	17184	4g
17185	Live Oak		3 at 19					20	17185	4g
17186	Live Oak				5 at 25			17	17186	4g
17195	Valley Oak		3 at 25					20	17195	4g
17196	Blue Oak			10				15	17196	4g
17197	Blue Oak		3 at 19					12	17197	4g
17198	Live Oak				5,7			16	17198	4g
17199	Live Oak						3 at 10	14	17199	4g
17200	Blue Oak				5,6			17	17200	4g
17201	Live Oak				3 at 14			16	17201	4g
17202	Live Oak					4		14	17202	4g
17203	Blue Oak	5						6	17203	4g
17204	Live Oak				3 at 21			18	17204	4g
17205	Blue Oak		6,7					15	17205	4g
17206	Blue Oak		8,8					14	17206	4g
17207	Blue Oak		3 at 17					16	17207	4g
17209	Live Oak				3 at 15			20	17209	4g
17210	Live Oak		3 at 23					24	17210	4g
17211	Live Oak	9						16	17211	4g
17212	Live Oak		4 at 25					19	17212	4g
17213									17213	4g
17214	Live Oak		8 at 42					24	17214	4g
17215	Blue Oak			4				14	17215	4g
17216	Live Oak				5,9			16	17216	4g
17217	Blue Oak		3 at 20					16	17217	4g
17218	Live Oak						5 at 14	16	17218	4g
17219	Live Oak		3 at 13					17	17219	4g
17220	Live Oak					6		17	17220	4g
17221	Live Oak		8 at 41					20	17221	4g
17222	Live Oak			6				14	17222	4g
17223	Live Oak				5 at 25			18	17223	4g
17224	Live Oak		4 at 29					18	17224	4g
17225	Live Oak						4,6	19	17225	4g
17226	Live Oak		13 at 56					19	17226	4g
17227	Live Oak						3 at 15	16	17227	4g
17228	Live Oak		7,7					15	17228	4g
17229	Blue Oak			10				15	17229	4g
17230	Live Oak		3 at 16					19	17230	4g
17231	Blue Oak						4 at 11	16	17231	4g
17232	Live Oak				5 at 27			18	17232	4g
17233	Blue Oak	7						12	17233	4g
17234	Live Oak		7,8					17	17234	4g
17235	Live Oak		4 at 30					24	17235	4g
17236	Live Oak	8						16	17236	4g

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4g

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
17237	Valley Oak		3 at 20					19	17237	4g
17238	Blue Oak		7,7					13	17238	4g
17239	Live Oak	9						14	17239	4g
17240	Live Oak		6 at 36					20	17240	4g
17241	Blue Oak					6		13	17241	4g
17242	Live Oak				5 at 25			20	17242	4g
17261	Live Oak		7 at 43					26	17261	4g
17262	Live Oak				3 at 15			19	17262	4g
17263	Live Oak				3 at 15			16	17263	4g
17264	Live Oak				5 at 20			16	17264	4g
17265	Live Oak	8						14	17265	4g
17266	Live Oak						4,6	16	17266	4g
17267	Blue Oak	7						15	17267	4g
17281	Live Oak		8,10					17	17281	4g
17282	Live Oak			5				14	17282	4g
17283	Live Oak		3 at 16					17	17283	4g
17284	Live Oak		4 at 28					17	17284	4g
17285	Live Oak		3,5					15	17285	4g
17286	Live Oak		5,6					15	17286	4g
17287	Live Oak				6 at 29			14	17287	4g
17288	Live Oak		12 at 90					18	17288	4g
17289	Live Oak		3 at 21					24	17289	4g
17290	Live Oak		6 at 40					18	17290	4g

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4g

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
17291	Live Oak		3 at 16					15	17291	4g
17292	Live Oak		7 at 44					20	17292	4g
17294	Live Oak				7 at 30			20	17294	4g
17295	Live Oak				3 at 12			20	17295	4g
17296	Live Oak		5 at 28					17	17296	4g
17297	Live Oak				3 at 10			13	17297	4g
17298	Live Oak			5				17	17298	4g
17299	Live Oak		5					6	17299	4g
17300	Live Oak		5 at 34					24	17300	4g
17301	Live Oak		7,12					21	17301	4g
17302	Live Oak		4 at 18					15	17302	4g
17303	Live Oak		3 at 17					20	17303	4g
17304	Live Oak		8,9					20	17304	4g
17305	Live Oak						3,5	16	17305	4g
17306	Live Oak		5 at 39					25	17306	4g
17307	Live Oak		4 at 30					21	17307	4g
17308	Live Oak		6,6					16	17308	4g
17309	Live Oak		5,5					12	17309	4g
17310									17310	4g
17311	Live Oak		3,7					16	17311	4g
17312	Live Oak		4 at 21					14	17312	4g
17313	Live Oak		6 at 34					17	17313	4g
17314	Live Oak		10 at 62					18	17314	4g
17315	Live Oak				6 at 32			18	17315	4g
17317	Live Oak		4 at 27					15	17317	4g
17320	Live Oak		4 at 20					20	17320	4g
17321	Live Oak		3 at 18					26	17321	4g
17322	Live Oak		7 at 39					17	17322	4g
17323	Live Oak	8						14	17323	4g
17324	Live Oak	7						15	17324	4g
17341	Live Oak				3 at 15			13	17341	4g
17343	Live Oak		6,7					14	17343	4g
17368	Live Oak		11 at 51					20	17368	4g
17369	Blue Oak	5						6	17369	4g
17370	Live Oak		3 at 14					16	17370	4g
17371	Live Oak		8 at 28					17	17371	4g
17372	Blue Oak	3						5	17372	4g
17373	Live Oak			5				17	17373	4g
17374	Live Oak					6		15	17374	4g
17381	Live Oak					6		15	17381	4g
17382	Live Oak	5						15	17382	4g
17383	Live Oak			5				12	17383	4g
17384	Live Oak	8						16	17384	4g
17385	Live Oak				6 at 34			22	17385	4g
17386	Live Oak			5				20	17386	4g
17387	Live Oak				4 at 22			18	17387	4g
17458	Live Oak					7		15	17458	4g
17459	Live Oak		6,6					15	17459	4g
17460	Live Oak		6,8					19	17460	4g

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4g

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
17461	Live Oak					7		20	17461	4g
17462	Live Oak		7 at 21					18	17462	4g
17463	Live Oak					4		6	17463	4g
17464	Live Oak					8		16	17464	4g
19644	Live Oak						4 at 16	12	19644	4g
19645	Live Oak		3 at 15					15	19645	4g
19646	Live Oak		4 at 24					17	19646	4g
19647	Blue Oak		5,5					10	19647	4g
19648	Blue Oak	11						13	19648	4g
19649	Blue Oak		2,4					6	19649	4g
19650	Live Oak		3 at 19					16	19650	4g
19651	Live Oak		3 at 19					18	19651	4g
19652	Blue Oak	6						10	19652	4g
19653	Blue Oak		6,6					14	19653	4g
19654	Blue Oak		6,8					17	19654	4g
19655	Blue Oak	11						16	19655	4g
19656	Blue Oak	10						18	19656	4g
19659	Blue Oak	8						10	19659	4g
19668	Live Oak		11 at 61					19	19668	4g
19669	Live Oak		3,5					14	19669	4g
19670	Live Oak		3 at 14					14	19670	4g
19671	Live Oak				3 at 12			15	19671	4g
19672	Live Oak		6 at 32					17	19672	4g
21356	Blue Oak	10						17		4g
21357	Blue Oak	10						17		4g
21358	Blue Oak	10						17		4g
21362	Blue Oak	10						17		4g
21363	Blue Oak	10						17		4g
21364	Blue Oak	10						17		4g
21365	Blue Oak	10						17		4g
21384	Blue Oak	10						17		4g
21472	Blue Oak	10						17		4g
21519	Live Oak	10						17		4g
21674	Live Oak	10						17		4g
21687	Blue Oak	10						17		4g
21801	Live Oak	10						17		4g
22527	Live Oak	10						17		4g
22647	Live Oak	10						17		4g
22655	Live Oak	10						17		4g
22702	Live Oak	10						17		4g
23038	Valley Oak	13						16	23038	4g
23049	Live Oak	10						17		4g
23051	Live Oak	10						17		4g
23058	Valley Oak	10						17		4g
23066	Live Oak	10						17		4g
23068	Live Oak	10						17		4g
23071	Live Oak	10						17		4g
23073	Blue Oak	10						17		4g
23079	Live Oak	10						17		4g
23081	Live Oak	10						17		4g

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4g

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
23082	Live Oak	10						17		4g
23083	Blue Oak	10						17		4g
23092	Blue Oak	10						17		4g
23093	Live Oak	10						17		4g
23095	Blue Oak	10						17		4g
23098	Live Oak	10						17		4g
23099	Valley Oak	10						17		4g
26152	Live Oak		3 at 19					16	26152	4g
26153	Live Oak		5,7					13	26153	4g
26154	Live Oak	6						17	26154	4g
26155	Live Oak					5		10	26155	4g
26156	Live Oak						3 at 15	20	26156	4g
26170	Live Oak		5,9					22	26170	4g
26172	Live Oak	9						18	26172	4g
26173	Live Oak	7						16	26173	4g
26174	Live Oak	5						10	26174	4g
26175	Live Oak	5						14	26175	4g
26176	Live Oak		3 at 20					21	26176	4g
26177	Live Oak		5 at 20					15	26177	4g
26178	Live Oak					7		15	26178	4g
26179	Live Oak		3 at 14					12	26179	4g
26180	Live Oak						6 at 12	12	26180	4g
26181	Live Oak						4 at 15	15	26181	4g
26184	Live Oak		5,8					19	26184	4g
26193	Live Oak		3 at 17					16	26193	4g
26195	Live Oak		9,10					26	26195	4g
26357	Live Oak						5 at 17	12	26357	4g
26358	Live Oak				2,8			14	26358	4g
26359	Live Oak						3 at 12	14	26359	4g
26360	Live Oak		3,10					10	26360	4g
26361	Blue Oak	7						8	26361	4g
26364	Live Oak		5,6					17	26364	4g
26380	Live Oak						8,9	15	26380	4g
26381	Live Oak						4 at 25	16	26381	4g
26382	Live Oak						7,7	15	26382	4g
26451	Live Oak						3 at 24	19	26451	4g
26601	Valley Oak	33						37	26601	4g
26602	Live Oak		6 at 30					15	26602	4g
26603	Live Oak	16						18	26603	4g
26604	Live Oak	4						9	26604	4g
26605	Live Oak				6 at 20			14	26605	4g
26606	Live Oak			11				21	26606	4g
26607	Live Oak						3 at 14	13	26607	4g
26608	Live Oak	15						18	26608	4g

Stantec

Clover Valley Partners

Clover Valley

City of Rocklin, CA

Tree Summary - Phase 4h

(All data available on Trees)

Number and Caliper Inches of Trees Removed

Tree Species	Number of Fair trees Removed	Caliper Inches of Fair Trees Removed	Caliper Inches of Fair Multi-Stem Trees Removed	Number of Fair/Poor trees Removed	Caliper Inches of Fair/Poor Trees Removed	Caliper Inches of Multi-Stem Fair/Poor Trees Removed	Number of Poor trees Removed	Caliper Inches of Poor Trees Removed	Caliper Inches of Poor Multi-Stem Trees Removed
Blue Oak	103	551	730	2	14		10	75	23
Live Oak	59	138	1413	8	20	139	14	32	161
Valley Oak	2	40		1	12				
Misc	7	119							
Total	171	848	2143	11	46	139	24	107	184

	Number of trees Removed	Caliper Inches of Trees Removed	Caliper Inches of Multi-Stem Trees Removed	Total Caliper Inches of Trees Removed
Fair Trees	171	848	2143	2991
Fair / Poor Trees	11	46	139	185
Fair & Fair / Poor Trees	**182**	894	2282	**3176**
Poor Trees	**24**	107	184	**291**

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4h

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
3	Blue Oak		14,15					17	3	4h
4	Blue Oak	19						15	4	4h
6	Live Oak		4 at 24					17	6	4h
8	Live Oak		9 at 80					31	55010	4h
9									9	4h
11									11	4h
12									12	4h
13									13	4h
14									14	4h
15									15	4h
7994	Valley Oak	19						25	7994	4h
7995	Live Oak		3 at 49					31	7995	4h
7999	Live Oak		6 at 42					18	7999	4h
8000	Blue Oak	10						15	8000	4h
23039	Live Oak		3 at 20					15	23039	4h
23040	Live Oak		8,19					22	23040	4h
23041	Live Oak		3 at 27					19	23041	4h
23042	Live Oak		3 at 29					20	23042	4h
23043	Live Oak		6 at 33					14	23043	4h
23045	Live Oak		5 at 30					15	23045	4h
23046	Blue Oak		3 at 12					8	23046	4h
23443	Blue Oak	10						17		4h
23787	Live Oak	10						17		4h
24078	Blue Oak		6,7					13	24078	4h
24079	Blue Oak	12						14	24079	4h
24080	Blue Oak	8						17	24080	4h
24081	Live Oak	8						19	24081	4h
24082	Blue Oak						5,6	15	24082	4h
24083	Live Oak					6		14	24083	4h
24084	Live Oak				3 at 19			15	24084	4h
24088	Blue Oak	9						12	24088	4h
24098	Blue Oak		5,6					19	24098	4h
24099	Blue Oak	6						12	24099	4h
24100	Blue Oak	7						8	24100	4h
24101	Blue Oak	6						10	24101	4h
24102	Blue Oak	5						9	24102	4h
24129	Blue Oak	6						11	24129	4h
24130	Blue Oak	6						7	24130	4h
24131	Live Oak		6,6					14	24131	4h
24132	Live Oak		6 at 44					20	24132	4h
24133	Live Oak	8						14	24133	4h
24134	Live Oak		5,8					15	24134	4h
24135	Live Oak	5						14	24135	4h
24136	Live Oak		5 at 38					17	24136	4h
24137	Live Oak		3 at 20					16	24137	4h
24138	Live Oak				8 at 40			16	24138	4h
24184	Blue Oak	10						17		4h
24243	Blue Oak		2,4					8	24243	4h
24244	Blue Oak		4,5					10	24244	4h
24245	Blue Oak					5		11	24245	4h

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4h

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
24246	Blue Oak		5,5					13	24246	4h
24247	Live Oak						3,6	14	24247	4h
24260	Blue Oak	5						12	24260	4h
24261	Blue Oak	6						12	24261	4h
24262	Blue Oak	5						11	24262	4h
24263	Blue Oak		3,5					7	24263	4h
24264	Blue Oak	5						8	24264	4h
24265	Live Oak		8,8					17	24265	4h
24266	Blue Oak		8,8					14	24266	4h
24267	Live Oak	6						16	24267	4h
24268	Blue Oak	7						12	24268	4h
24269	Blue Oak		7,13					16	24269	4h
24270	Live Oak		4 at 32					21	24270	4h
24271	Blue Oak		10,10					17	24271	4h
24272	Valley Oak	21						23	24272	4h
24273	Blue Oak	8						15	24273	4h
24274	Blue Oak		3 at 19					14	24274	4h
24290	Blue Oak		4,7					12	24290	4h
24291	Blue Oak		6,6					15	24291	4h
24292	Blue Oak	6						10	24292	4h
24293	Blue Oak		5,6					14	24293	4h
24294	Blue Oak		9,11					15	24294	4h
24295	Blue Oak		11,12					19	24295	4h
24296	Live Oak				4 at 34			18	24296	4h
24297	Blue Oak	5						16	24297	4h
24297	Live Oak	10						17		4h
24298	Blue Oak		10,11					19	24298	4h
24299	Blue Oak		5,13					17	24299	4h
24300	Blue Oak						4,8	10	24300	4h
24301	Live Oak		3 at 17					18	24301	4h
24302	Blue Oak		14,16					24	24302	4h
24303	Blue Oak		15,17					28	24303	4h
24304	Blue Oak	7						14	24304	4h
24305	Blue Oak	8						14	24305	4h
24306	Blue Oak					8		15	24306	4h
24307	Blue Oak		8,8					15	24307	4h
24308	Live Oak					6		12	24308	4h
24309	Blue Oak	8						15	24309	4h
24310	Blue Oak	8						13	24310	4h
24311	Blue Oak	5						15	24311	4h
24312	Blue Oak	12						18	24312	4h
24313	Blue Oak					5		5	24313	4h
24314	Blue Oak	5						8	24314	4h
24315	Live Oak						5,6	17	24315	4h
24316	Live Oak	8						18	24316	4h
24317	Blue Oak	10						17	24317	4h
24318	Blue Oak	10						14	24318	4h
24319	Blue Oak	5						11	24319	4h
24320	Blue Oak	5						13	24320	4h

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4h

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
24321	Live Oak						4,6	14	24321	4h
24322	Blue Oak	12						15	24322	4h
24323	Blue Oak	6						15	24323	4h
24339	Live Oak	10						17		4h
24446	Live Oak	10						17		4h
24498	Blue Oak	9						14	24498	4h
24499	Blue Oak	9						10	24499	4h
24500	Blue Oak	5						10	24500	4h
24501	Blue Oak					10		17	24501	4h
24502	Blue Oak					6		13	24502	4h
24503	Blue Oak		3 at 22					18	24503	4h
24504	Blue Oak	8						12	24504	4h
24505	Blue Oak					15		18	24505	4h
24506	Live Oak				4 at 28			19	24506	4h
24507	Blue Oak	10						14	24507	4h
24508	Blue Oak	7						10	24508	4h
24509									24509	4h
24510	Blue Oak	6						13	24510	4h
24511	Blue Oak		9,11					17	24511	4h
24512	Live Oak		6 at 45					22	24512	4h
24513	Blue Oak	8						17	24513	4h
24514	Blue Oak		9,10					17	24514	4h
24515	Blue Oak		8,9					17	24515	4h
24517	Blue Oak	8						14	24517	4h
24519	Live Oak	10						17		4h
24556	Blue Oak	6						15	24556	4h
24557	Blue Oak	4						8	24557	4h
24557	Blue Oak	10						17		4h
24559	Blue Oak	11						18	24559	4h
24560	Blue Oak			7				16	24560	4h
24561	Blue Oak		3 at 29					20	24561	4h
24562	Blue Oak	10						19	24562	4h
24563	Blue Oak		3 at 27					18	24563	4h
24766	Blue Oak	10						17		4h
24777	Live Oak	10						17		4h
24797	Blue Oak	10						17		4h
24839	Blue Oak	12						20	24839	4h
24840	Blue Oak	10						13	24840	4h
24841	Blue Oak	11						16	24841	4h
24842	Blue Oak		4,8					17	24842	4h
24843	Blue Oak	7						16	24843	4h
24844	Live Oak				8,10			19	24844	4h
24845	Live Oak						4 at 19	17	24845	4h
24846	Blue Oak		3 at 26					22	24846	4h
24847	Blue Oak	10						17	24847	4h
24848	Blue Oak	9						12	24848	4h
24849	Blue Oak		5,6					15	24849	4h
24851	Blue Oak		10,11					17	24851	4h
24852	Blue Oak		3 at 41					26	24852	4h
24853	Blue Oak	15						18	24853	4h

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4h

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
24854	Live Oak		3 at 18					16	24854	4h
24855	Blue Oak		7,9					16	24855	4h
24857	Blue Oak					12		17	24857	4h
24858	Live Oak		4 at 38					21	24858	4h
24859	Blue Oak	10						12	24859	4h
24860	Blue Oak		13,14					18	24860	4h
24861	Blue Oak	12						15	24861	4h
24862	Blue Oak	15						26	24862	4h
24863	Live Oak						10,19	29	24863	4h
25575	Blue Oak	10						17		4h
26533	Live Oak	10						17		4h
26586	Live Oak						6,6	14	26586	4h
26587	Live Oak		4 at 30					19	26587	4h
26615	Live Oak	10						17		4h
26617	Live Oak	10						17		4h
26641	Live Oak	10						17		4h
26744	Live Oak	10						17		4h
26807	Live Oak		4 at 34					22	26807	4h
26808	Live Oak		4 at 25					23	26808	4h
26809	Live Oak		6 at 47					20	26809	4h
26810	Live Oak		3 at 18					18	26810	4h
26928	Live Oak		6 at 31					17	26928	4h
26929	Live Oak		3 at 16					17	26929	4h
26930	Live Oak	8						15	26930	4h
26931	Live Oak						4 at 23	18	26931	4h
26932	Blue Oak		6,7					16	26932	4h
27028	Blue Oak	10						17		4h
27104	Valley Oak			12				17	27104	4h
27105	Blue Oak	20						26	27105	4h
27106	Live Oak	9						16	27106	4h
27111	Live Oak	12						16	27111	4h
27114	Live Oak		4 at 28					18	27114	4h
27115	Live Oak		6,6					15	27115	4h
27116	Live Oak					6		9	27116	4h
27117	Live Oak		6 at 48					22	27117	4h
27118	Live Oak		4 at 31					24	27118	4h
27132	Live Oak		5 at 59					24	27132	4h
27169	Blue Oak	10						17		4h
27241	Live Oak		5 at 33					22	27241	4h
27244	Live Oak		8,10					22	27244	4h
27245	Live Oak		4 at 47					26	27245	4h
27246	Live Oak	15						24	27246	4h
27247	Live Oak	21						23	27247	4h
27248	Live Oak		4 at 46					28	27248	4h
27249	Live Oak		9 at 88					27	27249	4h
27250	Live Oak	18						20	27250	4h
27251	Live Oak		5 at 43					22	27251	4h
27298	Live Oak	10						17		4h
27430	Blue Oak		4,6					10	27430	4h

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4h

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
27446	Live Oak	10						17		4h
28465	Blue Oak	10						17		4h
28467	Blue Oak	10						17		4h
28697	Live Oak	12						13		4h
28981	Live Oak	13						15		4h
28984	Live Oak	14						15		4h

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4i

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
1151	Live Oak				6 at 88			30	1151	4i
1171	Live Oak		4 at 57					30	50250	4i
1274	Live Oak						4 at 12	15	50329	4i
1275	Live Oak		5 at 34					20	50327	4i
1276	Blue Oak		5,7					13	50290	4i
1277	Live Oak				4 at 26			22	50289	4i
1278	Live Oak		4 at 27					19	50288	4i
1279	Live Oak		8 at 32					16	50287	4i
1280	Live Oak						7 at 41	16	50285	4i
1281	Live Oak		4 at 23					20	50282	4i
1301	Valley Oak		11,14					23	1301	4i
1302	Live Oak	6						14	1302	4i
1303	Live Oak		12 at 49					15	1303	4i
1311	Live Oak		5 at 36					19	1311	4i
1312	Live Oak		6 at 30					15	1312	4i
1313	Live Oak		6,8					15	1313	4i
1316	Live Oak		17 at 88					19	1316	4i
1318	Live Oak		8 at 43					20	1318	4i
1319	Live Oak		3,7					15	1319	4i
1320	Live Oak		6,12					20	1320	4i
1321	Blue Oak	11						16	1321	4i
1322	Blue Oak	10						12	1322	4i
1323	Live Oak		5 at 40					16	1323	4i
1324	Blue Oak	9						13	1324	4i
2902	Live Oak		8,14					19	2902	4i
2903	Valley Oak	20						21	2903	4i
2904	Live Oak		3 at 13					17	50248	4i
2905	Live Oak		3 at 21					22	50246	4i
2906	Live Oak		7,7					17	50247	4i
2907	Live Oak	9						20	50245	4i
16809	Live Oak					6		11	16809	4i
16810	Valley Oak		6,6					13	16810	4i
16815	Live Oak	8						13	16815	4i
16816	Live Oak		4,11					15	16816	4i
16817	Live Oak		17,21					30	16817	4i
16818	Live Oak		13,15					22	16818	4i
16819	Blue Oak		5,6					14	16819	4i
16820	Live Oak		3 at 26					18	16820	4i
16821	Live Oak		14 at 77					21	16821	4i
16822	Blue Oak	5						8	16822	4i
16823	Blue Oak	5						8	16823	4i
16824	Live Oak		6 at 33					16	16824	4i
16825	Live Oak		11,16					23	16825	4i
16826	Live Oak		8 at 57					18	16826	4i
16828	Live Oak		5,10					17	16828	4i
16829	Live Oak		4 at 28					22	16829	4i
16830	Live Oak						3 at 10	12	16830	4i
16831	Blue Oak		5,6					14	16831	4i
16832	Live Oak		5 at 28					15	16832	4i
16833	Live Oak		10 at 58					21	16833	4i

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4I

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
16834	Live Oak		3 at 12					18	16834	4i
16835	Live Oak	8						14	16835	4i
16837	Live Oak	6						14	16837	4i
16838	Valley Oak	12						18	16838	4i
16839	Valley Oak	10						25	16839	4i
16841	Valley Oak	11						16	16841	4i
16842	Valley Oak	24						34	16842	4i
16843	Valley Oak	11						15	16843	4i
16844	Valley Oak		3 at 31					26	16844	4i
16845	Valley Oak	9						15	16845	4i
20030	Live Oak	10						17	50440	4i
20042	Live Oak		5 at 22					17	50388	4i
20044	Live Oak					5		13	50400	4i
20045	Live Oak						3 at 12	14	50406	4i
20047	Blue Oak	8						17	50386	4i
20048	Live Oak		4 at 12					15	50385	4i
20049	Live Oak		3 at 13					17	50387	4i
20051	Blue Oak	6						11	50383	4i
20053	Blue Oak	4						7	50382	4i
20054	Live Oak				3 at 14			17	50381	4i
20055	Live Oak						5 at 25	20	50380	4i
20056	Live Oak				7 at 28			22	50378	4i
20057	Live Oak				4 at 12			20	50376	4i
20058	Live Oak						7 at 17	22	50377	4i
20059	Blue Oak	7						11	50375	4i
20060	Live Oak						3 at 10	18	50374	4i
20068	Live Oak			6				20	50362	4i
20069	Live Oak		3,6					19	50363	4i
20070	Live Oak	10						18	50364	4i
20071	Blue Oak		5,5					13	50365	4i
20072	Blue Oak		3 at 12					11	50348	4i
20073	Blue Oak	5						10	50366	4i
20074	Live Oak		6 at 26					16	50367	4i
20075	Live Oak		4 at 16					15	50373	4i
20076	Live Oak				4 at 11			16	50372	4i
20077	Live Oak				3 at 6			10	50371	4i
20078	Live Oak			5				18	50379	4i
20079	Live Oak				4 at 15			17	50370	4i
20080	Blue Oak	5						6	50369	4i
20081	Live Oak		4 at 23					20	50368	4i
20082	Live Oak				8 at 30			20	50345	4i
20083	Blue Oak			5				10	50346	4i
20084	Live Oak	4						10	50347	4i
20085	Live Oak	7						20	50344	4i
20086	Live Oak		8,10					17	50343	4i
20087	Live Oak		6,10					22	50342	4i
20088	Blue Oak	4						5	50349	4i
20089	Live Oak				5 at 10			16	50341	4i
20090	Live Oak	4						8	50340	4i

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4i

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
20091	Live Oak		6 at 23					13	50339	4i
20095	Blue Oak	4						8	50353	4i
20096	Blue Oak	5						6	50319	4i
20102	Live Oak						3,4	8	50318	4i
20103	Live Oak						7 at 37	22	50314	4i
20104	Live Oak				3 at 13			15	50312	4i
20105	Live Oak				3 at 4			18	50313	4i
20106	Live Oak				10 at 35			25	50315	4i
20107	Live Oak		3,8					17	50321	4i
20108	Live Oak						3 at 10	18	50320	4i
20109	Live Oak				13 at 66			22	50322	4i
20110	Live Oak			5				16	50323	4i
20111	Live Oak						4 at 17	18	50338	4i
20112	Blue Oak	7						10	50337	4i
20113	Live Oak		5 at 31					18	50331	4i
20114	Blue Oak	5						13	50333	4i
20115	Live Oak					4		15	50335	4i
20116	Live Oak		7,7					16	50336	4i
20117	Live Oak				5,7			15	50334	4i
20118	Live Oak		2,4					10	50332	4i
20119	Blue Oak		7,10					20	50330	4i
20120	Live Oak				7 at 42			22	50328	4i
20121	Live Oak	9						18	50326	4i
20122	Live Oak				5 at 31			21	50324	4i
20123	Live Oak		7 at 33					20	50325	4i
20124	Blue Oak	11						13	50310	4i
20125	Blue Oak						2,4	14	50311	4i
20129	Blue Oak		4,5					6	50296	4i
20130	Live Oak						4 at 11	16	50295	4i
20131	Live Oak						14 at 67	20	50294	4i
20132	Live Oak						3 at 10	18	50293	4i
20133	Live Oak		3 at 17					16	50291	4i
20134	Live Oak				4 at 18			18	50292	4i
20135	Live Oak		8 at 32					17	50279	4i
20136	Live Oak		10 at 39					20	50278	4i
20139	Live Oak		7 at 37					20	50284	4i
20141	Live Oak						8 at 33	22	50307	4i
20142	Live Oak						10 at 42	23	50306	4i
20143	Live Oak		6 at 30					20	50305	4i
20144	Blue Oak		4,6					12	50304	4i
20145	Live Oak				14 at 54			22	50301	4i
20146	Live Oak						3 at 10	16	50302	4i
20147									50300	4i
20148	Live Oak			4				12	50299	4i
20149	Live Oak						11 at 43	20	50286	4i
20150	Live Oak						3 at 11	12	50265	4i
20151	Live Oak						6 at 36	23	50281	4i
20152	Live Oak				13 at 46			20	50280	4i
20153	Live Oak		3 at 12					15	50277	4i
20154	Live Oak				9 at 55			28	50276	4i

Clover Valley Partners

Clover Valley

City of Rocklin, CA

Tree Summary - Phase 4i

(All data available on Trees)

Number and Caliper Inches of Trees Removed

Tree Species	Number of Fair trees Removed	Caliper Inches of Fair Trees Removed	Caliper Inches of Fair Multi-Stem Trees Removed	Number of Fair/Poor trees Removed	Caliper Inches of Fair/Poor Trees Removed	Caliper Inches of Multi-Stem Fair/Poor Trees Removed	Number of Poor trees Removed	Caliper Inches of Poor Trees Removed	Caliper Inches of Poor Multi-Stem Trees Removed
Blue Oak	80	505	300	6	10	73	8	63	6
Live Oak	125	131	2693	33	37	725	34	62	628
Valley Oak	13	122	81						
Misc	5	95							
Total	223	853	3074	39	47	798	42	125	634

	Number of trees Removed	Caliper Inches of Trees Removed	Caliper Inches of Multi-Stem Trees Removed	Total Caliper Inches of Trees Removed
Fair Trees	223	853	3074	3927
Fair / Poor Trees	39	47	798	845
Fair & Fair / Poor Trees	**262**	900	3872	**4772**
Poor Trees	**42**	125	634	**759**

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4i

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
20155	Blue Oak	7						12	50275	4i
20156	Live Oak				7 at 29			20	50273	4i
20158	Live Oak		9 at 50					22	50271	4i
20159	Blue Oak	6						6	50272	4i
20160	Live Oak						4 at 17	18	50270	4i
20161	Live Oak		7 at 18					17	50268	4i
20162	Live Oak		4 at 11					14	50267	4i
20200	Live Oak		4 at 29					15	20200	4i
20201	Blue Oak				4 at 15			14	20201	4i
20202	Blue Oak	5						10	20202	4i
20203	Live Oak	5						6	20203	4i
20204	Live Oak						4 at 16	15	20204	4i
20205	Blue Oak		3,4					8	20205	4i
20206	Blue Oak	8						8	20206	4i
20207	Live Oak		3 at 13					16	20207	4i
20208	Live Oak		8 at 33					17	20208	4i
20209	Live Oak		5 at 22					18	20209	4i
20210	Live Oak		3 at 17					18	20210	4i
20211	Live Oak		4,7					17	20211	4i
20212	Live Oak		3 at 15					17	20212	4i
20213	Live Oak		3 at 9					16	20213	4i
20214	Live Oak		4,4					15	20214	4i
20215	Live Oak	4						15	20215	4i
20448	Live Oak				8 at 24			15	20448	4i
20449	Live Oak						3 at 15	15	20449	4i
20450	Live Oak			5				16	50269	4i
20451	Blue Oak	4						12	20451	4i
20452	Live Oak		4 at 10					12	20452	4i
20453	Live Oak		2,5					12	20453	4i
20454	Blue Oak		4,7					12	20454	4i
20455	Live Oak		4,4					8	20455	4i
20466	Live Oak	7						18	20466	4i
20467	Live Oak		6 at 24					17	20467	4i
20468	Live Oak						3 at 25	30	20468	4i
20469	Live Oak		5 at 31					21	20469	4i
20472	Blue Oak	6						13	20472	4i
20473	Blue Oak	8						12	20473	4i
20474	Blue Oak	7						10	20474	4i
20492	Live Oak	9						18	20492	4i
20493	Live Oak		5,8					19	20493	4i
20494	Live Oak		4,7					18	20494	4i
20495	Live Oak		6,7					17	20495	4i
20496	Live Oak		4 at 20					18	20496	4i
20497	Live Oak		6,8					17	20497	4i
20498	Live Oak		4 at 15					15	20498	4i
20499	Live Oak		3 at 18					19	20499	4i
20500	Live Oak				4 at 16			16	20500	4i
20501	Live Oak		3 at 10					10	20501	4i
20502	Live Oak	6						14	20502	4i

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4i

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
20503	Live Oak		7 at 33					17	20503	4i
20504	Live Oak		11 at 16					20	20504	4i
20505	Valley Oak		6,7					15	20505	4i
20506	Live Oak		4 at 22					19	20506	4i
20507	Live Oak		3 at 11					10	20507	4i

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4i

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
20531	Live Oak		5,5					10	20531	4i
20532	Blue Oak		4,4					9	20532	4i
20536	Blue Oak	13						18	20536	4i
20537	Blue Oak	8						16	20537	4i
20538	Valley Oak	13						18	20538	4i
20539	Blue Oak					13		8	20539	4i
20540	Live Oak	6						15	20540	4i
20541	Live Oak						4 at 17	13	20541	4i
20542	Blue Oak		3 at 31					17	20542	4i
20543	Blue Oak	7						12	20543	4i
20558	Blue Oak					4		10	20558	4i
20559	Live Oak					5		14	20559	4i
20561	Blue Oak				4 at 8			10	20561	4i
20562	Live Oak			7				13	20562	4i
20567	Blue Oak	14						18	20567	4i
20568	Blue Oak	12						16	20568	4i
20569	Blue Oak	5						10	20569	4i
20573	Live Oak		3 at 12					12	20573	4i
20574	Live Oak		4 at 16					13	20574	4i
20575	Live Oak		14 at 56					14	20575	4i
20749	Live Oak				4 at 28			18	20749	4i
20750	Live Oak						4 at 39	20	20750	4i
20751	Blue Oak	12						18	20751	4i
20762	Blue Oak		11,13					18	20762	4i
20763	Live Oak		11 at 42					20	20763	4i
20764	Blue Oak		3,4					6	20764	4i
20765	Blue Oak	7						12	20765	4i
23151	Live Oak		5 at 40					21	23151	4i
23152	Live Oak					9		17	23152	4i
23157	Blue Oak	8						15	23157	4i
23161	Blue Oak	6						10	23161	4i
23162	Live Oak		8 at 74					22	23162	4i
23163	Blue Oak		12,15					17	23163	4i
23164	Live Oak		7 at 45					17	23164	4i
23165	Live Oak		5,8					16	23165	4i
23166	Live Oak		10 at 52					19	23166	4i
23168	Live Oak		10 at 53					18	23168	4i
23172	Live Oak		3 at 17					19	23172	4i
23173	Live Oak		9 at 39					18	23173	4i
23184									23184	4i
23201	Live Oak		5 at 21					14	23201	4i
23202	Live Oak		4 at 17					18	23202	4i
23203	Live Oak		3 at 11					14	23203	4i
23204	Live Oak		4,5					15	23204	4i
23205	Live Oak	5						15	23205	4i
23206	Live Oak		5 at 27					18	23206	4i
23207	Live Oak				5,7			17	23207	4i
23241	Live Oak		9 at 45					17	23241	4i
23242	Live Oak	8						15	23242	4i

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4i

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
23243	Live Oak		4 at 14					14	23243	4i
23244	Live Oak		7 at 32					16	23244	4i
23245	Live Oak		5 at 24					16	23245	4i
23263	Live Oak		3 at 11					10	23263	4i
23264	Live Oak		9 at 37					17	23264	4i
23714	Blue Oak	10						16	23714	4i
28997	Blue Oak	13						18		4i
29069	Blue Oak	13						18		4i
29166	Blue Oak	13						18		4i
29169	Blue Oak	13						18		4i
29170	Blue Oak	13						18		4i
29171	Blue Oak	13						18		4i
29172	Live Oak	13						18		4i
29173	Blue Oak	13						18		4i
29174	Blue Oak	13						18		4i
29175	Live Oak	13						18		4i
29176	Blue Oak	13						18		4i
29177	Blue Oak	13						18		4i
29178	Live Oak	13						18		4i
29194	Blue Oak	13						18		4i
29195	Blue Oak	13						18		4i
29196	Blue Oak	13						18		4i
29209	Blue Oak	13						18		4i
29210	Blue Oak	13						18		4i
29211	Blue Oak	13						18		4i
29212	Blue Oak	13						18		4i
29213	Blue Oak	13						18		4i
29214	Blue Oak	13						18		4i
29215	Blue Oak	13						18		4i
29216	Blue Oak	13						18		4i
29217	Blue Oak	13						18		4i
29218	Blue Oak	13						18		4i
29219	Blue Oak	13						18		4i
29220	Blue Oak	13						18		4i
29221	Blue Oak	13						18		4i
29222	Blue Oak	13						18		4i
29223	Blue Oak	13						18		4i
29224	Blue Oak	13						18		4i
29225	Blue Oak	13						18		4i
29226	Blue Oak	13						18		4i
29227	Blue Oak	13						18		4i
29228	Blue Oak	13						18		4i
29229	Blue Oak	13						18		4i
29230	Blue Oak	6						8		4i
29231	Blue Oak	-1						-2		4i
50266									50266	4i
50283									50283	4i
50384	Blue Oak			5				17	50384	4i
50405									50405	4i

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Clover Valley Partners

Clover Valley

City of Rocklin, CA

Tree Summary - Phase 4j

(All data available on Trees)

Number and Caliper Inches of Trees Removed

Tree Species	Number of Fair trees Removed	Caliper Inches of Fair Trees Removed	Caliper Inches of Fair Multi-Stem Trees Removed	Number of Fair/Poor trees Removed	Caliper Inches of Fair/Poor Trees Removed	Caliper Inches of Multi-Stem Fair/Poor Trees Removed	Number of Poor trees Removed	Caliper Inches of Poor Trees Removed	Caliper Inches of Poor Multi-Stem Trees Removed
Blue Oak	375	3431	985	36	352	107	84	948	178
Interior Live Oak							1	9	
Live Oak	45	149	417	18	93	161	45	248	359
Valley Oak	16	167	91	2	34		3	55	
Misc	4	52							
Total	440	3799	1493	56	479	268	133	1260	537

	Number of trees Removed	Caliper Inches of Trees Removed	Caliper Inches of Multi-Stem Trees Removed	Total Caliper Inches of Trees Removed
Fair Trees	440	3799	1493	5292
Fair / Poor Trees	56	479	268	747
Fair & Fair / Poor Trees	**496**	4278	1761	**6039**
Poor Trees	**133**	1260	537	**1797**

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4j

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
2766	Blue Oak		14,14					17	2766	4j
2769	Blue Oak			7				6	2769	4j
2770	Live Oak				3 at 27			20	2770	4j
2771	Blue Oak		8,10					17	2771	4j
2772	Blue Oak		10,10					21	2772	4j
2773	Blue Oak						9,13	14	2773	4j
2774	Blue Oak	14						16	2774	4j
2775	Blue Oak		6,9					17	2775	4j
2776	Blue Oak					12		15	2776	4j
2778	Blue Oak	12						16	2778	4j
2779	Blue Oak	8						15	2779	4j
2780	Blue Oak					15		15	2780	4j
2781	Blue Oak					12		14	2781	4j
2782	Blue Oak			17				21	2782	4j
2783	Blue Oak	10						13	2783	4j
2784	Blue Oak	8						14	2784	4j
2785	Blue Oak					17		17	2785	4j
2786	Blue Oak		9,14					16	2786	4j
2787	Blue Oak						7,9	12	2787	4j
2788	Blue Oak	12						15	2788	4j
2789	Blue Oak	17						18	2789	4j
2790	Blue Oak					9		9	2790	4j
2791	Live Oak						4 at 30	13	2791	4j
2798	Blue Oak					16		12	2798	4j
2827	Live Oak		12					14	2827	4j
2828	Live Oak		15					18	2828	4j
2829	Blue Oak						6,7	10	2829	4j
2842	Blue Oak						8,9	21	2842	4j
2843	Blue Oak	12						14	2843	4j
2844	Blue Oak	12						14	2844	4j
2845	Blue Oak	9						12	2845	4j
2846	Blue Oak			18				19	2846	4j
2847	Blue Oak	14						16	2847	4j
2866	Blue Oak					9		5	2866	4j
2868	Blue Oak					9		4	2868	4j
2870	Blue Oak	7						6	2870	4j
2871	Blue Oak		3,4					8	2871	4j
2872	Blue Oak	13						15	2872	4j
2873	Blue Oak	12						13	2873	4j
2874	Blue Oak	9						10	2874	4j
2877	Live Oak					11		15	2877	4j
2893	Blue Oak	23						24	2893	4j
2894	Blue Oak	8						12	2894	4j
2895	Blue Oak						9,11	14	2895	4j
2896	Blue Oak					19		21	2896	4j
2897	Blue Oak			14				17	2897	4j
2898	Blue Oak	13						21	2898	4j
2899	Blue Oak	20						16	2899	4j
2900	Blue Oak					13		17	2900	4j
3043	Blue Oak	7						11	3043	4j

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4j

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
3044	Blue Oak		6,13					16	3044	4j
3045	Blue Oak	10						12	3045	4j
3047	Blue Oak	12						16	3047	4j
3048	Live Oak		10					11	3048	4j
3049	Blue Oak	8						14	3049	4j
3050	Blue Oak		4,5					12	3050	4j
3051	Blue Oak		4,9					15	3051	4j
3052	Blue Oak		5,8					13	3052	4j
3053	Blue Oak					15		15	3053	4j
3054	Blue Oak	9						13	3054	4j
3055	Valley Oak					20		17	3055	4j
3056	Blue Oak			12				24	3056	4j
3057	Blue Oak	11						18	3057	4j
3058	Live Oak						5,6	17	3058	4j
3059	Blue Oak		3 at 27					17	3059	4j
3060	Blue Oak	7						12	3060	4j
3061	Blue Oak	9						14	3061	4j
3062	Blue Oak	6						12	3062	4j
3063	Blue Oak	13						25	3063	4j
3064	Blue Oak					22		19	3064	4j
3065	Blue Oak	7						14	3065	4j
3066	Blue Oak	6						13	3066	4j
3067	Blue Oak			13				18	3067	4j
3068	Blue Oak	9						14	3068	4j
3069	Blue Oak	7						6	3069	4j
3072	Blue Oak		8,9					15	3072	4j
3073	Blue Oak	12						15	3073	4j
3074	Blue Oak	9						15	3074	4j
3075	Live Oak	6						14	3075	4j
3076	Blue Oak	10						18	3076	4j
3077	Valley Oak	22						27	3077	4j
3078	Live Oak						7,9	15	3078	4j
3079	Live Oak					8		9	3079	4j
3080	Blue Oak	7						10	3080	4j
3081	Blue Oak	10						15	3081	4j
3085	Blue Oak	7						13	3085	4j
3086	Live Oak	8						16	3086	4j
3087	Blue Oak	7						10	3087	4j
3088	Blue Oak			7				18	3088	4j
3089	Blue Oak	9						15	3089	4j
3090	Live Oak					8		14	3090	4j
3091	Blue Oak	15						16	3091	4j
3092	Blue Oak					11		13	3092	4j
3093	Blue Oak		8,11					16	3093	4j
3097	Live Oak						7,7	16	3097	4j
3098	Blue Oak	21						24	3098	4j
3099	Live Oak		3 at 15					16	3099	4j
3201	Live Oak					8		13	3201	4j
3202	Blue Oak	8						15	3202	4j

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4j

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
3203	Blue Oak	20						22	3203	4j
3204	Blue Oak	8						15	3204	4j
3205	Valley Oak	14						25	3205	4j
3206	Blue Oak	10						13	3206	4j
3207	Blue Oak	10						12	3207	4j
3210	Blue Oak	8						10	3210	4j
3211	Blue Oak					6		9	3211	4j
3212	Blue Oak	7						13	3212	4j
3213	Live Oak	9						16	3213	4j
3214	Blue Oak	11						17	3214	4j
3215	Blue Oak	9						12	3215	4j
3216	Blue Oak	12						18	3216	4j
3217	Live Oak		4,8					13	3217	4j
3220	Blue Oak		9,11					20	3220	4j
3221	Live Oak					8		9	3221	4j
3222	Blue Oak	8						10	3222	4j
3223	Blue Oak	11						18	3223	4j
3224	Blue Oak	6						8	3224	4j
3225	Blue Oak		5,10					16	3225	4j
3226	Blue Oak					10		13	3226	4j
3227	Blue Oak	14						18	3227	4j
3228	Blue Oak					14		17	3228	4j
3229	Blue Oak	10						15	3229	4j
3230	Blue Oak					16		17	3230	4j
3231	Blue Oak		7,8					15	3231	4j
3232	Blue Oak	14						17	3232	4j
3233	Blue Oak					16		16	3233	4j
3234	Blue Oak			7				10	3234	4j
3235	Blue Oak	11						12	3235	4j
3236	Blue Oak		3 at 16					15	3236	4j
3237	Blue Oak	15						15	3237	4j
3238	Live Oak			11				20	3238	4j
3239	Live Oak				3 at 27			20	3239	4j
3244	Blue Oak	12						13	3244	4j
3245	Blue Oak					22		19	3245	4j
3246	Blue Oak					13		16	3246	4j
3247	Blue Oak	22						21	3247	4j
3248	Blue Oak		5,11					16	3248	4j
3249	Blue Oak	13						16	3249	4j
3250	Blue Oak	21						19	3250	4j
3251	Blue Oak	17						19	3251	4j
3252	Blue Oak			12				16	3252	4j
3253	Blue Oak	8						15	3253	4j
3254	Blue Oak					17		18	3254	4j
3255	Blue Oak	11						13	3255	4j
3256	Blue Oak	14						18	3256	4j
3257	Blue Oak	11						17	3257	4j
3259									55002	4j
3260									55004	4j
3261	Live Oak		8,8					12	3261	4j

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4j

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
3262	Blue Oak	10						12	3262	4j
3263	Blue Oak	16						21	3263	4j
3265	Blue Oak	23						22	3265	4j
3266	Blue Oak	11						15	3266	4j
3267	Blue Oak						13,14	18	3267	4j
3268	Blue Oak		8,11					15	3268	4j
3269	Blue Oak	8						11	3269	4j
3270	Blue Oak	14						16	3270	4j
3271	Blue Oak		11,12					15	3271	4j
3272	Blue Oak		11,12					15	3272	4j
3273	Blue Oak	9						13	3273	4j
3274	Blue Oak	11						13	3274	4j
3275	Blue Oak	11						14	3275	4j
3276	Live Oak		5,9					15	3276	4j
3277	Blue Oak	13						15	3277	4j
3278	Blue Oak	8						12	3278	4j
3279	Valley Oak		4,17					26	3279	4j
3280	Valley Oak	7						14	3280	4j
3281	Blue Oak					8		10	3281	4j
3282	Blue Oak	11						15	3282	4j
3283	Blue Oak					16		20	3283	4j
3284	Blue Oak	17						22	3284	4j
3286	Blue Oak	25						31	3286	4j
3287	Blue Oak	12						9	3287	4j
3288	Blue Oak	18						25	3288	4j
3289	Blue Oak					12		13	3289	4j
3290	Blue Oak	13						15	3290	4j
3291	Blue Oak			10				11	3291	4j
3292	Blue Oak	18						21	3292	4j
3293	Blue Oak	14						17	3293	4j
3294	Blue Oak	19						15	3294	4j
3295	Blue Oak	15						17	3295	4j
3296	Blue Oak	12						13	3296	4j
3297									3297	4j
3298	Blue Oak	11						13	3298	4j
3299	Blue Oak	11						16	3299	4j
3300	Blue Oak					9		17	3300	4j
20440	Blue Oak	18						17	20440	4j
20660	Live Oak						7,8	22	20660	4j
20661	Live Oak					10		18	20661	4j
20864	Live Oak		3 at 31					20	20864	4j
20865	Valley Oak	5						11	20865	4j
20866	Live Oak		7,8					19	20866	4j
20867	Blue Oak	13						16	20867	4j
20868	Valley Oak	11						14	20868	4j
20869	Blue Oak	14						21	20869	4j
20870	Blue Oak	8						10	20870	4j
20871	Blue Oak	14						17	20871	4j
20886	Blue Oak	5						6	20886	4j

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Removed Oak Tree Inventory - Phase 4j

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
20887	Blue Oak	16						15	20887	4j
20888	Blue Oak	16						19	20888	4j
20889	Blue Oak	14						16	20889	4j
20890	Blue Oak	4						4	20890	4j
20891	Blue Oak		5,6					14	20891	4j
20892	Blue Oak					4		5	20892	4j
20893	Blue Oak		9,10					18	20893	4j
20894	Live Oak					9		14	20894	4j
20895	Blue Oak					22		22	20895	4j
20896	Blue Oak	17						18	20896	4j
20897	Blue Oak		2,5					10	20897	4j
20898	Blue Oak	10						14	20898	4j
20899	Blue Oak	11						15	20899	4j
20900	Blue Oak	6						12	20900	4j
20901	Blue Oak	6						8	20901	4j
20902	Blue Oak	10						14	20902	4j
20903	Blue Oak					12		13	20903	4j
20904	Blue Oak			11				15	20904	4j
20905	Blue Oak					9		13	20905	4j
20906	Blue Oak	5						14	20906	4j
20907	Blue Oak				3 at 17			8	20907	4j
20908	Blue Oak	21						25	20908	4j
20909	Blue Oak			6				10	20909	4j
20910	Blue Oak		4,5					12	20910	4j
20911	Blue Oak		5,7					13	20911	4j
20912	Blue Oak						3,7	13	20912	4j
20913	Live Oak	7						8	20913	4j
20914	Blue Oak	7						13	20914	4j
20915	Blue Oak	4						14	20915	4j
20916	Blue Oak					8		12	20916	4j
20917	Blue Oak	10						14	20917	4j
20918	Blue Oak					5		15	20918	4j
20919	Blue Oak					16		17	20919	4j
20920	Blue Oak			10				20	20920	4j
20921	Blue Oak	14						17	20921	4j
20922	Blue Oak	4						5	20922	4j
20923	Live Oak			9				16	20923	4j
20924	Blue Oak	4						10	20924	4j
20925	Blue Oak	6						8	20925	4j
20926	Blue Oak	6						6	20926	4j
20927	Blue Oak	8						16	20927	4j
20928	Live Oak				4 at 32			17	20928	4j
20929	Blue Oak	6						13	20929	4j
20930	Blue Oak					4		5	20930	4j
20931	Blue Oak	6						12	20931	4j
20932	Live Oak	6						11	20932	4j
20933	Blue Oak	7						12	20933	4j
20934	Blue Oak	10						13	20934	4j
20935	Blue Oak					7		8	20935	4j
20936	Blue Oak	7						8	20936	4j

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Removed Oak Tree Inventory - Phase 4j

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
20937	Blue Oak	11						16	20937	4j
20938	Blue Oak				7,10			13	20938	4j
20940	Blue Oak	8						15	20940	4j
20944	Blue Oak	16						40	20944	4j
20945	Blue Oak		5,5					10	20945	4j
20946	Blue Oak	8						14	20946	4j
20947	Live Oak					9		9	20947	4j
20948	Blue Oak	4						6	20948	4j
20950	Blue Oak	7						12	20950	4j
20951	Blue Oak	6						8	20951	4j
20952	Blue Oak	21						22	20952	4j
21056	Blue Oak			9				16	21056	4j
21060	Blue Oak	6						13	21060	4j
21061	Blue Oak	5						10	21061	4j
21063	Blue Oak			9				15	21063	4j
21064	Blue Oak	15						17	21064	4j
21065	Blue Oak					17		15	21065	4j
21067	Blue Oak	11						17	21067	4j
21068	Blue Oak	10						16	21068	4j
21069	Blue Oak	11						17	21069	4j
21070	Live Oak	14						18	21070	4j
21071	Blue Oak	10						17	21071	4j
21072	Live Oak			7				13	21072	4j
21073	Blue Oak					6		10	21073	4j
21074	Blue Oak	11						16	21074	4j
21075	Live Oak					10		15	21075	4j
21076	Blue Oak	6						14	21076	4j
21077	Live Oak		6,8					16	21077	4j
21078	Live Oak	4						12	21078	4j
21079	Live Oak	7						17	21079	4j
21081									21081	4j
21082	Blue Oak	6						12	21082	4j
21083	Blue Oak	9						14	21083	4j
21085	Live Oak					7		13	21085	4j
21087	Blue Oak					7		13	21087	4j
21088	Blue Oak		5,6					14	21088	4j
21090	Blue Oak	9						14	21090	4j
21091	Blue Oak	11						16	21091	4j
21092	Live Oak	6						15	21092	4j
21093	Live Oak		3 at 19					15	21093	4j
21094	Live Oak	9						14	21094	4j
21095	Live Oak		10,14					17	21095	4j
21096	Blue Oak	6						8	21096	4j
21097	Live Oak			9				16	21097	4j
21098	Live Oak			6				15	21098	4j
21099	Blue Oak	8						21	21099	4j
21100	Blue Oak	5						12	21100	4j
21101	Blue Oak				3 at 15			14	21101	4j
21102	Blue Oak					17		14	21102	4j

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Removed Oak Tree Inventory - Phase 4j

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
21103	Blue Oak					14		15	21103	4j
21104	Live Oak	8						14	21104	4j
21106	Live Oak		7,9					17	21106	4j
21107	Blue Oak	8						10	21107	4j
21108	Blue Oak	5						8	21108	4j
21109	Blue Oak	7						6	21109	4j
21110	Live Oak						4 at 10	13	21110	4j
21111	Live Oak	3						8	21111	4j
21112	Valley Oak	12						20	21112	4j
21113	Valley Oak	8						14	21113	4j
21114	Blue Oak					17		19	21114	4j
21115	Blue Oak	4						10	21115	4j
21116	Blue Oak	8						12	21116	4j
21117	Blue Oak					13		16	21117	4j
21118	Blue Oak	8						12	21118	4j
21119	Live Oak	5						10	21119	4j
21120	Blue Oak	8						11	21120	4j
21121	Blue Oak	5						6	21121	4j
21123	Blue Oak	8						12	21123	4j
21125	Blue Oak	9						13	21125	4j
21126	Blue Oak					10		13	21126	4j
21127	Live Oak						5,8	15	21127	4j
21128	Live Oak				6,10			17	21128	4j
21129	Valley Oak			19				22	21129	4j
21130	Blue Oak	6						9	21130	4j
21131	Blue Oak	10						13	21131	4j
21132	Blue Oak	4						5	21132	4j
21133	Blue Oak	9						12	21133	4j
21135	Blue Oak	5						7	21135	4j
21144	Blue Oak	9						10	21144	4j
21145	Blue Oak		5,6					13	21145	4j
21154	Blue Oak					6		10	21154	4j
21155	Live Oak					7		14	21155	4j
21156	Blue Oak					21		23	21156	4j
21157	Live Oak	9						15	21157	4j
21158	Valley Oak	15						18	21158	4j
21159	Blue Oak			13				15	21159	4j
21160	Blue Oak			7				15	21160	4j
21162	Blue Oak	4						11	21162	4j
21163	Blue Oak	6						10	21163	4j
21164	Blue Oak			8				15	21164	4j
21165	Live Oak					6		13	21165	4j
21167	Blue Oak				6,6			14	21167	4j
21169	Blue Oak	10						15	21169	4j
21170	Blue Oak			25				20	21170	4j
21194	Live Oak						6,7	16	21194	4j
21195	Live Oak				2,5			17	21195	4j
21196	Live Oak						8,12	19	21196	4j
21197	Live Oak	13						16	21197	4j
21198	Live Oak			11				15	21198	4j

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Removed Oak Tree Inventory - Phase 4j

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
21260	Blue Oak	8						8	21260	4j
21261	Blue Oak			13				16	21261	4j
21262	Blue Oak	11						22	21262	4j
21263	Blue Oak					10		13	21263	4j
21264	Blue Oak	15						23	21264	4j
21265	Blue Oak	25						33	21265	4j
21266	Blue Oak	19						24	21266	4j
21267	Blue Oak	16						16	21267	4j
21268	Blue Oak	15						15	21268	4j
21269	Blue Oak	7						13	21269	4j
21270	Blue Oak	17						26	21270	4j
21271	Blue Oak	14						17	21271	4j
21272	Blue Oak	12						14	21272	4j
21273	Blue Oak	17						20	21273	4j
21274	Blue Oak	21						18	21274	4j
21275	Blue Oak			18				19	21275	4j
21276	Blue Oak					10		12	21276	4j
21277	Blue Oak	16						19	21277	4j
21278	Blue Oak					27		19	21278	4j
21279	Blue Oak		5,6					8	21279	4j
21280	Blue Oak	16						24	21280	4j
21281	Blue Oak			13				13	21281	4j
21282	Blue Oak	13						20	21282	4j
21283	Blue Oak		3 at 20					15	21283	4j
21284	Blue Oak					12		13	21284	4j
21289	Blue Oak	6						6	21289	4j
21290	Blue Oak					10		13	21290	4j
21291	Blue Oak	18						21	21291	4j
21292	Blue Oak			16				15	21292	4j
21293	Blue Oak					11		12	21293	4j
21294	Blue Oak	15						20	21294	4j
21295	Blue Oak	7						13	21295	4j
21296	Blue Oak	15						16	21296	4j
21297	Blue Oak	8						15	21297	4j
21298	Blue Oak	14						21	21298	4j
21299	Blue Oak	9						14	21299	4j
21300	Blue Oak						4 at 24	16	21300	4j
21301	Blue Oak	7						16	21301	4j
21302	Blue Oak			12				15	21302	4j
21303	Blue Oak	10						13	21303	4j
21304	Blue Oak	8						9	21304	4j
21305	Blue Oak					9		15	21305	4j
21306	Blue Oak	24						29	21306	4j
21307	Live Oak					8		15	21307	4j
21308	Blue Oak	7						10	21308	4j
21709	Live Oak					17		18	21709	4j
22083	Blue Oak		2,4					6	22083	4j
22085	Blue Oak					5		8	22085	4j
22102	Blue Oak	13						16	22102	4j
22103	Blue Oak			4				3	22103	4j

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		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
22104	Live Oak					16		15	22104	4j
22105	Live Oak						3 at 23	14	22105	4j
22107	Blue Oak	6						7	22107	4j
22987	Blue Oak		12,18					20	22987	4j
22988	Blue Oak					19		10	22988	4j
22989	Blue Oak	18						25	22989	4j
22990	Live Oak					13		15	22990	4j
22991	Live Oak					10		16	22991	4j
22992	Blue Oak					7		10	22992	4j
22993	Blue Oak	12						14	22993	4j
22994	Live Oak					8		11	22994	4j
22995	Blue Oak					20		20	22995	4j
22996	Blue Oak					18		18	22996	4j
22997	Blue Oak			10				13	22997	4j
22998	Blue Oak		7,7					12	22998	4j
23583	Blue Oak	10						16	23583	4j
23584	Blue Oak					6		14	23584	4j
23620	Blue Oak				5,9			16	23620	4j
23633	Blue Oak	10						15	23633	4j
23634	Blue Oak	9						18	23634	4j
23635	Blue Oak	8						15	23635	4j
23636	Blue Oak	8						14	23636	4j
23637	Blue Oak					10		15	23637	4j
23638	Blue Oak	6						5	23638	4j
23639	Blue Oak			10				14	23639	4j
23640	Blue Oak	7						14	23640	4j
23641	Blue Oak				8,11			16	23641	4j
23642	Blue Oak	10						16	23642	4j
23643	Blue Oak					10		15	23643	4j
23644	Blue Oak					8		7	23644	4j
23645	Blue Oak		11,14					19	23645	4j
23646	Live Oak						3,5	15	23646	4j
23648	Blue Oak	8						8	23648	4j
23649	Live Oak			9				15	23649	4j
23650	Blue Oak	10						15	23650	4j
23651	Blue Oak	11						17	23651	4j
23654	Blue Oak	11						18	23654	4j
23655	Blue Oak						3 at 17	15	23655	4j
23656	Live Oak		3 at 26					19	23656	4j
23657	Blue Oak	19						22	23657	4j
23658	Blue Oak	12						18	23658	4j
23659	Blue Oak	14						18	23659	4j
23660	Live Oak					24		14	23660	4j
23661	Blue Oak	13						21	23661	4j
23662	Blue Oak	9						17	23662	4j
23674	Blue Oak	12						18	23674	4j
23675	Blue Oak	13						17	23675	4j
23676	Blue Oak	8						16	23676	4j
23677	Blue Oak	8						14	23677	4j

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		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
23679	Blue Oak	9						15	23679	4j
23681	Blue Oak	9						10	23681	4j
23682	Valley Oak			15				22	23682	4j
23683	Live Oak	6						10	23683	4j
23684	Blue Oak	5						10	23684	4j
23685	Blue Oak		3 at 18					13	23685	4j
23686	Blue Oak	6						8	23686	4j
23687	Blue Oak	8						10	23687	4j
23688	Blue Oak					17		16	23688	4j
23689	Blue Oak	8						15	23689	4j
23690	Blue Oak		7,7					13	23690	4j
23691	Blue Oak	6						8	23691	4j
23692	Blue Oak	18						24	23692	4j
23693	Blue Oak		11,20					25	23693	4j
23694	Blue Oak	8						15	23694	4j
23695	Blue Oak	11						18	23695	4j
23696	Blue Oak	10						15	23696	4j
23697	Blue Oak					16		17	23697	4j
23698	Blue Oak	12						17	23698	4j
23699	Blue Oak		7,7					16	23699	4j
23700	Blue Oak	8						17	23700	4j
23701	Blue Oak	14						19	23701	4j
23702	Blue Oak					8		15	23702	4j
23703	Blue Oak	15						22	23703	4j
23704	Blue Oak	7						6	23704	4j
23705	Blue Oak	11						15	23705	4j
23706	Live Oak		12,12					22	23706	4j
23707	Blue Oak	16						23	23707	4j
25000	Blue Oak	21						18	25000	4j
25001	Blue Oak	8						10	25001	4j
25002	Blue Oak	7						10	25002	4j
25003	Blue Oak		12,13					16	25003	4j
25004	Blue Oak					17		21	25004	4j
25005	Blue Oak	7						11	25005	4j
25006	Blue Oak	12						12	25006	4j
25007	Blue Oak	9						10	25007	4j
25008	Blue Oak	14						8	25008	4j
25009	Blue Oak	7						7	25009	4j
25010	Live Oak		3 at 10					8	25010	4j
25053	Live Oak						8,8	12	25053	4j
25054	Blue Oak	16						16	25054	4j
25055	Live Oak						7,9	16	25055	4j
29059	Blue Oak				6,7			8	29059	4j
29060	Blue Oak	11						16	29060	4j
29061	Blue Oak	15						20	29061	4j
29062	Blue Oak					25		20	29062	4j
29063	Blue Oak	12						15	29063	4j
29064	Blue Oak		3 at 15					9	29064	4j
29136	Blue Oak	13						16	29136	4j
29233	Blue Oak		3 at 20					16		4j

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		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
21199	Live Oak						3 at 20	18	21199	4j
21200	Live Oak						5 at 31	17	21200	4j
21202	Live Oak					8		17	21202	4j
21203	Blue Oak	14						20	21203	4j
21204	Blue Oak	9						16	21204	4j
21205	Blue Oak	12						18	21205	4j
21206	Live Oak					8		6	21206	4j
21207	Live Oak					9		16	21207	4j
21209	Blue Oak	8						14	21209	4j
21210	Blue Oak	12						16	21210	4j
21211	Blue Oak	8						15	21211	4j
21212	Blue Oak	11						17	21212	4j
21213	Blue Oak					8		17	21213	4j
21214	Blue Oak	8						15	21214	4j
21215	Valley Oak					18		22	21215	4j
21216	Blue Oak					32		30	21216	4j
21217	Live Oak		3 at 12					12	21217	4j
21218	Blue Oak	6						6	21218	4j
21219	Blue Oak	22						25	21219	4j
21220	Live Oak				3 at 20			16	21220	4j
21221	Blue Oak	10						13	21221	4j
21222	Blue Oak		15,17					24	21222	4j
21223	Blue Oak		14,19					21	21223	4j
21224	Blue Oak		3 at 13					9	21224	4j
21225	Live Oak	5						7	21225	4j
21226	Blue Oak	11						12	21226	4j
21227	Blue Oak					9		10	21227	4j
21228	Valley Oak					17		21	21228	4j
21239	Blue Oak					10		15	21239	4j
21240	Blue Oak	11						16	21240	4j
21241	Live Oak		3 at 12					11	21241	4j
21242	Blue Oak					13		16	21242	4j
21243	Blue Oak	11						16	21243	4j
21244	Blue Oak			21				17	21244	4j
21245	Blue Oak	8						10	21245	4j
21246	Blue Oak					14		16	21246	4j
21247	Blue Oak	7						9	21247	4j
21248	Blue Oak					6		7	21248	4j
21249	Blue Oak					7		10	21249	4j
21250	Blue Oak	28						33	21250	4j
21251	Blue Oak	9						15	21251	4j
21252	Blue Oak		3 at 34					20	21252	4j
21253	Blue Oak		9,11					18	21253	4j
21254	Blue Oak	5						7	21254	4j
21255	Blue Oak	7						9	21255	4j
21256	Blue Oak	22						25	21256	4j
21257	Blue Oak			20				21	21257	4j
21258	Blue Oak	8						10	21258	4j
21259	Blue Oak					21		22	21259	4j

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Removed Oak Tree Inventory - Phase 4j

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
29234	Blue Oak		3 at 12					10		4j
29236	Blue Oak		5,9					13		4j
29251	Live Oak	12						17		4j
29252	Live Oak	10						20		4j
29253	Live Oak	16						18		4j
29254	Live Oak	8						15		4j
29255	Live Oak	8						13		4j
29259	Live Oak	6						8		4j
29260	Blue Oak	6						6		4j
29261	Blue Oak		8,9					24		4j
29262	Blue Oak						5,6	14		4j
29325	Blue Oak	12						20		4j
29488	Blue Oak					10		16		4j
29489	Blue Oak	10						13		4j
29492	Blue Oak	8						14		4j
29498	Blue Oak	12						14		4j
29499	Blue Oak	9						16		4j
29500	Blue Oak	11						13		4j
29501	Blue Oak		7 at 18					10		4j
29502	Blue Oak	10						12		4j
29503	Blue Oak	11						13		4j
29504	Blue Oak	8						10		4j
29505	Blue Oak	9						12		4j
29525	Live Oak	8						8		4j
31043	Blue Oak	10						13		4j
31063	Blue Oak	11						15		4j
31120	Blue Oak	12						13		4j
31176	Blue Oak	12						15		4j
31213	Blue Oak	11						9		4j
31223	Live Oak	9						12		4j
31327	Live Oak	10						13		4j
31327	Live Oak	7						9		4j
31460	Live Oak	14						15		4j
36816	Blue Oak	16						20		4j
36817	Blue Oak	9						12		4j
36818	Blue Oak	14						20		4j
36819	Blue Oak	13						16		4j
36820	Blue Oak	12						20		4j
36821	Live Oak	18						23		4j
36822	Blue Oak	12						13		4j
36823	Blue Oak					5		8		4j
36824	Blue Oak		6,16					26		4j
36825	Blue Oak	15						19		4j
36826	Blue Oak	14						16		4j
36827	Blue Oak	18						22		4j
36828	Blue Oak	14						15		4j
36829	Blue Oak			15				30		4j
36830	Blue Oak	7						17		4j
36831	Blue Oak	5						6		4j

Clover Valley Arborist Report
Removed Oak Tree Inventory - Phase 4j

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
36832	Blue Oak		7,10					18		4j
36833	Blue Oak						5 at 36	20		4j
36834	Blue Oak		3 at 14					12		4j
36835	Blue Oak		7 at 28					17		4j
36836	Blue Oak	10						16		4j
36837	Blue Oak				5 at 18			17		4j
36838	Blue Oak					9		20		4j
36839	Blue Oak	12						28		4j
36840	Blue Oak		14,16,18					28		4j
36841	Blue Oak	12						28		4j
36842	Blue Oak		14,16,19					28		4j
39491	Live Oak	12						28		4j
42462	Valley Oak		14,16,20					28		4j
42463	Valley Oak	12						28		4j
42464	Valley Oak		14,16,21					28		4j
42510	Valley Oak	12						28		4j
42510	Valley Oak		14,16,22					28		4j
42663	Live Oak	12						28		4j
46016	Live Oak		14,16,23					28		4j
46129	Blue Oak	12						28		4j
46291	Live Oak		14,16,24					28		4j
47226	Live Oak	12						28		4j
47241	Blue Oak		14,16,25					28		4j
47594	Live Oak	12						28		4j
47658	Live Oak		14,16,26					28		4j
47684	Live Oak	12						28		4j
50439	terior Live Oak		14,16,27					28		4j
50465	Valley Oak	12						28		4j
55008	Valley Oak		14,16,28					28		4j

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Clover Valley

City of Rocklin, CA

Tree Summary - Within Easements

(All data available on Trees)

Number and Caliper Inches of Trees Removed

Tree Species	Number of Fair trees Removed	Caliper Inches of Fair Trees Removed	Caliper Inches of Fair Multi-Stem Trees Removed	Number of Fair/Poor trees Removed	Caliper Inches of Fair/Poor Trees Removed	Caliper Inches of Multi-Stem Fair/Poor Trees Removed	Number of Poor trees Removed	Caliper Inches of Poor Trees Removed	Caliper Inches of Poor Multi-Stem Trees Removed
Blue Oak	42	259	230	2	19		9	81	27
Interior Live Oak	1	7							
Live Oak	42	31	958	8		201	20	79	181
Valley Oak	2	30							
Misc	1	17							
Total	88	344	1188	10	19	201	29	160	208

	Number of trees Removed	Caliper Inches of Trees Removed	Caliper Inches of Multi-Stem Trees Removed	Total Caliper Inches of Trees Removed
Fair Trees	88	344	1188	1532
Fair / Poor Trees	10	19	201	220
Fair & Fair / Poor Trees	**98**	363	1389	**1752**
Poor Trees	**29**	160	208	**368**

Clover Valley Arborist Report
Removed Oak Tree Inventory - Easements

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
1314	Live Oak		7 at 29					18	1314	ea
1315	Live Oak		7 at 34					16	1315	ea
1317	Live Oak		5,6					20	1317	ea
1827	Blue Oak	10						14	1827	ea
1833	Blue Oak			9				16	1833	ea
1834	Blue Oak			10				15	1834	ea
1896	Live Oak				4 at 36			17	1896	ea
1897	Blue Oak		4 at 30					15	1897	ea
2068	Blue Oak					13		14	2068	ea
2106	Blue Oak	12						13	2106	ea
2229	Blue Oak	8						12	2229	ea
2231	Live Oak						5,5	15	2231	ea
4249	Live Oak		3 at 24					18	4249	ea
5787	Live Oak		7,8					16	5787	ea
5788	Live Oak		6,6					17	5788	ea
5797	Blue Oak					10		16	5797	ea
5798	Blue Oak	9						16	5798	ea
5799	Live Oak		3 at 12					12	5799	ea
5808	Live Oak		5 at 18					16	5808	ea
5817	Live Oak		5 at 35					17	5817	ea
5818	Live Oak		3 at 15					16	5818	ea
5819	Live Oak		5,6					10	5819	ea
5821	Blue Oak	7						13	5821	ea
5827	Live Oak		4 at 26					16	5827	ea
5828	Live Oak		3 at 12					19	5828	ea
5830	Live Oak		6,12					13	5830	ea
5876	Live Oak					12		16	5876	ea
5878	Live Oak		13 at 72					22	5878	ea
5880	Live Oak		5 at 43					25	5880	ea
7060	Blue Oak					10		17	7060	ea
8669	Valley Oak	20						25	8669	ea
11314	Blue Oak		3 at 14					11	11314	ea
11315	Blue Oak		4,7					13	11315	ea
11331	Blue Oak		3 at 18					15	11331	ea
11332	Blue Oak		4 at 12					16	11332	ea
11333	Blue Oak	11						15	11333	ea
11334	Blue Oak	10						15	11334	ea
11356	Live Oak						7,11	19	11356	ea
11357	Live Oak					9		13	11357	ea
11360	Blue Oak	6						14	11360	ea
11361	Blue Oak	5						14	11361	ea
11371	Blue Oak	13						15	11371	ea
11372	Blue Oak					9		14	11372	ea
11725	Blue Oak	13						18	11725	ea
11726	Blue Oak	15						17	11726	ea
11728	Live Oak					6		8	11728	ea
15762	Blue Oak		5,6					14	15762	ea
15763	Blue Oak					7		13	15763	ea
15766	Blue Oak		7,8					13	15766	ea
15791	Blue Oak	9						13	15791	ea

Clover Valley Arborist Report
Removed Oak Tree Inventory - Easements

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
15876	Live Oak		6,7					15	15876	ea
15878	Live Oak				6,7			17	15878	ea
15886	Live Oak		7 at 42					20	15886	ea
15889	Live Oak				5 at 32			20	15889	ea
15904	Blue Oak					5		10	15904	ea
15905	Live Oak	5						6	15905	ea
16827	Live Oak		3 at 10					18	16827	ea
17246	Blue Oak		12,12					18	17246	ea
17561	Live Oak		3 at 45					32	17561	ea
20242	Valley Oak	10						16	20242	ea
20385	Blue Oak	13						26	20385	ea
20410	Live Oak						6,6	14	20410	ea
20418									20418	ea
20419	Blue Oak	6						15	20419	ea
21380	Blue Oak		11,16					20	21380	ea
21382	Blue Oak						3 at 27	13	21382	ea
21519	Blue Oak				4 at 14			18	21519	ea
21534	Live Oak					10		17	21534	ea
21538	Blue Oak					17		23	21538	ea
23169	Live Oak		5 at 28					19	23169	ea
23170	Live Oak		6 at 30					21	23170	ea
23171	Live Oak		12 at 58					20	23171	ea
23178	Live Oak		8 at 24					16	23178	ea
23179	Live Oak		5,5					12	23179	ea
23180	Live Oak		5 at 29					17	23180	ea
23181	Live Oak		8,8					18	23181	ea
23182	Live Oak	6						13	23182	ea
23183	Live Oak		5,7					15	23183	ea
23191	Live Oak		5 at 10					12	23191	ea
23194	Blue Oak		4,6					12	23194	ea
23459	Live Oak	9						18	23459	ea
23588	Blue Oak	10						17	23588	ea
23590	Blue Oak					10		15	23590	ea
23592	Live Oak					9		13	23592	ea
23593	Blue Oak		8,10					17	23593	ea
23598	Blue Oak	5						8	23598	ea
23599	Live Oak						3 at 20	16	23599	ea
23607	Blue Oak		4,8					16	23607	ea
23608	Live Oak						12,14	15	23608	ea
23609	Live Oak					8		18	23609	ea
23619	Blue Oak		6,10					17	23619	ea
26582	Live Oak		5 at 39					20	26582	ea
26583	Live Oak						6 at 27	20	26583	ea
26588	Live Oak				3 at 19			17	26588	ea
26589	Blue Oak	7						15	26589	ea
26854	Blue Oak	10						15	26854	ea
26876	Live Oak				7 at 42			17	26876	ea
26877	Live Oak		7 at 49					18	26877	ea
26897	Live Oak						3 at 13	14	26897	ea

Clover Valley Arborist Report
Removed Oak Tree Inventory - Easements

		Fair Trees		Poor-Fair Trees		Poor Trees				
Tree #	Species	DBH	Multi-stem DBH	DBH	Multi-stem DBH	DBH	Multi-stem DBH	Dripline	Point#	Phase
26898	Live Oak				6 at 20			16	26898	ea
26899	Live Oak		5,6					16	26899	ea
26900	Live Oak					4		6	26900	ea
26901	Live Oak		3 at 19					18	26901	ea
26902	Live Oak	5						10	26902	ea
26903	Live Oak						3 at 18	19	26903	ea
26908	Live Oak						6,6	12	26908	ea
26909	Live Oak	6						12	26909	ea
26910	Live Oak				4 at 22			17	26910	ea
26911	Blue Oak	4						12	26911	ea
27594	Blue Oak		6,6					17	27594	ea
27629	Live Oak						7,7	20	27629	ea
27631	Live Oak				3 at 17			16	27631	ea
27639	Live Oak		3 at 18					15	27639	ea
27794	Live Oak					8		18	27794	ea
27795	Live Oak					13		17	27795	ea
27796	Blue Oak	16						23	27796	ea
27798	Blue Oak	6						15	27798	ea
27799	Blue Oak	5						7	27799	ea
27800	Blue Oak	6						13	27800	ea
27801	Live Oak		5 at 30					19	27801	ea
27802	Blue Oak	7						16	27802	ea
27803	Live Oak		8 at 45					20	27803	ea
27805	Live Oak		5 at 33					18	27805	ea
28093	Blue Oak	14						17	28093	ea
28111	Blue Oak	6						6	28111	ea
50215	terior Live O	7						10	50215	ea

Clover Valley Partners

Clover Valley

City of Rocklin, CA

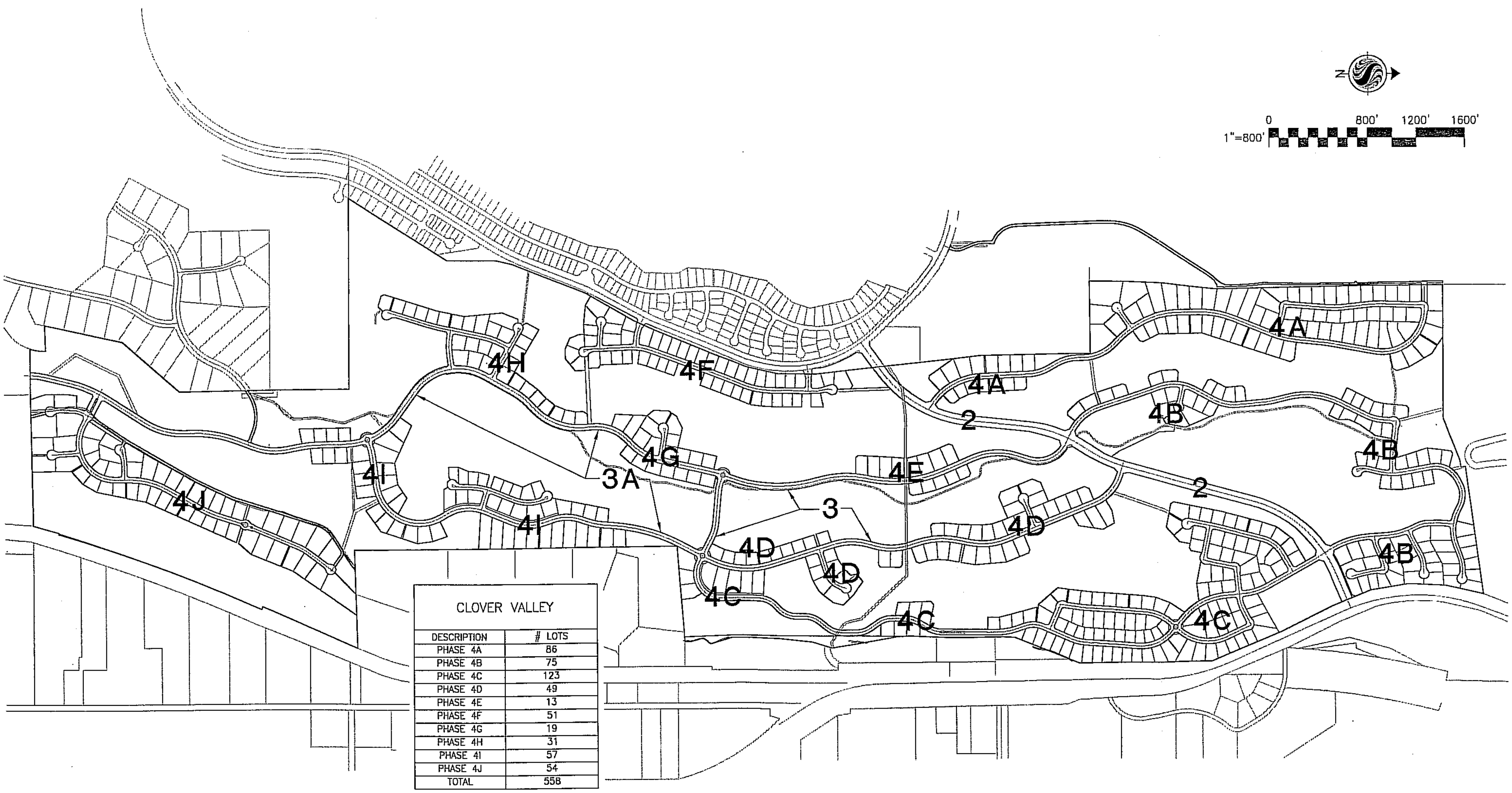
Tree Summary - Trees removed off-site

(All data available on Trees)

Number and Caliper Inches of Trees Removed

Tree Species	Number of Fair trees Removed	Caliper Inches of Fair Trees Removed	Caliper Inches of Fair Multi-Stem Trees Removed	Number of Fair/Poor trees Removed	Caliper Inches of Fair/Poor Trees Removed	Caliper Inches of Multi-Stem Fair/Poor Trees Removed	Number of Poor trees Removed	Caliper Inches of Poor Trees Removed	Caliper Inches of Poor Multi-Stem Trees Removed
Blue Oak	17	119	78	1	13		6	66	27
Live Oak	1		32				3	20	
Misc	2	26							
Total	20	145	110	1	13	0	9	86	27

	Number of trees Removed	Caliper Inches of Trees Removed	Caliper Inches of Multi-Stem Trees Removed	Total Caliper Inches of Trees Removed
Fair Trees	20	145	110	255
Fair / Poor Trees	1	13	0	13
Fair & Fair / Poor Trees	**21**	158	110	**268**
Poor Trees	**9**	86	27	**113**



CLOVER VALLEY	
DESCRIPTION	# LOTS
PHASE 4A	86
PHASE 4B	75
PHASE 4C	123
PHASE 4D	49
PHASE 4E	13
PHASE 4F	51
PHASE 4G	19
PHASE 4H	31
PHASE 4I	57
PHASE 4J	54
TOTAL	558

Stantec

Client/Project
CLOVER VALLEY

Title
PHASE LAYOUT

NOVEMBER, 2005
844 38701

APPENDIX K

PRELIMINARY GEOLOGIC AND GEOTECHNICAL INVESTIGATION REPORT PROPOSED CLOVER VALLEY LAKES VILLAGE ROCKLIN, CALIFORNIA

June 19, 1998

A Report Prepared for:

Mr. Richard Kerr
Planning Consultant.
FORECAST GROUP, L.P.
1796 Tribute Road
Sacramento, California 94815

**GEOTECHNICAL INVESTIGATION FOR
PROPOSED 600 ACRE CLOVER VALLEY LAKES
RESIDENTIAL SUBDIVISION
ROCKLIN, CALIFORNIA**

Kleinfelder Project No.: 23-483516

Prepared by:

Bruce R. Hilton, RG, CEG
Senior Engineering Geologist

BRH for:
Raymond Costa, Jr. PE, GE
Senior Geotechnical Engineer

KLEINFELDER, INC.
3077 Fite Circle
Sacramento, California 95827

June 19, 1998

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PLATES

APPENDICES

1. INTRODUCTION

1.1. GENERAL

In this report we present the results of our preliminary geologic and geotechnical investigation for the proposed 900 lot, 600 acre Clover Valley Lakes residential subdivision in Rocklin, California. The site is located in the Clover Valley area along the west side of the Union Pacific Railroad tracks and Sierra College Boulevard. The site location relative to existing streets and topographic features is shown on Plate 1. This report includes preliminary geologic information and geotechnical parameters and general recommendations related to site development. "Preliminary" refers to the absence of grading plans that would allow us more design-specific review once available. Conclusions and recommendations presented in this report are based on the subsurface conditions encountered at the locations of our widely spaced explorations and our general knowledge of soil and rock conditions within the site area. These preliminary recommendations should not be used for design, extrapolated to other areas, or used for other developments. A more detailed geotechnical investigation must be performed prior to preparation of design drawings and specifications.

1.2. PROJECT DESCRIPTION

The proposed project will involve subdividing approximately 600 acres of previously ranched land into 900 residential lots, green belt, and commercial property. We anticipate future construction will consist of one- and two-story, single-family houses involving wood frame structures with concrete slab-on-grade floors. Appurtenant construction will include asphalt concrete paved roadways, bridges or culverts crossing the creek, and underground utilities.

Grading plans were not available at the time this report was prepared; however, as site topography varies from essentially level in the valley floor to gently sloping on the ridge lines to steeply sloping on the valley flanks, earthwork cuts and fills up to 10 to 20 feet thick are expected to achieve level building pads and provide vehicular access and positive site drainage. A site plan indicating the topography and geology of the valley, as well as the proposed property lines is shown on Plate 2

1.3. SITE CONDITIONS

The site consists of a long narrow shaped valley currently undeveloped and used for cattle grazing purposes. Existing site vegetation consists primarily of annual grasses, clover, and berry bushes in the valley floor with numerous trees lining the creek. The flanks of the valley are covered with grasses and oak trees with intermittent poison oak. As the ridge crest is approached the trees begin to thin out and eventually are not present. Site topography varies from relatively level in the valley floor to steeply sloping on the flanks to gently sloping on the ridge crest. Maximum vertical relief across the site is approximately 230 feet. A 30 inch diameter waterline owned by the Placer County Water Agency bisects the site from east to west.

1.4. PURPOSE AND SCOPE OF SERVICES

The purpose of our preliminary investigation was to explore and evaluate the subsurface conditions at various locations on the site in order to provide preliminary geologic and geotechnical engineering parameters and general recommendations for project planning.

The scope of services was outlined in our proposal dated April 6, 1998 and included the following:

- Exploration of the subsurface conditions at various locations within the area of the proposed development utilizing 19 exploratory test pits;
- Limited laboratory testing of representative samples obtained during the field investigation to evaluate relevant engineering parameters of the subsurface soils;
- Preparation of this preliminary report which includes:
    - A description of the proposed project;
    - A description of the surface and subsurface site conditions encountered during our field investigation;
    - A description of the site geologic setting and possible associated geohazards;
    - Preliminary comments and recommendations regarding site preparation, engineered fill, and anticipated excavation conditions;
    - A discussion of various foundation support systems and associated bearing pressures which may be applicable to the proposed construction;
    - A summary of the field investigation and laboratory testing programs.

2. ENGINEERING GEOLOGY

2.1. SITE AND GEOLOGIC SETTING

The proposed development at Clover Valley is located within the southern portion of Placer County within the incorporated limits of the City of Rocklin. Rocklin is situated in the western Sierra Nevada Foothills where topography consists of gently rolling hills blanketed with annual grasses, sparse chapparal vegetation, and oak trees. Geologically, the site occurs along the western margin of the Sierra Nevada geomorphic province where igneous and metamorphic rocks prevail. Along these Foothills, metamorphic rocks are overlain by locally thick sequences of volcanic derived and continental rocks. This stratigraphy is further complicated in the Rocklin area by the intrusion of the Rocklin-Penryn Pluton during the Cretaceous Period. Thus, the general lithologic section prevailing at and in the area surrounding the site consists of volcanic flows and breccias (Mehrten Formation) blanketing the granitic Pluton. Clover Valley provides an incised "cross-sectional view" of this geologic section with an alluviated valley from recent stream deposits along the canyon bottom.

Serpentinite is not mapped onsite nor is it suspected at this location. Serpentinite is a naturally occurring rock type consisting primarily of the mineral serpentine. Serpentine is a ferro-magnesian silicate mineral characterized by long, fibrous crystals which, in their purest form, can occur in a form known as asbestos. Asbestos is amenable to mechanical separation into fine filaments of considerable tensile strength and flexibility. Serpentinites geologically occur as a result of contact metamorphic alteration of ultramafic rocks along the Western Sierra Foothills metamorphic belt that extends from East of Merced to Lake Almanor in the northern Sierra. The majority of mine-grade asbestos has been produced out of serpentinites in Calaveras County along this same belt. The Clover Valley project is located an estimated 30± miles west of the nearest mapped occurrence of this ultramafic belt (Wagner, 1981: CDMG Map Sheet 1A).

2.2. SITE GEOLOGY AND FIELD INVESTIGATION

Site geologic mapping was performed initially to layout backhoe test pit locations. Geologic mapping was performed by field location of exposed geologic contacts and/or outcrops or those suspected by noting the content of "float" (i.e. rocks or clasts indicative of bedrock conditions at or upslope from it's occurrence). Key locations were recorded using a GPS (Global Positioning

System) having a published accuracy of 4+/- feet vertically and 2+/- feet horizontally. Nineteen backhoe test pits were then excavated to expose earth units for identification and qualitative description of geotechnical engineering properties. Bulk samples were collected from each test pit for later evaluation and review of test pit logs. All backhoe test pits were similarly located using the GPS.

Backhoe test pits confirmed the general geologic section anticipated by research and geologic mapping. Test pits encountered moderately hard to hard volcanic breccia (Mehrten Formation) in the upper portions of slopes and ridgelines overlying the granitic bedrock found in the lower portions of slopes. Shallow soils mantle the Mehrten bedrock and portions of the granitics, but alluviation along the valley floor of Clover Valley thicken near the bottoms of slope into a thick, saturated section of alluvium. Although Mehrten Formation typically occurs as conglomeratic bedrock capped by the locally named "volcanic caprock", very little cobbly (conglomeratic) Mehrten was found in geologic float and/or our backhoe test pits. As anticipated by research of regional geologic data and maps (se Section 2.1), serpentinite or other ultramafic rocks often associated with serpentinite were not observed onsite.

2.3. FAULTING AND SEISMICITY

Tectonically, Clover Valley is located relatively equidistant between the two major, capable fault zones in California; the San Andreas Fault Zone and related strike slip features piercing the Bay area and the Sierra Nevada Frontal System passing west of Reno. Both of these fault zones are at least 80 miles from the site explaining the relatively infrequent and low intensity ground shaking events in the Sacramento region. The Foothills Fault System (FFS) is the nearest major system of faults but is highly controversial in terms of it's capability of producing a sizable earthquake in the near future. The 1975 Oroville earthquake gave rise to concern that the FFS may be capable and launched a number of subsequent studies. Since a number of locations along the FFS were identified as having possible Quaternary displacement, a low slip rate has been assigned to short segments along the FFS considered capable of generating infrequent earthquakes of Moment Magnitude 6.0. Most recently, Dr. William Page (PG&E) in his 1993 Rock Creek-Drum Dam investigation reported that the DeWitt Fault, a splay of the FFS passing through the western portion of Auburn, may have displaced as recently as 3,500 years BP (Before Present). The nearest portion of the FFS to Clover Valley is the Deadman Fault located an estimated 12 miles east of the site.

Deterministic modeling was performed for a 6.0 earthquake an estimated 12 miles from the site and implementing Abrahamson and Silva's 1997 attenuation model for an oblique fault in other than a hanging wall condition. The resulting mean plus sigma, peak rock acceleration is 0.20g. Since the FFS has a very low slip rate, probabilistic modeling would likely further reduce this value. The CDMG (California Division of Mines and Geology) has compiled a probabilistic map of California using 10% probability of exceedance in 50 years. This map shows an estimated acceleration of 0.20g for the subject site area. Using these methods as a basis, a site design acceleration value of 0.20g is considered reasonable.

2.4. GROUNDWATER

Seepage was observed during mapping and occurred in a number of our test pits. Future seepage at the site will not only depend on natural recharge factors present today, but proposed development will introduce landscape irrigation-induced, artificial recharge. Seepage at the site can be anticipated in the following scenarios:

- Soil-bedrock interfaces where they become exposed or approach the ground surface
- Fill-over-cut contacts where granular, permeable fill is placed over less weathered, less permeable bedrock
- Canyon-bottoms where soils thicken and subsurface flows are governed by contributory runoff

3. GEOTECHNICAL CONDITIONS

3.1. SUBSURFACE CONDITIONS

As described in Section, 2, soil alluvium deposits cover bedrock consisting of Mehrten Formation volcanics and granitic bedrock. Near-surface soils encountered in our test pits in the valley floor consisted predominantly of very loose silty sand, alluvium, from the surface to depths ranging from about 3 feet below existing site grade to the maximum depths explored (14 feet) deepening in the lower lying areas adjacent to the creek. In Test Pit 11 we encountered a sandy clay with moderate expansion potential from about 3 to 6 feet below existing site grade. The alluvial soils were underlain by medium dense to very dense decomposed granitic (bedrock). The valley flanks and ridges were covered predominantly by soil deposits consisting of loose silty sand to soft sandy silt with cobbles from the surface to depths ranging from about 1 to 3 feet below existing site grade. These soils were underlain by very dense bedrock consisting of granitics in the flanks to Mehrten Formation volcanics on the ridges. The approximate depth to the top of the bedrock is included next to each test pit on Plate 2.

At the time of our field investigation, significant seepage was encountered in our valley floor test pits at depths of about 4 to 12 feet below existing site grade. This seepage is likely due to perched groundwater overlying on-site, dense soils or rock and will probably vary in quantity and extent depending on rainfall, and the water level in the adjacent creek, and other factors beyond the scope of this study.

A discussion of the field investigation and laboratory testing programs is presented in Appendix A of this report. Detailed descriptions of the subsurface conditions encountered during our field investigation are presented on the Logs of Test Pits, Plates A-3 through A-21.

4. CONCLUSIONS

Based upon the data collected during this preliminary investigation and from a geologic and geotechnical engineering standpoint, it is our opinion the site may be developed using conventional grading and foundation construction techniques. Two bedrock units and soil/alluvium have been characterized within the project limits as shown on Plate 2. General suggestions to reduce potential adverse effects as well as preliminary comments regarding the geotechnical aspects of project design and site development are presented below. These preliminary recommendations should not be used for design. We recommend a more detailed geotechnical investigation be performed prior to preparation of design drawings and specifications.

4.1. LOOSE, ALLUVIAL SOILS

Very loose to loose silty sandy alluvial deposits were encountered in about the upper 3 to 14 feet across a majority of the valley floor. The low density condition that the alluvium present at or near the ground surface suggest a high potential compressibility of these soils. It is our opinion these soils are underconsolidated and thus will likely undergo densification in response to the existing loads as well as the low to moderate loads associated with foundations and traffic loads. Although unlikely, offloading existing loads (i.e. excavation) in the valley area could reduce this potential. If not mitigated, this densification may result in differential settlement of the ground surface and thus potential damage to site improvements. Recommendations for mitigation of these soils are provided below (Section 4.3).

4.2. DIFFICULT EXCAVATION

We encountered shallow bedrock on the flanks and ridgelines of the valley. The granitics were encountered on the flanks of the valley and the Mehrten Formation volcanics were observed in the upper slopes and ridgelines. Whereas the majority of the granitics are expected to be rippable, assuming significant effort with localized singleshanked ripping, Mehrten volcanics are expected to be difficult to excavate and may require larger equipment (such as a Caterpillar D10 or D11) or blasting. Utility trench excavations are more confined than typical mass-excavation earthwork and may require specialized trenching equipment in the Mehrten volcanics.

The majority of the granitic bedrock excavations are not expected to produce oversized rock and, in fact, are expected to generate decomposed granite (so called "DG") consisting of silty medium to coarse grained sands. This material typically is of good quality for use as fill material. Earthwork cuts to the Mehrten volcanics will locally produce rock fragments that, under normal compactive effort do not break down to meet the maximum grain size specification for engineered fill of about 8 inches in maximum dimension. These materials are referred to as "oversized rock". Recommendations for mitigation of these concerns are provided in Section 5.4 below.

4.3. SHALLOW GROUNDWATER

Groundwater was encountered as shallow as about 4 feet below existing site grade in the valley floor. Shallow groundwater may have an adverse influence on the performance of proposed site improvements and may also impair grading and utility excavation operations if performed while such conditions persist.

5. RECOMMENDATIONS

5.1. SITE PREPARATION

5.1.1. Existing Facilities

We did observe one existing residence and the remnants of an old structure. It is possible that abandoned utility lines, septic tanks, cesspools, wells, and/or foundations exist on site. If encountered within the area of construction, these features should be removed and disposed of off-site; existing wells should be abandoned in accordance with applicable regulatory requirements.

5.1.2. Stripping and Grubbing

Prior to general site grading, existing vegetation, organic topsoil, and any debris should be stripped and disposed of outside the construction limits. We estimate the depth of stripping to be approximately 2 to 4 inches over a majority of the site. Deeper stripping or grubbing may be required where concentrations of organic soils or tree roots are encountered during site grading. Stripped topsoil (less any debris) may be stockpiled and reused for landscape purposes; however, this material should not be incorporated into any engineered fill.

5.1.3. Removals

Soft, saturated alluvial soils occur along the main canyon bottom and will require either removal or in-place densification. If removal and recompaction is performed, it should occur within areas mapped on Plate 2 as alluvium where improvements are proposed. Removal and recompaction should extend to a depth of about 3 feet below existing site grade, or until bedrock is encountered, whichever is shallowest. Removed soils are expected to be suitable for reuse as engineered fill once properly moisture conditioned which may require drying of wet soils where encountered. Since this removal depth may extend to or beneath the depth of groundwater, dewatering may be necessary prior to excavation and will seasonally fluctuate. . In the event that the removal and recompaction method is undesirable, in-place densification, structural reinforcement, or a combination of these methods with shallower removals will be reviewed based upon more detailed geotechnical (i.e. subsurface) data.

5.1.4. Scarification and Recompaction

Following site stripping and any required grubbing and/or overexcavation, we recommend all areas to receive engineered fill be scarified to a depth of 8 inches, uniformly moisture-conditioned to between 0 and 5 percent above the optimum moisture content, and compacted to at least 90 percent of the maximum dry density as determined by ASTM (American Society for Testing and Materials) Test Method D 1557[1].

In areas where bedrock is encountered, scarification may not be required provided the entire structural footprint is uniformly underlain by this earth unit. Additionally, all structural footprints must be underlain by uniform earth units of similar geotechnical engineering properties. Where both cut and fill materials will underlie structural footprints, the cut portion should be overexcavated 2 feet below finish pad grade, scarified 8 inches, moisture conditioned and replaced as engineered fill.

5.2. SUBDRAINAGE

Subdrainage will be necessary in areas where engineered fills may become subjected to groundwater saturation. As described in Section 2.4, seepage can be expected to occur onsite at soil-bedrock interfaces, fill-over-cut contacts, and canyon bottoms. Precise subdrain locations should be determined by the Geotechnical Engineer and/or Engineering Geologist either during the final investigation and/or during grading.

5.3. GROUNDWATER CONTROL

Shallow groundwater conditions in the valley alluvium and soils on canyon walls are expected to persist during the future lifetime of the proposed development. Also, should site grading be performed during or subsequent to wet weather, near-surface site soils may be wet. This condition could impair equipment maneuverability and efforts to compact site soils to the recommended compaction criteria.

[1] *This test method should be used wherever relative compaction, maximum dry density, or optimum moisture content is referenced within this report.*

If shallow groundwater exists at the time of proposed grading, subdrainage should be installed in advance of the grading operations to dewater soils within the depth of influence of grading to the extent reasonable. The configuration and design of subdrain systems is best estimated by a qualified geologist and/or geotechnical engineer during exposure of field conditions at the time of or immediately before construction. The contractor may recommend an alternative which may be mutually agreed upon by the project design team.

Despite successful dewatering efforts, excavated soils will likely remain over optimum moisture and thus will require either drying or replacement as engineered fill. Disking to aerate, chemical treatment, replacement or mixing with drier material, stabilization with a geotextile fabric or grid, or other methods may be utilized to reduce excessive soil moisture and facilitate earthwork operations.

5.4. ENGINEERED FILL

5.4.1. Soil Materials

All engineered fill soils should be nearly-free of organic or other deleterious debris, essentially non-plastic, and less than 8 inches in maximum dimension. In general, well-graded mixtures of gravel, sand, non-plastic silt, and small quantities of cobbles, rock fragments, and/or clay are acceptable for use as engineered fill. Specific requirements for engineered fill, as well as applicable test procedures to verify material suitability, are provided below. The native sandy clays are also considered potentially expansive and should be avoided in all engineered fills located within 24 inches of finished building pad subgrade, unless mixed with low- to non-expansive soils.

Fill Requirement		Test Procedures ASTM[1]	Test Procedures Caltrans[2]
Gradation			
Sieve Size	Percent Passing		
8 inch	100	C 136	202
3 inch	90-100	C136	202
3/4 inch	70-100	C 136	202
No. 4	50-100	C 136	202
No. 40	30-100	C 136	---
No. 50	30-100	---	202
No. 200	15-70	C 136	202
Plasticity			
Liquid Limit	Plasticity Index		
<30	<12	D 4318	204
Organic Content			
Less than 3%		D2974	---
Expansion Potential (UBC 29-2)			
Less than 20	---	---	---
Maximum Dry Density			
More than 105 pcf	---	D1557	---

[1]*American Society for Testing and Materials Standards (latest edition)*
[2]*State of California, Department of Transportation, Standard Test Methods (latest edition)*

In general, near-surface, on-site soils similar to those encountered in our test pits meet the requirements indicated above and may be used in engineered fills. All imported fill materials to be used for engineered fill should be sampled and tested by the project Geotechnical Engineer prior to being transported to the site.

5.4.2. Oversized Materials

Oversized materials are defined as soil/rock mixtures containing no particle sizes larger than about 3 feet in maximum dimension. In addition, the mixture should contain a sufficient matrix of soil to allow for proper compaction of soil around the rock fragments as specified below.

5.4.3. Placement and Compaction Criteria

Soils used for engineered fill within the upper 10 feet of building pad grade should be uniformly moisture-conditioned to between 0 and 4 percent above the optimum moisture content, placed in horizontal lifts less than 8 inches in loose thickness, contain no rock fragments greater than 8 inches in maximum dimension, and compacted to at least 90 percent relative compaction. Fills exceeding 5 feet in thickness, should be compacted to at least 95 percent relative compaction for their full depth. Disking and/or blending may be required to uniformly moisture-condition soils used for engineered fill. Additional fill lifts should not be placed if the previous lift did not meet the required dry density or if soil conditions are not stable. Blending may be required to uniformly moisture-condition soils used for engineered fill.

Soil with rock fragments greater than 8 inches but less than 3 feet in maximum dimension may be incorporated into the engineered fill, but should not be included within areas measured 15 feet minimum horizontally from slope faces, 10 feet below finished pad grade, 5 feet below finished subgrade in roadways, or 3 feet below the deepest utility, whichever is deeper (see Plate 2).

Rock fragments up to 3 feet in maximum dimension may either be individually placed or placed in windrows. There should be sufficient space provided between rock fragments to allow for passage of compaction equipment. Rock fragments should be placed in a manor that allows the voids around and beneath the rock fragments to be filled with soil. If rock fragments are placed in windrows, the windrows should be parallel to each other and be parallel to or perpendicular to the face of the slope depending on site geometry. The minimum horizontal spacing for windrows should be 20 feet center to center with a 5' foot stagger or offset from lower courses to the next overlying course. The minimum vertical spacing between windrow courses should be 4 feet from the top of a lower windrow to the bottom of the next higher windrow. All rock fragment placement and engineered fill placement should be continuously observed by a Kleinfelder representative.

Due to the coarse nature of the material excavated from Mehrten volcanics, it may not be possible to perform conventional field density tests for evaluation of compaction. If it is determined by the geotechnical engineer that field testing will not be feasible, the on-site coarse grained materials should be thoroughly wetted, placed in lifts less than 8 inches in loose thickness, and compacted using a minimum of five passes of either a self-propelled vibratory roller applying at least 20 tons force (dynamic) or a sheepsfoot roller weighing at least 30 tons (static). The degree of effort required to achieve compaction of engineered fill should be determined on the basis of performance of the engineered fill at the time of earthwork. The geotechnical engineer may make random observation pits to provide a basis for expressing an opinion as to whether the coarse grained is properly seated and moisture conditioned.

5.5. SLOPES

5.5.1. Fill Slopes

Where fills are constructed on hillsides steeper than 5(h) to 1(v), topsoil, slopewash, colluvium or other loose or porous soils should be removed and a minimum 10 foot wide key having at least 2 percent inclination into slope should be constructed at the toe of slope. The keys should extend completely through the soil mantle and into the underlying competent formational material or ground. Fill slopes should not be constructed steeper than 2(h) to 1(v). Engineered fill should extend to the design surface of fill slopes.

5.5.2. Cut Slopes

All cut slopes should be designed no steeper than 2(h) to 1(v). However, slopes cut into granitic bedrock should not be steeper than 1-1/2(h) to 1(v). In areas mapped as Mehrten Formation bedrock, slopes may be steepened to 1(h) to 1(v) but caution should be exercised in that excavation below the design grade would require replacement with fill at a 2(h) to 1(v) gradient or construction of an MSE or retaining structure. Cut slopes should be equipped with mid-slope terrace drains where exceeding 25 feet in vertical height in accordance with current UBC requirements. Cut slopes "daylighting" into natural terrain should also be protected by a brow ditch at the top of slope.

5.6. SPREAD FOOTINGS

5.6.1. Allowable Bearing Pressures

Shallow spread footings founded on undisturbed native soil, rock, or engineered fill would likely be adequate for the support of the proposed residential units. In general, foundations for these structures would typically be embedded a minimum of 12 to 18 inches below the lowest adjacent subgrade and have a minimum width of 12 inches. For spread foundations with the above minimum dimensions, minimum allowable bearing pressures on the order of 1,500 pounds per square foot (psf) could likely be used in design.

Total settlement of an individual foundation will vary depending on the plan dimensions of the foundation, the actual load supported, and foundation subgrade conditions. Estimated foundation settlements can be provided during the final geotechnical investigation and after site grading and structural locations and loads are known.

5.7. PRELIMINARY PAVEMENT SECTIONS

Preliminary pavement sections provided below are based on anticipated subgrade conditions, an assumed resistance value of 25 (R-values), and current Caltrans design procedures. Traffic indexes of 4.0, 5.0, and 6.0 were assumed for the design of minor residential streets and cul-de-sacs, local residential streets, and collector streets, respectively. Traffic indexes of 7.0 to 9.0 were assumed for arterial streets. Traffic indexes selected should be reviewed by the project architect or engineer to evaluate their suitability for this project. Changes in the traffic indexes will affect the corresponding pavement section.

Pavement Description	Assumed Traffic Index	Aggregate Baserock		Asphalt Concrete	
		(feet)	(inches	(feet)	(inches)
Minor Residential Streets and Cul-de-Sacs	4.0	.45	5.5	.20	2.5
Local Residential Streets	5.0	.65	8.0	.20	2.5
Residential Collector Streets	6.0	.80	9.5	.25	3.0
Residential Arterial Streets	7.0	.95	11.5	.30	3.5
Major Arterial Streets	9.0	1.20	14.5	.45	5.5

Sections provided above should be used for preliminary design and planning purposes only. Pavement sections actually required will depend on the type of material exposed within the pavement subgrade and anticipated traffic conditions (i.e. frequency and loads). Therefore, we recommend representative subgrade samples be obtained and R-value tests performed during the final geotechnical investigation and possibly after final subgrades have been constructed. These test results may then be used to evaluate pavement sections for construction.

5.8. CORROSION POTENTIAL

Chemical tests performed on two selected subgrade samples indicated water soluble sulfate contents of 4.5 and 17.3 parts per million (milligrams per kilogram). The ACI Manual of Concrete Practice, Section 201.2R-92, recommends using a Type I or II cement for foundations placed in these soils. The pH of the same soil samples ranged from 6.16 to 6.24, indicating a slightly acidic condition.

Minimum resistivity tests performed on the two soil samples indicated the soils are mildly corrosive to buried metal objects as indicated by results of 13,000 and 36,000 ohm-centimeters. A commonly accepted correlation between soil resistivity and corrosivity towards ferrous metals is provided below:

Soil Resistivity		Corrosivity
0 to 1,000 ohm-cm	-	severely corrosive
1,000 to 2,000 ohm-cm	-	corrosive
2,000 to 10,000 ohm-cm	-	moderately corrosive
over 10,000 ohm-cm	-	mildly corrosive

Kleinfelder has performed these soil corrosivity tests as requested by the client. These tests are only an indicator of soil corrosivity. A competent corrosion engineer should be retained to design corrosion protection systems appropriate for the project.

6. ADDITIONAL SERVICES AND LIMITATIONS

6.1. FINAL GEOTECHNICAL INVESTIGATION REPORT

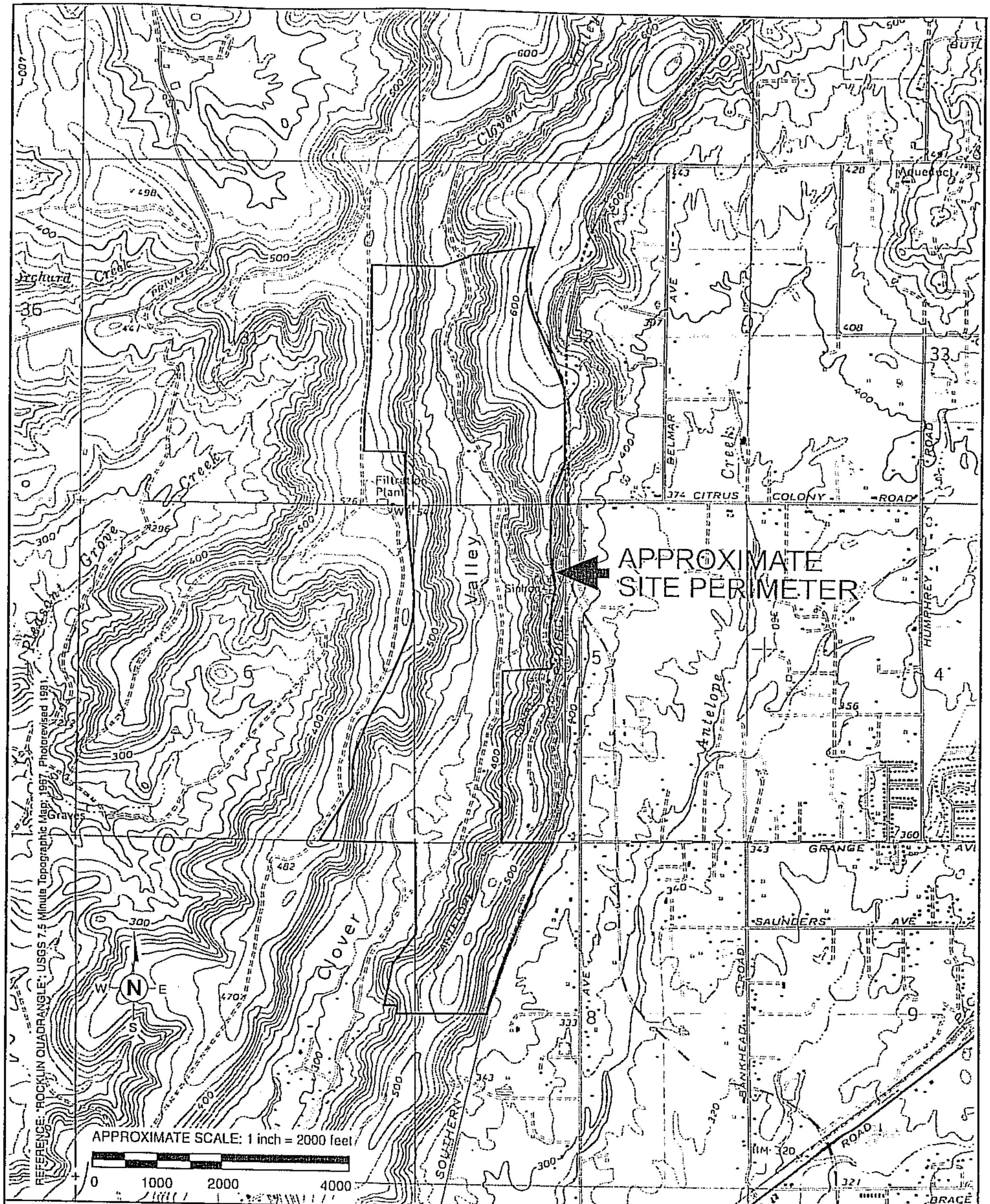
We recommend that a final geotechnical investigation be performed prior to preparation of design drawings and specifications. The purpose of this investigation would be to evaluate specific soil and groundwater conditions, to analyze foundation conditions based on design loads and locations, and to provide final site preparation, foundation design, and pavement recommendations.

6.2. LIMITATIONS

Recommendations contained in this report are based on our field observations and widely spaced subsurface explorations, limited laboratory tests, and our present knowledge of the proposed construction. It is possible that soil conditions could vary between or beyond the points explored. A more detailed geotechnical investigation must be performed prior to preparation of design drawings and specifications

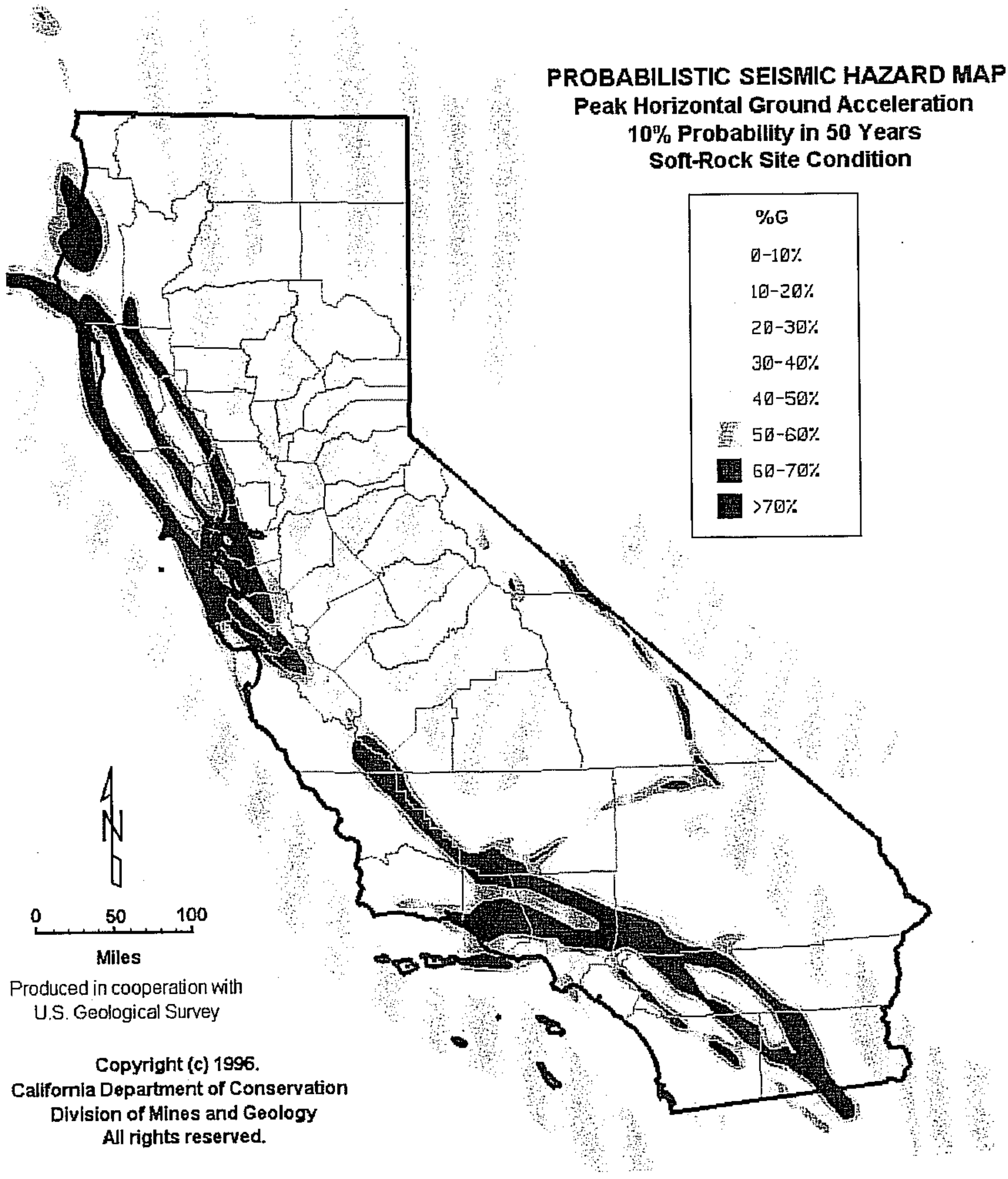
We have prepared this report for your exclusive use on this project in substantial accordance with the generally accepted geotechnical engineering practice as it exists in the site area at the time of our study. No warranty is expressed or implied.

This report may be used only by the client and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both on site and off site) or other factors may change over time, and additional work may be required with the passage of time. Any party other than the client who wishes to use this report shall notify Kleinfelder of such intended use. Based on the intended use of the report, Kleinfelder may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release Kleinfelder from any liability resulting from the use of this report by any unauthorized party.



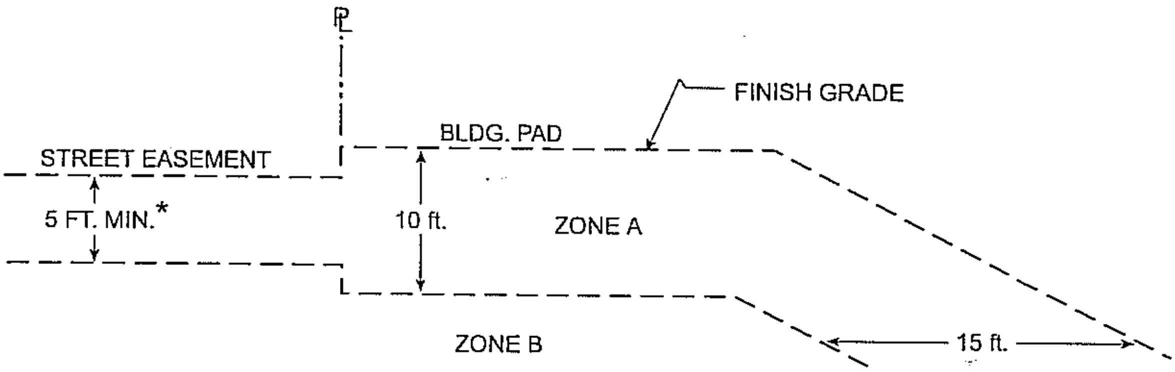
KLEINFELDER

Drawn By: D. Anderson Project No. 23-483516	Date: 4/28/98 Filename:	SITE LOCATION MAP CLOVER VALLEY LAKES CLOVER VALLEY ROCKLIN, CALIFORNIA	PLATE 1



KLEINFELDER	PROBABILISTIC SEISMIC HAZARD MAP CLOVER VALLEY LAKES CLOVER VALLEY ROCKLIN, CALIFORNIA	PLATE 3
Drawn By: D. Anderson Project No. 23-483516	Date: 5/1/98 Filename: 1645E	

TYPICAL GRADING WITHIN PROPOSED FILL AREA



LEGEND

ZONE A : "SOIL" FILL MATERIAL IN ACCORDANCE WITH REPORT

ZONE B: "SOIL-ROCK" FILL MATERIAL IN ACCORDANCE WITH REPORT

* 5 FT OR 3 FT BELOW DEEPEST UTILITY, WHICHEVER IS GREATER

KLEINFELDER		SPECIFICATIONS FOR SITE GRADING CLOVER VALLEY LAKES CLOVER VALLEY ROCKLIN, CALIFORNIA	PLATE 4
Drawn By: D. Anderson Project No. 23-483516	Date: 5/1/98 Filename: 1645 D		

APPENDIX A
SUBSURFACE EXPLORATION LOGS

The following plates are attached and complete this appendix.

Plate A-1	Unified Soil Classification System
Plate A-2	Log Key
Plate A-3	Log of Test Pit TP-1
Plate A-4	Log of Test Pit TP-2
Plate A-5	Log of Test Pit TP-3
Plate A-6	Log of Test Pit TP-4
Plate A-7	Log of Test Pit TP-5
Plate A-8	Log of Test Pit TP-6
Plate A-9	Log of Test Pit TP-7
Plate A-10	Log of Test Pit TP-8
Plate A-11	Log of Test Pit TP-9
Plate A-12	Log of Test Pit TP-10
Plate A-13	Log of Test Pit TP-11
Plate A-13	Log of Test Pit TP-12
Plate A-13	Log of Test Pit TP-13
Plate A-13	Log of Test Pit TP-14
Plate A-13	Log of Test Pit TP-15
Plate A-13	Log of Test Pit TP-16
Plate A-13	Log of Test Pit TP-17
Plate A-13	Log of Test Pit TP-18
Plate A-13	Log of Test Pit TP-19
Plate A-13	Laboratory Summary

EXPLORATORY TEST PITS

The subsurface conditions at the site were explored on April 21 and 22, 1998 by excavating 19 test pits (TP-1 through TP-19) to depths ranging from 1 to 14 feet below existing grade. Test pits were excavated using a tractor-mounted backhoe (Case 580) equipped with a 24-inch-bucket. The locations of test pits performed for this investigation are shown on Plate 2 of this report.

Test pits were located in the field by using a GPS system aided by visually sighting from existing site features.

Our engineer maintained a log of the test pits, visually classified soils encountered according to the Unified Soil Classification System (see Plate A-1) and obtained representative and bulk samples of the subsurface materials. A key to the Logs of Test Pits is presented on Plate A-2 of this appendix; Logs of Test Pits are presented on Plates A-3 through A-21.

SAMPLING PROCEDURES

Soil samples obtained from the test pits were packaged and sealed in the field to reduce moisture loss and disturbance, and returned to our Sacramento laboratory for further testing. After test pits were completed, they were backfilled with the excavated material.

LABORATORY TESTING

Laboratory tests were performed on selected samples to aid in soil classification and to evaluate physical properties of the soils which may affect the geotechnical aspects of project design and construction. A description of the laboratory testing program is presented below:

SIEVE ANALYSIS

Sieve analyses were performed to evaluate the gradational characteristics of the material and to aid in soil classification. Tests were performed in general accordance with ASTM Test Method C 136 and are summarized on the Summary of Laboratory Tests .

ATTERBERG LIMITS

Atterberg Limits tests were performed to aid in soil classification and to evaluate the plasticity characteristics of the material. Tests were performed in general accordance with ASTM Test Method D 4318 and are summarized on the Summary of Laboratory Tests .

SAND EQUIVALENT

Sand equivalent tests were performed on selected samples to evaluate the suitability of on-site soils for use as trench backfill. Tests were performed in accordance with Caltrans Test Method 217. Results of these tests are presented on the logs and are summarized on the Summary of Laboratory Tests.

COMPACTION

A compaction test was performed on a near-surface bulk soil sample to evaluate maximum dry density and optimum moisture content. Test procedures were in general accordance with ASTM Test Method D 1557. Results of this test are presented on the Summary of Laboratory Tests.

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			USCS SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (More than half of material is larger than the #200 sieve)	GRAVELS (More than half of coarse fraction is larger than the #4 sieve)	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, GRAVEL-SILT-SAND MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS (More than half of coarse fraction is smaller than the #4 sieve)	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
			SP	POORLY-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS, SAND-GRAVEL-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-GRAVEL-CLAY MIXTURES
FINE GRAINED SOILS (More than half of material is smaller than the #200 sieve)	SILTS AND CLAYS (Liquid limit less than 50)		ML	INORGANIC SILTS & VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (Liquid limit greater than 50)		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILT
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS & ORGANIC SILTS OF MEDIUM-TO-HIGH PLASTICITY
LOAMS				UNDER USDA SOIL CLASSIFICATION SYSTEM, SOIL OF APPROXIMATELY EQUAL SAND/SILT/CLAY

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Drafted By: DWA Date: 4/29/98	Project No.: 23-483516 File Number:

UNIFIED SOIL CLASSIFICATION SYSTEM

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE
A-1

KEYSOIL 83516 5/1/98

LOG SYMBOLS

	BULK / BAG SAMPLE	-4	PERCENT FINER THAN THE NO. 4 SIEVE (ASTM Test Method C 136)
	MODIFIED CALIFORNIA SAMPLER (2-1/2 inch outside diameter)	-200	PERCENT FINER THAN THE NO. 200 SIEVE (ASTM Test Method C 117)
	CALIFORNIA SAMPLER (3 inch outside diameter)	LL	LIQUID LIMIT (ASTM Test Method D 4318)
	STANDARD PENETRATION SPLIT SPOON SAMPLER (2 inch outside diameter)	PI	PLASTICITY INDEX (ASTM Test Method D 4318)
	NX SIZE CORE BARREL (2-5/8 inch outside diameter)	EI	EXPANSION INDEX (UBC Standard 29-2)
	SHELBY TUBE	COL	COLLAPSE POTENTIAL
	WATER LEVEL (level after completion)	UC	UNCONFINED COMPRESSION
	WATER LEVEL (level where first encountered)		
	SEEPAGE	MC	MOISTURE CONTENT

GENERAL NOTES

1. *Lines separating strata on the logs represent approximate boundaries only. Actual transitions may be gradual.*
2. *No warranty is provied as to the continuity of soil conditions between individual sample locations.*
3. *Logs represent general soil conditions observed at the point of exploration on the date indicated.*
4. *In general, Unified Soil Classification designations presented on the logs were evaluated by visual methods only. Therefore, actual designations (based on laboratory tests) may vary.*

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Date: 4/29/98

Project No.: 23-483516
File Number:

LOG KEY

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE

A-2

KEYLOGG 83516 5/1/98

Surface Conditions:	Gently sloping, light to moderate grass.	Date Completed:	4/21/98
		Logged By:	L. Reagan
Groundwater:	Encountered perched water at about 4 feet below existing site grade.	Total Depth:	13 feet

Depth (feet)	FIELD: Sample Type	FIELD: Sample No.	FIELD: Blows/ft	FIELD: Pen (tsf)	LABORATORY: Dry Density (pcf)	LABORATORY: Moisture Content (%)	LABORATORY: Liquid Limit	LABORATORY: Plasticity Index	LABORATORY: Passing #200 Sieve (%)	LABORATORY: Other Tests	Lithography	DESCRIPTION 0.0 to 13.0 feet. Approximate Surface Elevation (ft):
												SAND (SM) with Silt: Brown, moist, loose
		1B										
												red-brown, silt fraction decreasing
		2B										
5												
												gray-brown
10												
		3B										
												Test pit terminated at a depth of approximately 13 feet below existing site grade due to essential backhoe refusal.
15												
20												

KLEINFELDER

Drafted By: DWA	Project No.: 23-483516	LOG OF TEST PIT TP- 1 CLOVER VALLEY LAKES CLOVER VALLEY ROCKLIN, CALIFORNIA	PLATE 1 of 1 A-3
Date: 4/29/98	File Number:		

GEOTC2 83516 5/1/98

Surface Conditions: Gently sloping, light to moderate grass.

Groundwater: No free groundwater encountered.

Date Completed: 4/21/98

Logged By: L. Reagan

Total Depth: 2 feet

Depth (feet)	FIELD				LABORATORY							Lithography	DESCRIPTION 0.0 to 2.0 feet
	Sample Type	Sample No.	Blows/ft	Pen (tsf)	Dry Density (pcf)	Moisture Content (%)	Liquid Limit	Plasticity Index	Passing #200 Sieve (%)	Other Tests			Approximate Surface Elevation (ft):
													Cobbles & Boulders: with Sandy Silt matrix
													Test pit terminated at a depth of approximately 2-1/2 feet below existing site grade due to essential backhoe refusal on granitic material.
5													
10													
15													
20													

KLEINFELDER

Drafted By: DWA
Date: 4/29/98

Project No.: 23-483516
File Number:

LOG OF TEST PIT TP- 2

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE
1 of 1

A-4

GEOTC2 83516 5/1/98

Surface Conditions: Sparse grass, many TMV floats.

Groundwater: No free groundwater encountered.

Date Completed: 4/21/98

Logged By: L. Reagan

Total Depth: 3/4 feet

Depth (feet)	FIELD: Sample Type	Sample No.	Blows/ft	Pen (tsf)	LABORATORY: Dry Density (pcf)	Moisture Content (%)	Liquid Limit	Plasticity Index	Passing #200 Sieve (%)	Other Tests	Lithography	DESCRIPTION 0.0 to 0.8 feet Approximate Surface Elevation (ft):
												Silty SAND (SM) with Cobbles & Boulders: Brown, moist, loose, trace clay
												Test pit terminated at a depth of approximately 3/4 foot below existing site grade due to essential backhoe refusal on TMV material.
5												
10												
15												
20												

KLEINFELDER

Drafted By: DWA

Date: 4/29/98

Project No.: 23-483516

File Number:

LOG OF TEST PIT TP- 3

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE 1 of 1

A-5

GEOTC2 83516 5/1/98

Surface Conditions: Light grass, gently sloping.

Groundwater: No free groundwater encountered.

Date Completed: 4/21/98

Logged By: L. Reagan

Total Depth: 3 feet

Depth (feet)	FIELD: Sample Type	Sample No.	Blows/ft	Pen (tsf)	LABORATORY: Dry Density (pcf)	Moisture Content (%)	Liquid Limit	Plasticity Index	Passing #200 Sieve (%)	Other Tests	Lithography	DESCRIPTION 0.0 to 3.0 feet — Approximate Surface Elevation (ft):
												Sandy SILT (ML): Brown, very moist
												SAND (SM) with Silt: Red-brown, moist, very dense (DG)
												Test pit terminated at a depth of approximately 3 feet below existing site grade due to essential backhoe refusal.
5												
10												
15												
20												

KLEINFELDER

Drafted By: DWA
Date: 4/29/98

Project No.: 23-483516
File Number:

LOG OF TEST PIT TP- 4

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE
1 of 1

A-6

GEOTC2 83516 5/1/98

Surface Conditions:	Moderate grass, gently sloping.	Date Completed:	4/21/98
		Logged By:	L. Reagan
Groundwater:	No free groundwater encountered.	Total Depth:	8-1/2 feet

Depth (feet)	FIELD: Sample Type	FIELD: Sample No.	FIELD: Blows/ft	FIELD: Pen (tsf)	LABORATORY: Dry Density (pcf)	LABORATORY: Moisture Content (%)	LABORATORY: Liquid Limit	LABORATORY: Plasticity Index	LABORATORY: Passing #200 Sieve (%)	LABORATORY: Other Tests	Lithography	DESCRIPTION 0.0 to 8.5 feet Approximate Surface Elevation (ft):
												Silty SAND (SM): Dark brown, moist, loose red
5												Decomposed Granite: Yellow-brown, medium dense to dense
10												Test pit terminated at a depth of approximately 8-1/2 feet below existing site grade due to essential backhoe refusal on granitic material.
15												
20												

KLEINFELDER

Drafted By: DWA
Date: 4/29/98

Project No.: 23-483516
File Number:

LOG OF TEST PIT TP- 5

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE
1 of 1

A-7

GEOTC2 83516 5/1/98

Surface Conditions: Low grass, flat.

Groundwater: Encountered perched water at about 3 feet below existing site grade.

Date Completed: 4/21/98

Logged By: L. Reagan

Total Depth: 8 feet

Depth (feet)	FIELD: Sample Type	FIELD: Sample No.	FIELD: Blows/ft	FIELD: Pen (tsf)	LABORATORY: Dry Density (pcf)	LABORATORY: Moisture Content (%)	LABORATORY: Liquid Limit	LABORATORY: Plasticity Index	LABORATORY: Passing #200 Sieve (%)	LABORATORY: Other Tests	Lithography	DESCRIPTION 0.0 to 8.0 feet — Approximate Surface Elevation (ft):
	X	1B										Silty SAND (SM): Dark brown, very moist, loose
												brown
	X	2B										
5												
												dense
												Test pit terminated at a depth of approximately 8 feet below existing site grade due to caving.
10												
15												
20												

KLEINFELDER

Drafted By: DWA

Date: 4/29/98

Project No.: 23-483516

File Number:

LOG OF TEST PIT TP- 6

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE 1 of 1

A-8

GEOTC2 83516 5/1/98

Surface Conditions: High grass, gently sloping.

Groundwater: Encountered perched water at about 12 feet below existing site grade.

Date Completed: 4/21/98

Logged By: L. Reagan

Total Depth: 14 feet

Depth (feet)	FIELD: Sample Type	Sample No.	Blows/ft	Pen (tsf)	LABORATORY: Dry Density (pcf)	Moisture Content (%)	Liquid Limit	Plasticity Index	Passing #200 Sieve (%)	Other Tests	Lithography	DESCRIPTION 0.0 to 14.0 feet — Approximate Surface Elevation (ft):
0												SAND (SM) with Silt: Brown, moist, loose
	Bulk	Bulk										
												red-gray, silt fraction decreasing
		1B										medium dense
5												
10												
												dense to very dense
15												Test pit completed at a depth of approximately 14 feet below existing site grade.
20												

KLEINFELDER

Drafted By: DWA
Date: 4/29/98

Project No.: 23-483516
File Number:

LOG OF TEST PIT TP- 7

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE
1 of 1

A-9

GEOTC2 83516 5/1/98

Surface Conditions: High grass, gently sloping.

Groundwater: No free groundwater encountered.

Date Completed: 4/21/98

Logged By: L. Reagan

Total Depth: 14 feet

Depth (feet)	Sample Type	Sample No.	Blows/ft	Pen (tsf)	Dry Density (pcf)	Moisture Content (%)	Liquid Limit	Plasticity Index	Passing #200 Sieve (%)	Other Tests	Lithography	DESCRIPTION 0.0 to 14.0 feet / Approximate Surface Elevation (ft):
	FIELD				LABORATORY							
0												Silty SAND (SM): Brown, moist, loose
												medium dense
												18-inch granitic boulder
5												some cobbles
												Decomposed Granite: Yellow-brown, dense
		1B							9			
10												
		2B										
												Test pit completed at a depth of approximately 14 feet below existing site grade.
15												
20												

KLEINFELDER

Drafted By: DWA
Date: 4/29/98

Project No.: 23-483516
File Number:

LOG OF TEST PIT TP- 8

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE
1 of 1
A-10

GEOTC2 83516 5/1/98

Surface Conditions:	High grass, gently sloping.	Date Completed:	4/21/98
		Logged By:	L. Reagan
Groundwater:	No free groundwater encountered.		
		Total Depth:	10 feet

Depth (feet)	FIELD: Sample Type	FIELD: Sample No.	FIELD: Blows/ft	FIELD: Pen (tsf)	LABORATORY: Dry Density (pcf)	LABORATORY: Moisture Content (%)	LABORATORY: Liquid Limit	LABORATORY: Plasticity Index	LABORATORY: Passing #200 Sieve (%)	LABORATORY: Other Tests	Lithography	DESCRIPTION 0.0 to 10.0 feet. Approximate Surface Elevation (ft):
0												Silty SAND (SM): Dark brown, moist, loose
3												Decomposed Granite: Yellow-brown, dense
4		Bulk								Max DD=130pcf, Opt MC=8.5%; Sand Equivalent=30		
5												
10												very dense
												Test pit terminated at a depth of approximately 10 feet below existing site grade due to essential backhoe refusal.
15												
20												

KLEINFELDER	LOG OF TEST PIT TP- 9 CLOVER VALLEY LAKES CLOVER VALLEY ROCKLIN, CALIFORNIA	PLATE 1 of 1 A-11
Drafted By: DWA Date: 4/29/98	Project No.: 23-483516 File Number:	

GEOTC2 83516 5/1/98

Surface Conditions:	Medium to high grass, flat.
Groundwater:	Encountered perched water at about 9 feet below existing site grade.
Date Completed:	4/21/98
Logged By:	L. Reagan
Total Depth:	14 feet

Depth (feet)	FIELD: Sample Type	FIELD: Sample No.	FIELD: Blows/ft	FIELD: Pen (tsf)	LABORATORY: Dry Density (pcf)	LABORATORY: Moisture Content (%)	LABORATORY: Liquid Limit	LABORATORY: Plasticity Index	LABORATORY: Passing #200 Sieve (%)	LABORATORY: Other Tests	Lithography	DESCRIPTION 0.0 to 14.0 feet; Approximate Surface Elevation (ft):
												Silty SAND (SM): Dark brown, moist, loose
												gray-brown
5	X	1B							24			very wet
												brown
10												
												dense
15												Test pit completed at a depth of approximately 14 feet below existing site grade.
20												

KLEINFELDER

Drafted By: DWA
Date: 4/29/98
Project No.: 23-483516
File Number:

LOG OF TEST PIT TP-10

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE
1 of 1
A-12

Surface Conditions:	Clover, flat.	Date Completed:	4/21/98
		Logged By:	L. Reagan
Groundwater:	Encountered perched water at about 5 feet below existing site grade.	Total Depth:	14 feet

Depth (feet)	Sample Type	Sample No.	Blows/ft	Pen (tsf)	Dry Density (pcf)	Moisture Content (%)	Liquid Limit	Plasticity Index	Passing #200 Sieve (%)	Other Tests	Lithography	DESCRIPTION 0.0 to 14.0 feet / Approximate Surface Elevation (ft):
			FIELD		LABORATORY							
												Silty SAND (SM): Dark brown, very moist, loose
												brown, wet, medium dense
5												caving
												Sandy CLAY (CL): Mottled gray-brown with red, moist, medium stiff
		1B										
10		2B					41	20				gray, fine grained
												Decomposed Granite: Yellow-brown, moist, dense
15												Test pit completed at a depth of approximately 14 feet below existing site grade.
20												

KLEINFELDER

Drafted By: DWA
Date: 4/29/98

Project No.: 23-483516
File Number:

LOG OF TEST PIT TP-11

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE
1 of 1

A-13

GEOTC2 83516 5/1/98

Surface Conditions:	Moderate grass, gently sloping.	Date Completed:	4/21/98
		Logged By:	L. Reagan
Groundwater:	No free groundwater encountered.	Total Depth:	14 feet

Depth (feet)	FIELD: Sample Type	FIELD: Sample No.	FIELD: Blows/ft	FIELD: Pen (tsf)	LABORATORY: Dry Density (pcf)	LABORATORY: Moisture Content (%)	LABORATORY: Liquid Limit	LABORATORY: Plasticity Index	LABORATORY: Passing #200 Sieve (%)	LABORATORY: Other Tests	Lithography	DESCRIPTION 0.0 to 14.0 feet Approximate Surface Elevation (ft):
												Silty SAND (SM): Dark brown, moist, loose
												brown, medium dense
5												
												Decomposed Granite: Yellow-brown, moist, dense
												12-inch cobble
10												
	X	1B										
	X	2B										mottled yellow-brown with red
15												Test pit completed at a depth of approximately 14 feet below existing site grade.
20												

KLEINFELDER

Drafted By: DWA
Date: 4/29/98

Project No.: 23-483516
File Number:

LOG OF TEST PIT TP-12

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE
1 of 1

A-14

GEOTC2 83516 5/1/98

Surface Conditions:	Moderate grass, gently sloping.	Date Completed:	4/21/98
		Logged By:	L. Reagan
Groundwater:	No free groundwater encountered.	Total Depth:	14 feet

Depth (feet)	FIELD: Sample Type	FIELD: Sample No.	FIELD: Blows/ft	FIELD: Pen (tsf)	LABORATORY: Dry Density (pcf)	LABORATORY: Moisture Content (%)	LABORATORY: Liquid Limit	LABORATORY: Plasticity Index	LABORATORY: Passing #200 Sieve (%)	LABORATORY: Other Tests	Lithography	DESCRIPTION 0.0 to 13.8 feet Approximate Surface Elevation (ft):
												Silty SAND (SM): Dark brown, moist, loose
												gray-brown, medium dense
5												
10												
												Decomposed Granite: Yellow-brown, moist, dense
		1B										
												very dense
												Test pit completed at a depth of approximately 13-3/4 feet below existing site grade.
15												
20												

KLEINFELDER

Drafted By: DWA
Date: 4/29/98
Project No.: 23-483516
File Number:

LOG OF TEST PIT TP-13

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE
1 of 1
A-15

GEOTC2 83516 5/1/98

Surface Conditions:	Sparse grass, gently sloping.	Date Completed:	4/21/98
		Logged By:	L. Reagan
Groundwater:	No free groundwater encountered.	Total Depth:	8 feet

Depth (feet)	FIELD: Sample Type	FIELD: Sample No.	FIELD: Blows/ft	FIELD: Pen (tsf)	LABORATORY: Dry Density (pcf)	LABORATORY: Moisture Content (%)	LABORATORY: Liquid Limit	LABORATORY: Plasticity Index	LABORATORY: Passing #200 Sieve (%)	LABORATORY: Other Tests	Lithography	DESCRIPTION 0.0 to 8.0 feet Approximate Surface Elevation (ft):
												Silty SAND (SM): Dark brown, moist, loose to medium dense
												brown
												Decomposed Granite: Yellow-brown, moist, dense
5												
												very dense
												very difficult digging
												Test pit completed at a depth of approximately 8 feet below existing site grade.
10												
15												
20												

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Date: 4/29/98

Project No.: 23-483516
File Number:

LOG OF TEST PIT TP-14

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE
1 of 1

A-16

GEOTC2 83516 5/1/98

Surface Conditions:	Medium grass and clover, gently sloping, numerous floats.	Date Completed:	4/22/98
		Logged By:	L. Reagan
Groundwater:	No free groundwater encountered.	Total Depth:	1 feet

Depth (feet)	FIELD: Sample Type	FIELD: Sample No.	FIELD: Blows/ft	FIELD: Pen (tsf)	LABORATORY: Dry Density (pcf)	LABORATORY: Moisture Content (%)	LABORATORY: Liquid Limit	LABORATORY: Plasticity Index	LABORATORY: Passing #200 Sieve (%)	LABORATORY: Other Tests	Lithography	DESCRIPTION 0.0 to 1.0 feet — Approximate Surface Elevation (ft):
												Sandy SILT (ML) with Cobbles: Brown, moist, medium dense
												Test pit terminated at a depth of approximately 1 foot below existing site grade due to essential backhoe refusal on Mehrten material.
5												
10												
15												
20												

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Drafted By: DWA | Project No.: 23-483516
Date: 4/29/98 | File Number:

LOG OF TEST PIT TP-15

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE
1 of 1

A-17

GEOTC2 83516 5/1/98

Surface Conditions: Medium grass and clover, sparse trees, gently sloping, numerous floats.

Groundwater: No free groundwater encountered.

Date Completed: 4/22/98

Logged By: L. Reagan

Total Depth: 4 feet

Depth (feet)	FIELD: Sample Type	Sample No.	Blows/ft	Pen (tsf)	LABORATORY: Dry Density (pcf)	Moisture Content (%)	Liquid Limit	Plasticity Index	Passing #200 Sieve (%)	Other Tests	Lithography	DESCRIPTION 0.0 to 4.0 feet — Approximate Surface Elevation (ft):
												Sandy SILT (ML) with Cobbles & Boulders: Brown, moist, medium dense
		1B							17			Mehrten Breccia: Weathered
5												Test pit terminated at a depth of approximately 4 feet below existing site grade due to essential backhoe refusal.
10												
15												
20												

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Drafted By: DWA
Date: 4/29/98

Project No.: 23-483516
File Number:

LOG OF TEST PIT TP-16

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE
1 of 1

A-18

GEOTC2 83516 5/1/98

Surface Conditions:	Medium grass, gently sloping, numerous floats.	Date Completed:	4/22/98
		Logged By:	L. Reagan
Groundwater:	No free groundwater encountered.	Total Depth:	3-1/2 feet

Depth (feet)	FIELD: Sample Type	FIELD: Sample No.	FIELD: Blows/ft	FIELD: Pen (tsf)	LABORATORY: Dry Density (pcf)	LABORATORY: Moisture Content (%)	LABORATORY: Liquid Limit	LABORATORY: Plasticity Index	LABORATORY: Passing #200 Sieve (%)	LABORATORY: Other Tests	Lithography	DESCRIPTION 0.0 to 3.5 feet Approximate Surface Elevation (ft):
												Sandy SILT (ML) with Cobbles & Boulders: Brown, moist, medium dense
												Clayey SAND (SC): Red-brown, moist, medium dense, medium grained
		1B										
		2B										
												Granitic
												Test pit terminated at a depth of approximately 3-1/2 feet below existing site grade due to essential backhoe refusal.
5												
10												
15												
20												

KLEINFELDER

Drafted By: DWA
Date: 4/29/98

Project No.: 23-483516
File Number:

LOG OF TEST PIT TP-17

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE
1 of 1

A-19

GEOTC2 83516 5/1/98

Surface Conditions:	Sparse grass, gently sloping, numerous floats.	Date Completed:	4/22/98
		Logged By:	L. Reagan
Groundwater:	No free groundwater encountered.	Total Depth:	1/2 feet

Depth (feet)	FIELD: Sample Type	FIELD: Sample No.	FIELD: Blows/ft	FIELD: Pen (tsf)	LABORATORY: Dry Density (pcf)	LABORATORY: Moisture Content (%)	LABORATORY: Liquid Limit	LABORATORY: Plasticity Index	LABORATORY: Passing #200 Sieve (%)	LABORATORY: Other Tests	Lithography	DESCRIPTION 0.0 to 0.5 feet — Approximate Surface Elevation (ft):
												Sandy SILT (ML) with Cobbles: Brown, moist, medium dense
												Test pit terminated at a depth of approximately 1/2 foot below existing site grade due to essential backhoe refusal on mehrten breccia.
5												
10												
15												
20												

KLEINFELDER

Drafted By: DWA
Date: 4/29/98
Project No.: 23-483516
File Number:

LOG OF TEST PIT TP-18

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE
1 of 1

A-20

GEOTC2 83516 5/1/98

Surface Conditions: High grass, gently sloping, numerous floats.

Groundwater: No free groundwater encountered.

Date Completed: 4/22/98

Logged By: L. Reagan

Total Depth: 1/2 feet

Depth (feet)	FIELD: Sample Type	FIELD: Sample No.	FIELD: Blows/ft	FIELD: Pen (tsf)	LABORATORY: Dry Density (pcf)	LABORATORY: Moisture Content (%)	LABORATORY: Liquid Limit	LABORATORY: Plasticity Index	LABORATORY: Passing #200 Sieve (%)	LABORATORY: Other Tests	Lithography	DESCRIPTION 0.0 to 0.5 feet; Approximate Surface Elevation (ft):
												Sandy SILT (ML): Brown, moist, medium dense
												Test pit terminated at a depth of approximately 1/2 foot below existing site grade due to essential backhoe refusal on mehrten breccia.
5												
10												
15												
20												

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Drafted By: DWA
Date: 4/29/98

Project No.: 23-483516
File Number:

LOG OF TEST PIT TP-19

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE 1 of 1

A-21

GEOTC2 83516 5/1/98

TEST PIT NO.	SAMPLE DEPTH (ft)	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (% of dry weight)	PARTICLE SIZE SIEVE SIZE (percent passing)						ATTERBERG LIMITS		OTHER TESTS
				3"	3/4"	#4	#10	#40	#200	L.L.	P.I.	
TP- 8	8-1/2 to 9								9			
TP- 9	3-1/2 to 4-1/2											Max DD=130pcf, Opt MC=8.5%; Sand Equivalent=30
TP-10	4-1/2 to 5								24			
TP-11	9-1/2 to 10									41	20	
TP-16	2-1/2 to 3								17			

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Drafted By: DWA
Date: 4/29/98

Project No.: 23-483516
File Number:

SUMMARY OF LABORATORY TESTS

CLOVER VALLEY LAKES
CLOVER VALLEY
ROCKLIN, CALIFORNIA

PLATE
1 of 1

A-22

LABSUM1S 83516 5/1/98

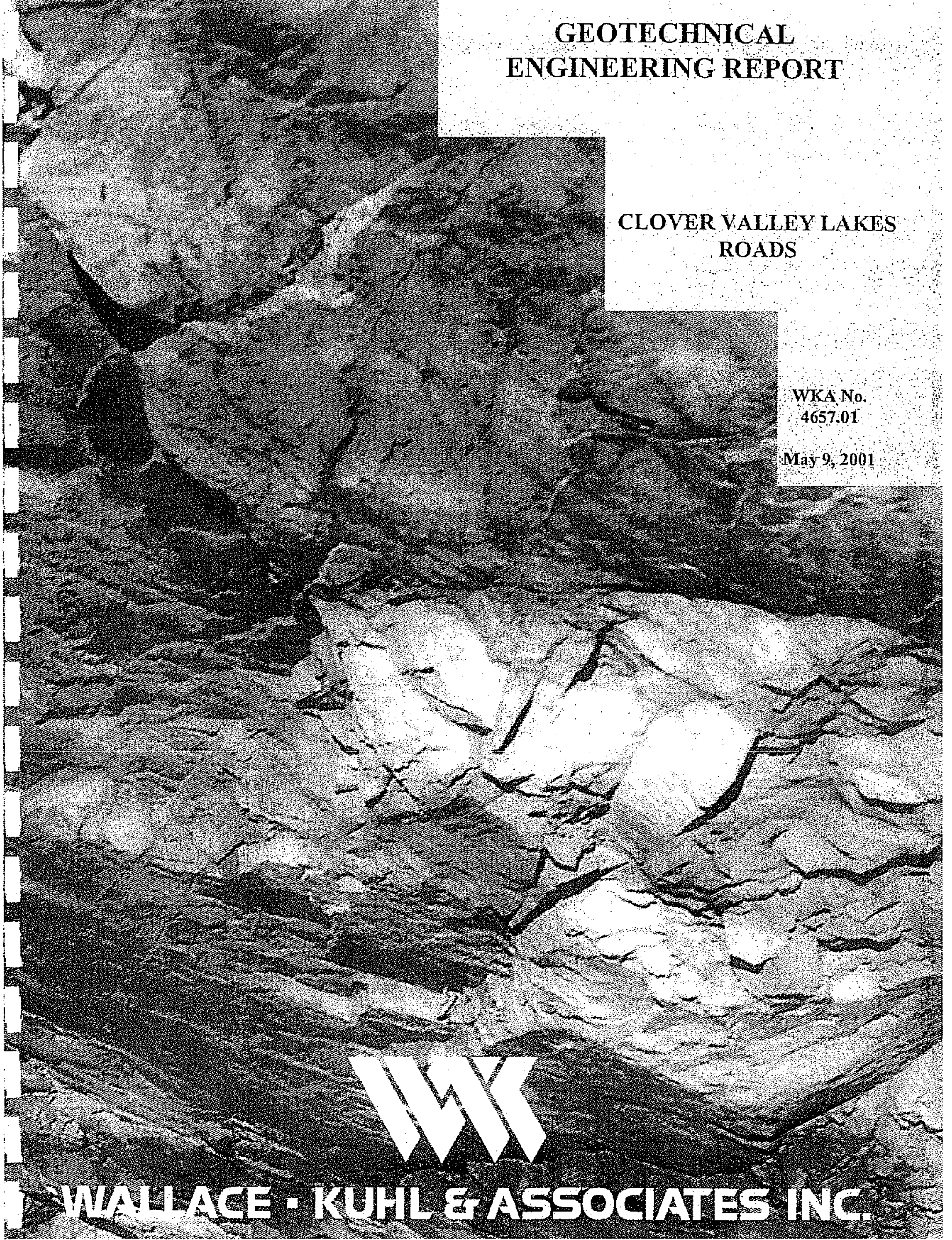
APPENDIX L

GEOTECHNICAL ENGINEERING REPORT

CLOVER VALLEY LAKES ROADS

WKA No. 4657.01

May 9, 2001



WALLACE · KUHL & ASSOCIATES INC.

GEOTECHNICAL ENGINEERING REPORT

CLOVER VALLEY LAKES ROADS

WKA No.
4657.01

May 9, 2001

WALLACE · KUHL & ASSOCIATES INC. 3050 Industrial Boulevard, West Sacramento, CA 95691 (916) 372-1434 (916) 372-9065 Fax

WALLACE · KUHL
& ASSOCIATES INC.

Geotechnical Engineering Report

CLOVER VALLEY LAKES ROADS

Rocklin, California

WKA No. 4657.01

May 9, 2001

INTRODUCTION

General

We have completed a geotechnical engineering investigation and pavement design for the major infrastructure at the Clover Valley Lakes project in Rocklin, California. This report is applicable to the design and construction of the streets, including utility construction. This report presents soil design parameters for proposed mechanically stabilized earth (MSE) retaining walls to be constructed along Clover Valley Parkway, and includes geotechnical recommendations for the design of the street crossings across Clover Valley Creek. We previously prepared a Preliminary Geotechnical Engineering Report for Clover Valley Lakes in January 2001 that describes general site development issues from a geotechnical standpoint.

Purpose and Scope of Work

The purposes of our investigation have been to explore the existing site, soil, rock and ground water conditions along the proposed major street alignments, and to provide engineering conclusions and recommendations concerning the geotechnical-related aspects of street, utility, retaining wall, and bridge construction. Our scope of work has included a geologic site reconnaissance, excavation of 49 test pits, and the drilling of two test borings. Undisturbed soil samples were obtained at test pit locations by hand sampling, and disturbed "bulk" samples of the soils and weathered rock were obtained from the test pits during the field exploration. Undisturbed soil samples also were obtained at various depths from the test borings. The samples were taken to our laboratory for further classification and selection of samples for testing to determine the engineering characteristics of the soils. The results of our field and laboratory work then were analyzed to determine geotechnical engineering conclusions and recommendations regarding site preparation and fill placement, slope construction, earthwork volume factors, subsurface drainage, underground utility construction, bridge foundation and wall design, retaining wall and sound wall design criteria, and pavement section alternatives for varying traffic conditions.

Plates and Attachments

A Vicinity Map is presented as Plate No. 1, and a Topographic Map of the site and adjacent area is included as Plate No. 2. A Site Plan and Geologic Map showing the location of our test pits and test borings is presented as Plate No. 3. Logs of Test Pits are included as Plates No. 4 through 14, and Logs of Borings are presented as Plates No. 15 and 16. An explanation of the symbols and classification system used on the logs appears on Plate No. 17. Appendix A contains general information regarding this investigation, descriptions of the field exploration and laboratory testing programs, and the results of laboratory tests that do not appear on the Logs of Test Borings. Appendix B contains Guide Earthwork Specifications for use in preparing contract documents.

Project Description

We understand the infrastructure for the project will consist of the construction of Clover Valley Parkway between Sierra College Boulevard and Park Drive, two primary interior roads through the low lying portion of the project (Summit Drive and Wild Ginger Loop), and several secondary streets. Bear Clover Way will be constructed across Clover Valley Creek between Summit Drive and Wild Ginger Loop. Typical utility depths along the major roads are anticipated to be 10 feet or less, with sewer lines as deep as 15 feet below street grade in some areas. The project will include five crossings of Clover Valley Creek, with arch plate or box culverts being the most likely type of bridge at each crossing. Several high excavation and fill slopes are proposed along Clover Valley Parkway; Mechanically Stabilized Embankments (MSE) or rock retaining walls will likely be considered at these locations.

FINDINGS

Site Description

Clover Valley is located in the northeastern portion of Rocklin in Placer County, California. The project site is north of Rawhide Road and south of North Clover Valley Road. Sierra College Boulevard is located easterly of the site, and the Whitney Oaks residential project is located to the west.

The site is located in a narrow north-south trending valley bordered on the east and west by ridges with moderate to steep slopes. The valley is drained by Clover Valley Creek, which flows through the valley from north to south. Land use at Clover Valley has mainly been associated with ranching and cattle grazing. An existing single-family home and a former diary barn are located near the middle of the property on the east side of the valley. Foundations associated with an old, demolished building and an underground wooden water line were observed several hundred feet north of the existing single family home. An east-west trending PCWA water line crosses the site in the northern portion of Clover Valley.

Site Geology

The geologic conditions at the site have been determined by review of available geologic literature, the results of our test pits and test borings, and our site reconnaissance. Four distinct geologic units exist at Clover Valley. These units include volcanic mudflow breccia of the Mehrten Formation, cobble conglomerate of the Mehrten Formation, granitic bedrock, and alluvial soils. Approximate boundaries of each geologic unit are shown on Plate No. 3.

The Mehrten volcanic mudflow breccia (shown as Tmv on Plate No. 3) was deposited in association with volcanic activity that took place during the Pliocene (5 to 10 million years ago). Andesitic volcanic eruptions in the Sierra Nevada resulted in volcanic mudflows that flowed westerly through stream and river valleys. Streams and rivers reworked the mudflows and deposited the material further downstream as cobble conglomerates. These sedimentary deposits were then overlain by subsequent mudflows. The lava-capped ridges at the site are the result of the last mudflow sequence deposited at Clover Valley. The elongate configuration of the lava-capped ridges is due to the confining nature of the old river valleys. As the mudflow hardened, it formed a resistant cap that protected the underlying softer rocks, such as the conglomerates, from erosional processes. Ridges that once confined the mudflows were left unprotected from erosional processes and were subsequently eroded, forming the present day Clover Valley.

The Mehrten volcanic mudflow breccia is composed of angular pieces and blocks of black, gray and red, fine grained to porphrytic, andesitic rock that range in size from less than an inch to several feet in diameter. The rocks are contained in a cemented matrix composed of andesitic lapilli and tan to gray ash and sand. The mudflow breccia exists on top of the ridges as caprock and dips gently to the southwest. Blocks of andesite are scattered over the ridge tops and represent the residual products of weathering. Soil development on the mudflow tends to be very thin with only a few inches of typical soil depth. Some areas underlain by the mudflow do not have any soil development.

The Mehrten conglomerate (Tmc on Plate No. 3) consists of rounded andesitic gravel and cobbles in a cemented matrix of andesitic sand and silt. Cemented layers of andesitic sandstone and thin layers of mudflow breccia are often interbedded within this unit. This unit is exposed on top of some of the ridges and in the higher portions of the hillsides at the site.

The Mehrten Formation is typically underlain by granitic bedrock that is approximately 130 to 150 million years old (Mesozoic age). The bedrock is part of the Penryn Pluton and has been classified as silicic quartz diorite. The Mesozoic quartz diorite (Mzd on Plate No. 3) is differentially weathered and varies between slightly weathered hard rock, and severely weathered rock that is similar to a partially cemented soil (decomposed granite). Several large granitic boulder outcrops exist throughout the valley, and on the sides of the ridges at the site.

Alluvial soils (Qal on Plate No. 3) exist along Clover Valley Creek and represent erosional and depositional processes that have taken place in Clover Valley during the last few thousands of years. The soils consist of sand, silt, and clay with some gravel and are at least 10 feet thick at the locations of our test pits near Clover Valley Creek.

Fault Location

Our literature review did not reveal any known faults crossing the property. The nearest known faults currently considered to be active are the Cleveland Hill fault located about 40 miles to the north near Oroville, and the Dunnigan Hills fault located about 40 miles to the west. Several active faults are located near Lake Tahoe and the Bay Area at distances over 70 miles from Clover Valley. Branches of the Bear Mountain fault zone and the Melones fault zone have been mapped 5 to 15 miles east of Clover Valley. These faults are not considered to be active, but several short segments of these faults are considered to show evidence of late-Quaternary displacement (movement within the past 700,000 years). The closest section of these faults to the site with late-Quaternary displacement is located approximately 10 miles east along the Bear Mountain fault zone.

Soil Conditions

Soils developed from residual weathering of the mudflow breccia on top of the ridges consist of rocky sandy silts, and are generally very thin (less than six inches in thickness). Soils in areas that are underlain by cobble conglomerates are typically the result of shallow to deep weathering, and generally consist of a mixture of silt, sand, gravel and cobbles. The thickness of the rocky soils above the cemented cobble conglomerate varies from one to several feet due to differential weathering of the conglomerate. Differential weathering also has resulted in varying soil depths above the granitic bedrock at the site. Soils overlying the granitic rock can be several feet deep only a few yards away from areas where hard granitic rock is exposed at the surface. Soils developed above the granitic bedrock are generally silty and clayey sands. The granitic bedrock is also overlain by several feet of alluvial soils near Clover Valley Creek. The alluvial soils consist of sand, silt, and clay with some gravel.

Ground Water

The soils within the flood plain of Clover Valley Creek are wet due to water migration through the area. Test pits excavated near Clover Valley Creek encountered a high volume of surface water that flowed into the test pits as they were excavated. We do not know if subsurface seepage was occurring at our test pit locations due to the amount of surface water flowing into the test pits. However, subsurface seepage near Clover Valley Creek should be anticipated even if the surface water is diverted from the area. Test pits excavated near the creek outside of the flood plain encountered ground water at various depths depending on the ground elevation at the test pit location and the proximity of the test pits to Clover Valley Creek.

Seepage was encountered in a few of our test pits excavated in the valley outside of the flood plain of Clover Valley Creek. Seepage from perched water above impermeable geologic materials should be anticipated during and shortly after the rainy season throughout the site.

Springs are known to be active at the site during certain times of the year, and are typically located on the hillsides. Springs are anticipated to be seasonal with the amount of seepage during any particular year dependent on the amount of rainfall during the year.

CONCLUSIONS

Retaining Wall and Bridge Foundation Support

The weathered granitic bedrock underlying the hillsides along Clover Valley Parkway at the proposed retaining wall sites will provide good bearing support for the foundation of the retaining walls if loose soils above the bedrock are removed and the retaining wall foundations are constructed on firm materials.

Soft and saturated clayey soils and loose granular soils at the proposed street crossings across Clover Valley Creek are not suitable to support the proposed bridges. Soft and loose soils at the street crossings should be removed and engineered fill should be placed in accordance with the recommendations of this report. Engineered fill, properly placed and compacted in accordance with the recommendations of this report, will provide good bearing support for the bridge foundations.

Settlement

The results of our consolidation tests (Plates No. A1 and A2) indicate that the soft and saturated clay soils at the street crossings of Clover Valley Creek will consolidate if several feet of engineered fill is placed over them. For this reason, in addition to the bearing support concerns described in the previous section, we recommend the compressible soils be removed prior to placement of engineered fill. Although removal of the compressible soils will greatly reduce the amount of settlement of the completed roadway fills, some minor settlement of the roadway fills should be anticipated during construction of the fills and utilities. However, settlement is anticipated to take place relatively quickly prior to pavement construction.

Ground Water

Water will be a significant factor during construction of the street crossings of Clover Valley Creek in the southern portion of Summit Drive and at Bear Clover Way. Although control and diversion of surface water will be the greatest concern, subsurface seepage during construction should be anticipated even if the surface water is diverted from the construction areas. Pumping of seepage from excavations should be anticipated.

Surface water and seepage will also be a factor during construction of the creek crossing at Clover Valley Parkway and the two crossings of the secondary streets in the northern portion of the site. Although control of surface water at these crossings may be less involved than at the two southern crossings due to the more confined nature of Clover Valley Creek in the northern portion of the site, diversion of surface water and pumping of seepage from excavations will be required to complete roadway fills and underground utilities.

Seasonal Water

Depending upon the time of year construction takes place, perched water or seepage may be encountered in excavation slopes during earthwork or within utility excavations on the ridges and hillsides due to the relatively impermeable materials at the site. Surface water and seepage could be encountered in excavations on hillsides near or below springs that are active on a seasonal basis.

During the wet season, infiltrating surface water will create saturated surface conditions due to the natural topography of the site and the impervious nature of the cemented materials. Grading operations attempted following the on-set of winter rains and prior to prolonged drying periods will be hampered by high soil moisture contents. Such soils, intended for use as engineered fill, will require considerable aeration and/or a period of drying to reach a moisture content that will permit the soils to be properly compacted.

Excavation Conditions

The mudflow breccia will be very difficult to excavate. Large tractors equivalent in size or larger than a Caterpillar D10 equipped with a single-tooth ripper typically are required to rip this material during mass grading. Excavation within the undisturbed cemented mudflow breccia is generally very difficult with a standard size backhoe, with depth of penetration limited to less than one foot. Large excavators equivalent in size to a Caterpillar 245 will have difficulty excavating utility trenches in the undisturbed breccia, but have been used successfully at other sites underlain by mudflow breccia. Rock trenchers specifically suited for excavating hard rock also have been used at nearby sites with similar rock conditions. Pre-ripping of utility alignments can result in easier excavation conditions, but pre-ripping can create pieces of mudflow breccia that may be too large to be suitable for use as trench backfill material without additional processing. Although blasting is typically used during rock excavation, it is our understanding that this type of rock tends to absorb energy produced by blasting, resulting in little energy being used to fracture the rock.

Excavation in the cemented cobble conglomerate will vary due to differences in cementation. Tractors similar in size to those used to rip the mudflow breccia should be able to rip the cemented conglomerate, and large excavators (Caterpillar 235 or 245) have been successfully used to excavate utility trenches in this material at nearby sites. Pre-ripping of utility trench alignments with large tractors during mass grading can reduce difficulty during utility trenching.

Weathered granitic rock should be excavatable with conventional grading and trenching equipment. However, large boulders of granitic rock are exposed at the surface in some areas that will be difficult to remove. Large boulders can sometimes be removed during mass grading with a large dozer, but they oftentimes require blasting to remove. Hard boulders of granitic rock should be anticipated during underground construction. Boulders encountered during trench excavation can usually be removed by light blasting or by hydraulic hammers.

The undisturbed, cemented mudflow breccia at the site can be considered as "stable rock" for the purposes of short-term excavations less than 20 feet deep. However, excavation of the mudflow breccia is typically very difficult with large excavators, and excavation could disturb the rock exposed in utility trench sidewalls. Depending on the type of equipment used to excavate the utility trenches, it may be necessary to slope short-term excavations in consideration of loose, disturbed rock in the trench sidewalls.

The cemented cobble conglomerate should be considered as "Type A" soil for the purposes of short term excavations less than 20 feet deep, and should be sloped in accordance with current CAL\OSHA requirements. Loose cobbles dislodged from trench sidewalls should be anticipated since disturbance during excavation could break the cementation that holds the cobbles in place.

The weathered granitic bedrock at the site may be considered as "Type B" and "Type C" soils, depending on the degree of weathering, the cementation of the decomposed granite, and if seepage or ground water exists. These soils should be sloped in accordance with current CAL\OSHA requirements.

Alluvial soils near Clover Valley Creek should be considered as "Type C" soils.

<u>Slope Stability</u>

The natural slopes at the site are generally stable at their present configurations due to the well-cemented nature of the geologic materials at the site. Slopes consisting of cemented mudflow breccia and conglomerate should remain stable if the existing slopes are not overly steepened during mass grading. The granitic rock is generally also considered to be stable unless significantly altered during grading. Stable slope gradients are dependent upon the degree of weathering. Although minor areas of surface erosion on the hillsides were observed during our field reconnaissance, these areas do not represent global stability concerns. Long term excavations and permanent fill slopes should remain stable if they are constructed in accordance with the recommendations of this report.

Fill Material Suitability

Although the mudflow breccia will be suitable for use as engineered fill material, it will tend to excavate in large boulders that will be difficult to break down to a size suitable for use within engineered fill. The mudflow breccia will be suitable for use as engineered fill material if it is broken into pieces less than 12 inches in maximum dimension and thoroughly mixed with soil. Large rock with a maximum diameter of 30 inches that cannot be broken into pieces less than 12 inches could be used within the deeper portions of fills at least two feet below street subgrade elevation if they are carefully placed in accordance with the recommendations in this report. However, large rock use as fill material could be encountered during later utility excavation. Use of rock as fill material is described in the Site Preparation section of this report.

Conglomerates should be suitable for use as fill material if they are free from rubble, rubbish and organic concentrations. Large boulders or cemented blocks of conglomerate larger than 12 inches in diameter may be excavated during grading which would need to be broken down to a suitable size prior to placement as engineered fill, or used within the deeper portions of fills.

The weathered granitic bedrock (decomposed granite) would be suitable fill material for the project. It would be best suited for use as fill behind retaining structures and MSE walls that may be constructed at the project.

Alluvial soils near Clover Valley Creek will generally not be suited for immediate use as fill material due to anticipated high moisture contents. These materials could be used for engineered fills if they are dried to appropriate moisture contents and if they are free from rubble, rubbish and organic concentrations.

Suitability of On-Site Materials For MSE Wall Construction

It is our understanding that Mechanically Stabilized Embankment (MSE) walls with wire or geosynthetic reinforcement require granular fill material absent of large rock (rock exceeding a diameter of about six inches). The weathered granitic rock at the site would be suitable fill material for MSE walls; however, the conglomerates and mudflow breccia at the site would require processing to either remove large rock or to break the large rock into sizes suitable for use as wall backfill material.

Pavement Subgrade Qualities

The rocky materials, sandy soils, and decomposed granite at the site exhibit good subgrade qualities for support of asphalt concrete pavements. Clays and silts exhibit poor qualities and should be avoided in the upper two feet of street subgrade. The results of the R-value tests are presented on Plates No. A3 through A7.

Gradation Analysis

Sieve analyses were performed on samples of alluvial soils obtained at the locations of Test Pits 11, 13 and 16 to provide information to be used in the design of the proposed detention ponds at the site. Sieve analyses also were performed on samples of weathered granitic rock obtained at the locations of Test Pits 36, 37 and 38 to provide information regarding particle sizes of possible MSE wall backfill materials. The results of the gradations of the samples tested are shown on Plates No. A8 through A13.

Corrosion Potential

Three samples of soils encountered by our test pits were tested to determine resistivity, pH, chloride and sulfate content (Plates No. A25 through A27). Samples were obtained from Test Pits 36, 44, and 49. The test results suggest that the site soils are mildly to moderately corrosive to reinforced concrete and exposed steel structures. Ordinary Type I-II Portland cement is considered satisfactory for use on this project, assuming a minimum 3-inch cover is maintained over the reinforcement.

It is our opinion that the native soils near Clover Valley Creek should be considered to be corrosive to ferrous metals due to the presence of water. Buried steel pipe and below grade ferrous metal objects near the creek should be protected from corrosion as designed by an engineer specializing in corrosion protection.

Seismic Design Values

The site is located within Seismic Zone 3, but it is not located within 15 kilometers of a Type A or Type B fault. The following parameters may be used for seismic design at the site using the 1997 Uniform Building Code (UBC).

	1997 UBC Table/Figure	Factor/Coefficient	Value
Seismic Zone	Figure 16-2	Zone	3
Seismic Zone Factor	Table 16-I	Z	0.30
Soil Profile Type	Table 16-J	Sc	--
Seismic Coefficient	Table 16-Q	C_a	0.33
Seismic Coefficient	Table 16-R	C_v	0.45
Near-Source Factor	Table 16-S	N_a	1.0
Near-Source Factor	Table 16-T	N_v	1.0
Seismic Source Type	Table 16-U	--	--

RECOMMENDATIONS

Site Preparation

Prior to grading, construction areas should be cleared of surface debris, rubble and significant vegetation. Remnants of demolished buildings and associated items located near the proposed alignment of Clover Valley Parkway on the east side of Clover Valley Creek should be removed if they exist within proposed construction areas. An existing abandoned underground telephone cable that crosses the alignment of Clover Valley Parkway on the east side of Clover Valley near our Test Pit 37 should be removed. Where practical, heavy concentrations of grass and weeds should be removed by stripping the upper two to three inches of soil. It may not be practical to strip surface vegetation on the ridges in areas that have sparse to moderately thick concentrations of grass and weeds due to the existence of large cobbles and boulders at the surface. Surface vegetation in these areas may be mixed with near-surface soil by blending with a dozer or compactor as a suitable alternative to stripping, depending upon the quantity and condition of organics at the time of grading. Blending must continue until the organics are thoroughly mixed with the soil; concentrations or pockets of organics will not be allowed. ***Mixing or blending of organics into the topsoil should be allowed only with our prior approval.***

Following site clearing and organic removal, areas designated to receive engineered fill should be scarified to a depth of at least six inches, uniformly moisture conditioned to near the optimum moisture content, and properly compacted. It will not be necessary to scarify areas where undisturbed cemented materials are exposed. Areas consisting of fine-grained soils should be compacted to at least 90 percent relative compaction prior to the placement of fill. Relative compaction should be based on the maximum dry density as determined by the ASTM D1557 test method. Rocky materials should be compacted by at least three complete coverages with a Caterpillar 825 compactor (or an equivalent sized self-propelled sheepsfoot compactor) to the satisfaction of our representative. Loose, soft or saturated soil deposits encountered during compaction operations should be removed to expose a firm base and backfilled with engineered fill, as recommended below. Our representative should be on-site during site preparation operations to observe the materials under compactive loads and to identify unstable soil deposits or areas of loose rocky materials.

Sloping ground steeper than six horizontal to one vertical (6:1) should be benched prior to receiving engineered fill. Each bench should consist of a level terrace excavated horizontally at least four feet into the hillside. Benching should be done progressively up the hillside at vertical increments not exceeding two feet. Fill placed on slopes that are steeper than four horizontal to one vertical (4:1) should be keyed into the natural ground at the toe of the fill slope. The toe key should be at least 15 feet wide, centered along the toe of the fill slope, and extend at least two feet into dense, hard or cemented materials as verified by our field representative.

Fill placement and bridge construction at the five proposed street crossings across Clover Valley Creek will be critically dependent on the diversion and control of surface water, particularly at the Summit Drive and Bear Clover Way crossings where large quantities of soft and saturated soils should be removed prior to fill placement and bridge construction. Control of surface water several weeks in advance of fill placement might be beneficial for equipment access. Although surface water diversion around these areas might control the flow of surface water, subsurface seepage into excavations should be anticipated that would require dewatering during construction.

Soft clayey soils and loose granular soils should be removed from the street crossings across Clover Valley Creek prior to fill placement. Based on the results of our field exploration, we anticipate the soils at the Summit Drive and Bear Clover Way crossings will require removal to a depth of at least six feet below the ground surface existing at the time of our field work. We estimate that removal of soft clayey soils would be required from about 200 feet along the Summit Drive crossing, and from about 300 feet along the Bear Clover Way crossing. Removal of soft or loose soils at the Clover Valley Parkway crossing and the two secondary street crossings north of Clover Valley Parkway is anticipated to be limited to less than 25 feet on each side of the creek. Our representative should observe soil removal operations to evaluate the stability of the soils to determine if additional excavation should be accomplished. We recommend that construction bid documents include a unit price (per cubic yard) for all excess excavation due to unsuitable materials and replacement with engineered fill.

We anticipate that stabilization of the bottom of the excavations at the Summit Drive and Bear Clover Way crossings by "bridging" will be needed after removal of the clayey soils due to the saturated conditions in these areas. We recommend that a layer of geogrid (Tensar BX 1200 or the equivalent) be placed on the exposed subgrade prior to fill placement. A lift of rocky fill material, 18 to 24 inches in thickness, should be placed over the geogrid and compacted in accordance with the recommendations of this report. If the first lift does not provide suitable stabilization for subsequent fill placement, a second layer of geogrid should be placed prior to placement of the next lift of fill material. We recommend rocky fill material be used for the lower portion of the engineered fills rather than sandy and silty soils or weathered granitic rock (decomposed granite) for stabilization considerations.

We do not anticipate that the clayey soils removed from the street crossings across Clover Valley Creek will be suitable for use as engineered fill material due to organic content and excessive moisture contents. Clayey soils should not be used in the upper two feet of the street subgrade even if they are dried and are free of organics. They could be used in the deeper portions of road fills if they are mixed with granular or rocky soils, are dried to appropriate moisture contents, and contain little or no organics. Granular soils removed from the street crossings might be suitable for use as engineered fill material if they are dried to appropriate moisture contents and are free of organics or other deleterious materials.

On-site soils and rock materials may be used as engineered fill if they do not contain debris, organics or other deleterious materials. Fill material used in the upper two feet of street subgrade should possess an R-value of at least 40. A reasonable effort should be made to break down rocks larger than 12 inches into smaller pieces during earthwork for use as engineered fill material. Although it may not be possible to eliminate all rock larger than 12 inches from fill material without screening the fill material prior to placement, we recommend that rock exceeding 12 inches in diameter be avoided in the upper two feet of fill placed in the streets. Rocks between 12 and 30 inches in diameter that cannot be reasonably broken down to less than 12-inch size particles may be selectively placed within engineered fill at depths greater than two feet below street subgrade elevation if approved by our field representative. Rocks used as fill should be thoroughly mixed with soils to avoid voids being created within fill. Large rocks used as engineered fill material should be separated to allow proper compaction around and over the boulders. Soils placed around large rock should be uniformly moisture conditioned and compacted to the satisfaction of our representative in accordance with the recommendations presented in the following paragraphs. Rocks exceeding 30 inches in diameter should be broken into smaller pieces prior to use as fill, or removed from the construction area.

Engineered fill consisting predominately of fine-grained soils should be placed in horizontal lifts not exceeding six inches in compacted thickness. Each layer should be compacted at a uniform moisture content (at least the optimum moisture) to not less than 90 percent of the maximum dry density (ASTM D1557). Fills exceeding 20 feet in thickness should be compacted to not less than 95 percent.

A procedural compaction specification is recommended for fill materials containing high percentages of gravel, cobbles and rock fragments. Fill materials containing rock should be placed in horizontal lifts about 12 inches in thickness, and be uniformly and thoroughly moisture conditioned to the full depth of each lift. Compaction of rocky fill materials should be achieved by a minimum of three successive passes with a Caterpillar 825 compactor (or an equivalent sheepsfoot compactor) to the satisfaction of our on-site representative. Fills exceeding 20 feet in thickness should be compacted by a minimum of five successive passes with a Caterpillar 825 compactor (or equivalent). Compactive effort should be applied uniformly across the full width of the fill. Large rocks that cannot be properly incorporated into the engineered fill should be removed from the fill.

Approach fills and abutment fills at the bridge sites should be placed in accordance with the recommendations in the previous paragraph and compacted to at least 95 percent of the ASTM D1557 maximum dry density, or by a minimum of five successive passes of a Caterpillar 825 sheepsfoot compactor (or equivalent) if fill materials consist of rocky materials.

Import fill materials, if required, should be granular in nature, with a Plasticity Index not exceeding 15, and a maximum particle size of six inches. Import fill material used in the upper two feet of street subgrade should possess an R-value of at least 40. Import fill material must be approved by our office prior to transporting the material to the project.

Final street subgrades should be moisture conditioned and compacted to at least 95 percent of the maximum dry density or by at least five passes with a Caterpillar 825 (or equivalent) compactor after completion of underground utilities and just prior to placement of aggregate base. Compaction of the final street subgrade should be performed regardless of whether final elevation is achieved by filling, excavation, or is left at existing grade.

All earthwork operations should be accomplished in accordance with the recommendations contained within the Geotechnical Engineering Report. We recommend that our representative be present during site preparation and fill placement to verify compliance with these recommendations and the project specifications. ***This is especially important on this project since performance criteria have been specified for compaction of rocky materials.***

Slope Construction

Permanent excavation and fill slopes should be constructed at a gradient of two horizontal to one vertical (2:1) or flatter. It may be possible to excavate permanent excavation slopes steeper than

2:1 if the slopes are completely excavated in undisturbed cemented materials. However, each proposed excavation slope must be reviewed by Wallace - Kuhl & Associates, Inc. prior to recommending steeper slope gradients, and in no case should excavation slopes be steeper than 1½:1. Although the cemented geologic materials at the site are anticipated to be generally stable at steep excavation slope gradients, the risk of localized instability (loose cobbles or small pieces of cemented material becoming dislodged from the slope over a period of time) increases with steeper slope gradients.

Fill and excavation slopes exceeding 30 feet in height should be provided with a terrace at mid-height or at vertical increments not exceeding 30 feet in the case of very high slopes. Each terrace should slope into the slope, and a lined swale or ditch should be provided to collect surface water. The swale or ditch should direct water toward a suitable discharge point or drainage intake structure. Terraces should be at least six feet wide. However, wider terraces would allow better access for maintenance of the swale or ditch for the removal of loose soil, rock or other debris from the terrace.

Stability of excavation slopes could be affected by planes of weakness within the slope material or by the presence of seasonal seepage. A representative of Wallace - Kuhl & Associates, Inc. should observe slopes during construction to determine if factors that could affect slope stability are encountered, and to delineate contacts between cemented and noncemented material where transitional slope gradients may be required.

Slopes constructed by fill and excavation should be protected from erosion by suitable methods prior to the rainy season. Disturbed, weathered granitic rock is very susceptible to erosion even if it is properly compacted. Fill slopes should be track walked upon completion to reduce erosion. Track walking also should be performed on excavation slopes, if loose material exists. Slopes constructed with rocky material will experience some sloughing of rock after slope construction is completed. Protective fencing or other suitable barriers should be constructed at the base of high slopes if protection from falling rock is desired. Control of water over the slopes may be accomplished by providing small berms at the top of the slope, constructing V-ditches near the top of the slope, or by grading the area behind the top of the slope to drain away from the slope. Brow ditches at the top of slopes are very effective at redirecting runoff water away from slopes. Ponding of surface water at the top of the slope or allowing sheet flow of water over the top of a slope should be avoided.

Earthwork Volume Factors

Volume factor determination for the on-site materials by laboratory testing is not possible due to the nature of the rocky materials. Therefore, volume factors for rocky materials can only be estimated based on experience. Discussions with contractors who have worked in rocky materials similar to those at the site indicate that cemented mudflow breccia typically increases in volume by 5 to 10 percent when excavated and placed as engineered fill. However, volume factors for the mudflow breccia will be affected by the contractor's ability to break large rock into pieces suitable for use as fill and the amount of large rock not reused in fill construction. Cemented conglomerates may increase or decrease in volume by about 5 percent depending on the degree of compactive effort. Weathered granitic rock in the hillsides of Clover Valley should be anticipated to increase in volume by 5 to 10 percent when excavated and placed as engineered fill. The alluvial soils and sandy soils overlying the weathered granitic rock will decrease in volume when excavated and placed as fill by about 10 to 20 percent depending on the type of material.

The actual percent shrinkage will be dependent on the degree of compaction of fill material, i.e., soils compacted to 95 percent relative compaction will have a higher percent shrinkage than soils compacted to 90 percent relative compaction. Percent compaction usually varies during fill placement and is a factor that is difficult to anticipate. Stripping losses can also affect earthwork quantity calculations. It is estimated that the upper two or three inches of soil may be removed during stripping within areas of the site where stripping is recommended and feasible.

It is our opinion that an accurate prediction of overall shrinkage factors for earthwork is not possible. Therefore, we recommend that the improvement plans provide for either changes in grade or spoils and borrow areas to accommodate some shortage or excess of material that cannot be predicted at this time.

Subsurface Drains

Excavation slopes on hillsides may expose springs or seeps that are anticipated to be active during or shortly after the rainy season. Identification of springs and seeps in excavation slopes will be dependent on the time of year and the amount of rainfall during any particular year, and may not be possible until several months (or years) after grading operations are complete. Recommendations to intercept water from springs and seeps could be provided after springs or seeps have been identified.

Construction Monitoring

To evaluate the risk of settlement that may occur after the fill material is placed at the street crossings across Clover Valley Creek, we recommend monitoring the fills to determine if settlement occurs after the fills are placed. Elevation readings could be obtained by the project surveyor about once a week prior to final pavement construction throughout the duration of underground construction. Our firm should evaluate information regarding settlement.

Underground Utility Construction

Trenching for underground utilities will encounter varying materials consisting of cemented mudflow breccia, cemented cobble conglomerate, granitic bedrock, decomposed granite, and alluvial soils. Excavation conditions are described in the Excavation Conditions section of this report. Utility trenches should be sloped or shored in accordance with CAL/OSHA standards.

In general, utility trench backfill materials should consist of granular soils and rocky materials or approved granular import material. Rock over three inches in diameter should be excluded from initial backfill to avoid impact damage to utility lines. Rock over 12 inches may be used in the upper portions of utility excavations if the excavations are wide enough to allow access with a large sheepsfoot compactor and the rocky material is placed and compacted as engineered fill in accordance with the recommendations included in the Site Preparation section of this report. The upper foot of trench backfill should consist of material similar to adjacent subgrade soils to provide uniform support of the pavement section.

Utility trench backfill should be compacted to at least 90 percent of the maximum dry density (ASTM D1557) at or near the optimum moisture content in six-inch lifts if the backfill material consists of soil that can be tested with a nuclear density gauge. Rocky backfill material should be compacted in six to 12 inch lifts using mechanical compaction methods. The lift thickness and number of passes to achieve proper compaction will depend on the size of the rocky material and the type of compaction equipment used. Jetting of trench backfill for compaction is not recommended.

Bridge Foundation and Wall Design

Based on discussions with the project's civil engineer, Stantec Consulting, Inc., it is our understanding that the bridges at the proposed street crossings of Clover Valley Creek will either be box culverts or multi-plate arches supported on a shallow foundation. The following recommendations for a shallow foundation system are provided with the assumption that loose, soft, and/or compressible soils will be removed at each bridge site as recommended in the Site Preparation section of this report. Recommendations for a deep foundation consisting of driven piles or drilled piers to support the bridges have not been provided in consideration of the type of bridges desired for this project. Deep foundation recommendations could be provided if the proposed bridge designs change or if the poor soils at the bridge sites cannot be removed.

The proposed bridges may be supported on foundations that extend at least 18 inches into properly compacted engineered fill or firm undisturbed on-site materials. Foundation excavations must be observed by a representative of Wallace-Kuhl and Associates to verify the existence of anticipated foundation materials and to provide amended recommendations, if necessary. The foundations may need to be deepened to depths greater than the minimum depth recommended in consideration of scour. Scour is dependent on the hydrologic characteristics of Clover Valley Creek and the specific bridge site, and should be evaluated by an engineer with expertise in hydrology and scour depth.

Foundations so established may be sized for maximum allowable soil pressures of 2000 pounds per square foot (psf) for dead load, 3000 psf for dead plus live load, or 4000 psf to include the short-term effects of seismic or wind forces, provided that any loose or soft soils are removed from foundation excavations prior to placement of foundation concrete. The weight of foundation concrete extending below adjacent soil grades may be disregarded in sizing computations. A structural engineer should design foundation reinforcement. The modulus of subgrade reaction ("k-value") of firm granular materials (engineered fill or undisturbed in-place materials) may be assumed to be 150 pounds per square inch (psi) per inch. This value has been estimated based on studies relating soil type to "k-value", and has not been determined by field testing.

Resistance to lateral foundation displacement may be computed using an allowable friction factor of 0.40, which may be multiplied by the effective vertical load on the foundation. Additional lateral resistance may be achieved by utilizing an allowable passive earth pressure against the vertical projection of the foundation in firm granular soils equal to a fluid pressure of 400 psf per foot of depth. These two modes of resistance should not be added unless the frictional component is reduced by 50 percent since mobilization of these resistances likely will occur at different degrees of horizontal movement.

Based on the publication "Peak Acceleration From Maximum Credible Earthquakes in California (Rock and Stiff-Soil Sites)" prepared by the California Department of Conservation, Division of Mines and Geology in 1992 (DMG Open-File Report 92-1), a peak ground acceleration of about 0.2g may be anticipated for the site.

Box culvert walls should be capable of resisting earth pressures for the at-rest condition equivalent to a fluid pressure of 60 psf per foot of depth of retained soil for horizontal backfill conditions, assuming the walls are designed to be rigid ("non-yielding"). Retaining walls that will be allowed to rotate about their base (such as wing walls) should be capable of resisting "active" lateral earth pressures equal to an equivalent fluid pressure of 40 psf per foot of depth of retained soil for horizontal backfill. These values do not include the effect of surcharge loads or sloping backfill. We recommend that a surcharge load equivalent to two feet of retained soil be included in earth pressure calculations to account for traffic loads on paved surfaces adjacent to the walls. For retaining structures with backfill sloping at a gradient no steeper than two horizontal to one vertical (2:1), the at-rest pressure should be increased to 80 psf per foot of depth and the active pressure should be increased to 60 psf per foot of depth. Foundations for retaining walls may be designed in accordance with the parameters in the preceding paragraphs.

Backfill behind box culvert and wing walls should be fully drained to prevent the build-up of hydrostatic pressure behind the wall. Retaining walls should be provided with a drainage blanket (Class 2 permeable material, Caltrans Specification Section 68-1.025) at least one foot wide extending from the base of wall to within two feet of the top of the wall. The top two feet above the drainage layer should consist of compacted materials that are similar to the soils used as abutment fill material. Weep holes or perforated PVC pipe should be provided at the base of the wall to collect accumulated water. Drain pipes, if used, should slope to discharge at no less than a one percent fall to suitable discharge points. Open-graded ½-inch to ¾-inch crushed rock may be used in lieu of the Class 2 permeable material, if the rock and drain pipe are completely enveloped in an approved nonwoven geotextile filter fabric. Proprietary drainage products, such as Miradrain or the equivalent, could be used as an alternate to rock drains behind the walls if they are installed in accordance with the manufacturer's recommendations.

Structural backfill materials for the bridges (other than the drainage layer) should be free of significant quantities of rubbish, rubble, organics and rock over 12 inches in size. Structural backfill should be placed in lifts not exceeding 12 inches in compacted thickness, and should be mechanically compacted to densities equivalent to or higher than 95% relative compaction. A soil density of 135 pounds per cubic foot (pcf) for granular and rocky fill materials may be assumed to determine surcharge loads for multi-plate arch bridges.

MSE Retaining Wall Design and Construction

Mechanically Stabilized Earth (MSE) retaining walls will be considered along Clover Valley Parkway on steep hillsides on the west and east sides of Clover Valley. Design criteria for MSE wall construction has been requested by the project civil engineers.

Based on the conditions we observed on the hillsides along the alignment of Clover Valley Parkway, we anticipate that the foundation materials for the retaining walls will consist of weathered granitic rock. A maximum applied soil bearing pressure of 5000 pounds per square foot (psf) at a depth of embedment of at least two feet may be assumed for dense, in-place, weathered granitic rock. Loose soils above the weathered granitic rock should be removed to expose dense materials as verified by our field representative. Foundation excavations must be observed by a representative of Wallace-Kuhl and Associates to verify the existence of anticipated foundation materials and to provide amended recommendations, as necessary.

Based on information provided by the project's civil engineer and the results of our field work, we anticipate that the MSE walls will be constructed in areas of weathered granitic rock. Undisturbed samples of the weathered granitic rock were obtained from near the proposed retaining wall locations, and laboratory testing was performed to determine the shear strength characteristics of the weathered granitic rock. The results of our laboratory tests are included in Appendix A. Based on the test results, it is our opinion that an effective angle of internal friction of 35 degrees for the in-place weathered granitic rock would be appropriate, with no more than 300 pounds per square foot cohesion. The soils should be considered to have a moist unit weight of about 135 pounds per cubic foot (pcf).

Structural backfill materials for MSE retaining walls should be free of significant quantities of rubbish, organics and rock over six inches in size. Clays should not be used as fill for MSE retaining walls. Structural backfill should be placed in lifts not exceeding 12 inches in compacted thickness, and should be mechanically compacted to densities equivalent to or higher than 95 percent relative compaction. We recommend weathered granitic rock (decomposed granite) be used as structural backfill material.

Disturbed samples of weathered granitic rock (decomposed granite) were obtained from the areas near the proposed retaining wall locations, and laboratory testing was performed to determine the remolded shear strength characteristics of the compacted material. The results of our laboratory tests are included in Appendix A. We recommend an effective angle of internal friction of 32 degrees for properly compacted weathered granitic rock, and that the material should be considered to have cohesion of about 600 pounds per square foot. Weathered granitic rock placed and compacted as structural backfill should be considered to have a moist unit weight of about 135 pounds per cubic foot (pcf).

Sound Wall Systems

Foundations for sound wall systems should be based within firm undisturbed ground, engineered fill placed and compacted in accordance with the recommendations of this report, or a combination of these materials, as verified by our representative. Sound wall foundations may be designed using a maximum allowable soil bearing pressure of 2000 pounds per square foot (psf) for dead load, 3000 psf for dead plus live load, or 4000 psf for total load. Lateral resistance may be computed using an equivalent fluid pressure of 350 psf per foot of depth. Where foundations extend within three feet of slopes steeper than three horizontal to one vertical (3:1), the upper 12 inches of embedment should be disregarded. For pier foundations, the lateral resistance may be computed using 1½ times the pier diameter. Difficult excavation conditions for pier foundations should be anticipated due to the rocky conditions at the site. Pier foundations extending into the cemented geologic materials *are not recommended* due to probable excavation difficulty.

Pavement Design

Samples of anticipated subgrade materials were obtained during our field exploration and taken to our laboratory for Resistance value (R-value) testing. The results of our R-value tests are presented on Plates No. A3 through A7. Based on the results of our R-value tests and our experience at nearby projects with similar conditions, it is our opinion that an R-value of 40 should be used to determine pavement sections at the project for subgrade conditions consisting of granular soils and rocky materials. The following sections are not applicable for silty or clayey subgrade soils. Our representative should observe conditions at the final subgrade elevation to verify that the granular or rocky subgrade materials exist.

The following pavement design sections have been determined in accordance with methods contained in the "California Department of Transportation Highway Design Manual," Fourth Edition. The Highway Design Manual method includes a safety factor that is applied to asphalt concrete, and results in an increase in asphalt concrete thickness. We are including pavement design sections with the safety factor.

Recommended Pavement Sections

Traffic Index	Type B Asphalt Concrete	Class 2 Aggregate Base
5.0	2½"	5"
5.5	3"	5"
6.0	3½"	5"
6.5	4"	6"
7.0	4"	7"
7.5	4½"	8"
8.0	4½"	9"
8.5	5"	9"
9.0	5½"	10"
9.5	6"	10"
10.0	6"	11"

We emphasize that the performance of a pavement is critically dependent upon uniform compaction of the subgrade soils, as well as all engineered fill and utility trench backfill within the limits of the pavements. The upper six inches of pavement subgrade should be compacted to at least 95 percent of the ASTM D1557 maximum dry density, or when rocky, in accordance with the performance specification recommended in the Site Preparation section of this report. Final subgrade preparation should be performed just prior to placement of the aggregate base. Class 2 aggregate base should be compacted to at least 95 percent (ASTM D1557). Materials used for pavement construction should conform to the appropriate sections of the most recent editions of the Caltrans Standard Specifications and the City of Rocklin Standards.

Efficient drainage of all surface water to avoid infiltration and saturation of the supporting aggregate base and subgrade soils is important to the performance of pavements. Constructing concrete cut-off curbs between landscape medians and pavement areas can reduce the risk of water entering the aggregate base. To be effective the cut-off curbs should extend to the bottom of the aggregate base. Where drop inlets or other surface drainage features are to be constructed, weep holes should be considered at the base/subgrade level to allow free drainage of accumulated water.

Construction Testing and Observation

Geotechnical testing and observation during construction is considered a continuation of our geotechnical engineering investigation. Wallace - Kuhl & Associates, Inc. should be retained to provide testing and observation services during earthwork, pavement construction, and retaining wall construction to observe compliance with design concepts and the project specifications, and to provide consultation as required during construction.

LIMITATIONS

Our recommendations are based upon the information provided regarding the proposed construction, combined with our analysis of site conditions revealed by the field exploration. We have used our best engineering judgment based upon the information provided and the data generated from our investigation. If the proposed construction is modified or resited; or, if it is found during construction that subsurface conditions differ from those we encountered at the test pit and test boring locations, we should be afforded the opportunity to review the new or changed conditions to determine if our conclusions and recommendations must be modified.

We recommend being given the opportunity to review the final plans and specifications to verify that the intent of our recommendations has been implemented in those documents.

We emphasize that this report is applicable only to the proposed construction and the investigated site. This report should not be utilized for construction on any other site.

Wallace ▪ Kuhl & Associates, Inc.

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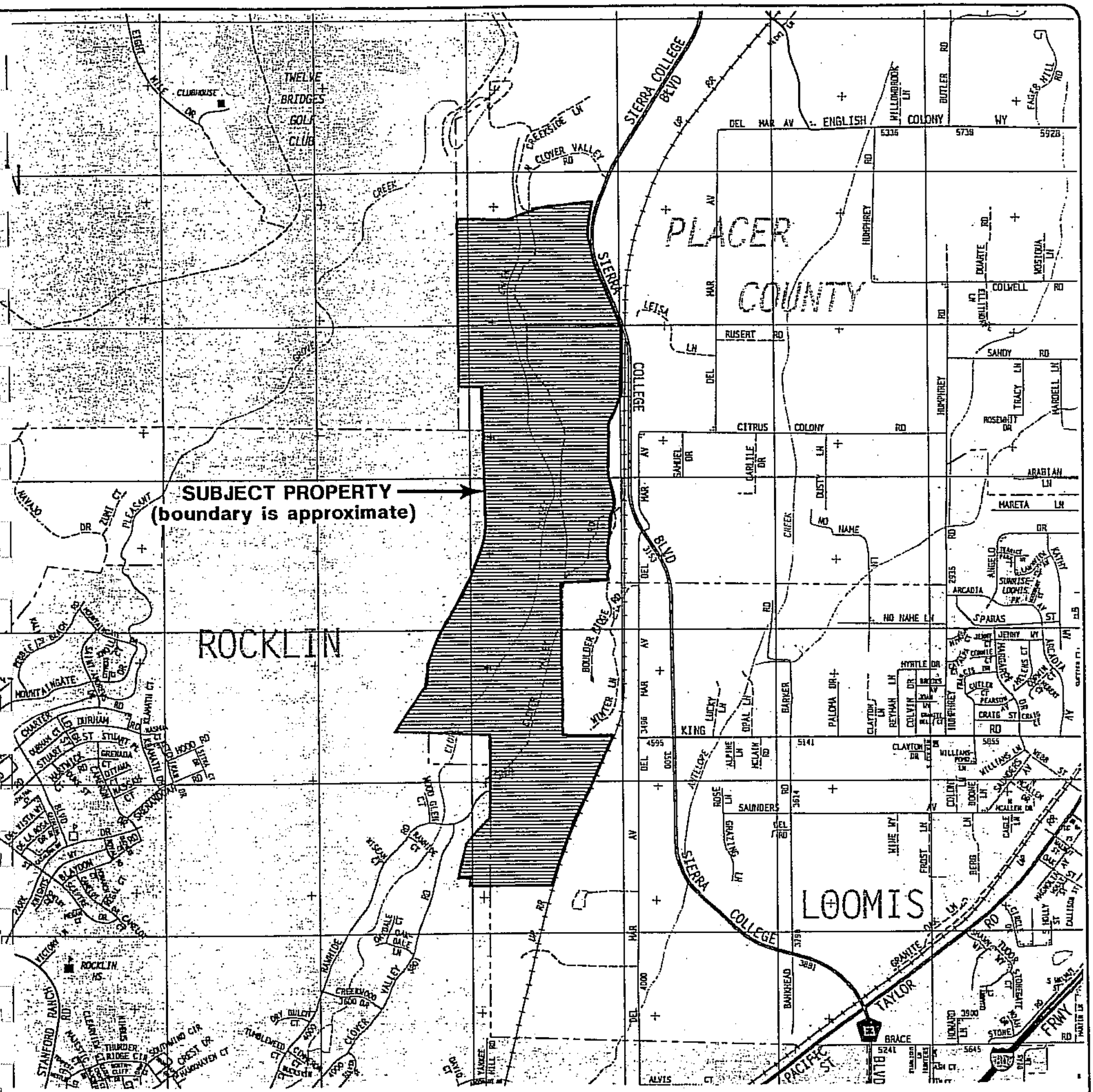
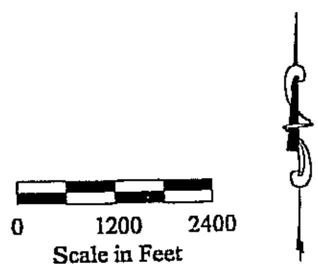
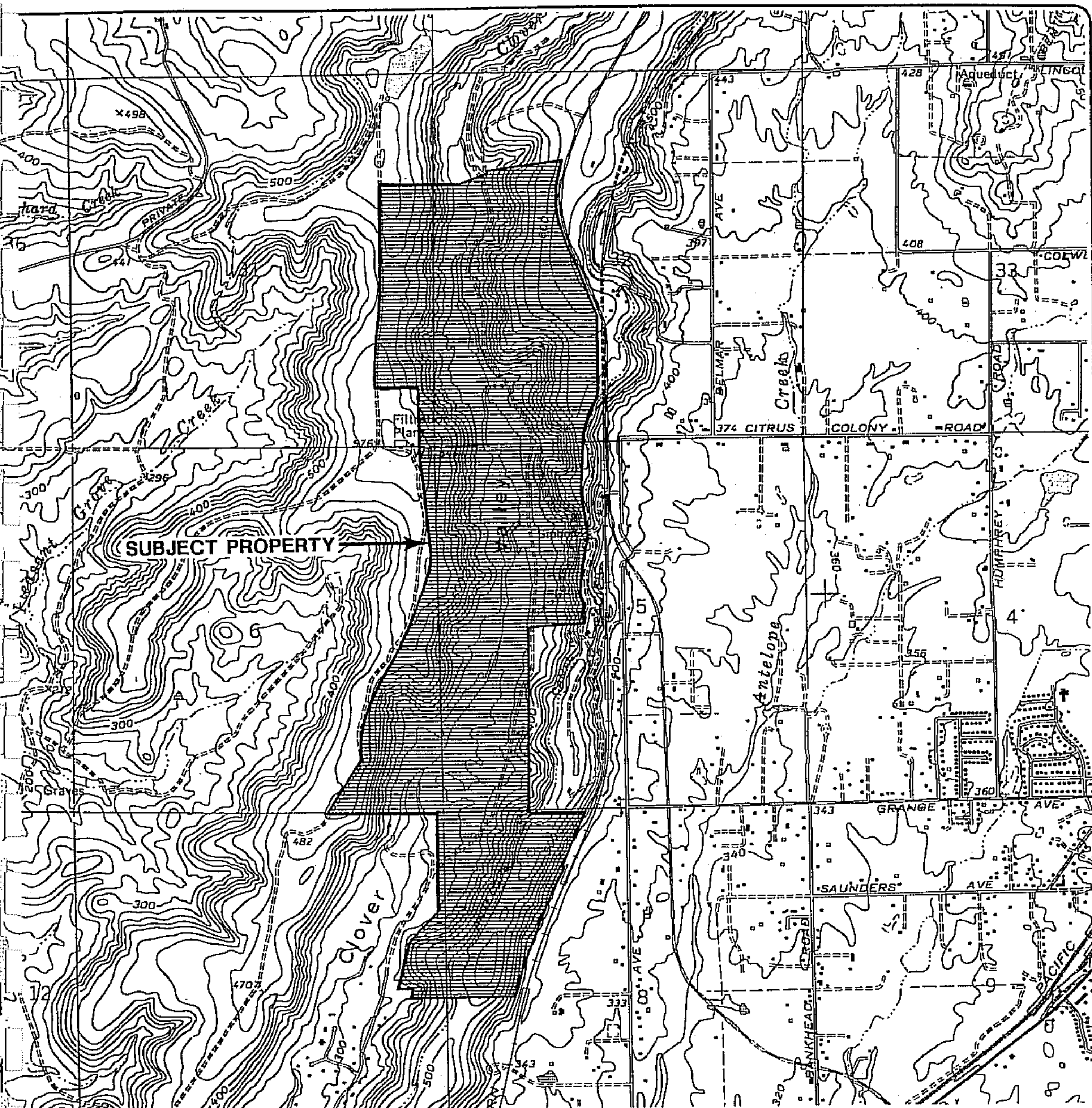




Adapted from the Thomas Guide
Sacramento County Street Guide
and Directory, 1998 edition.

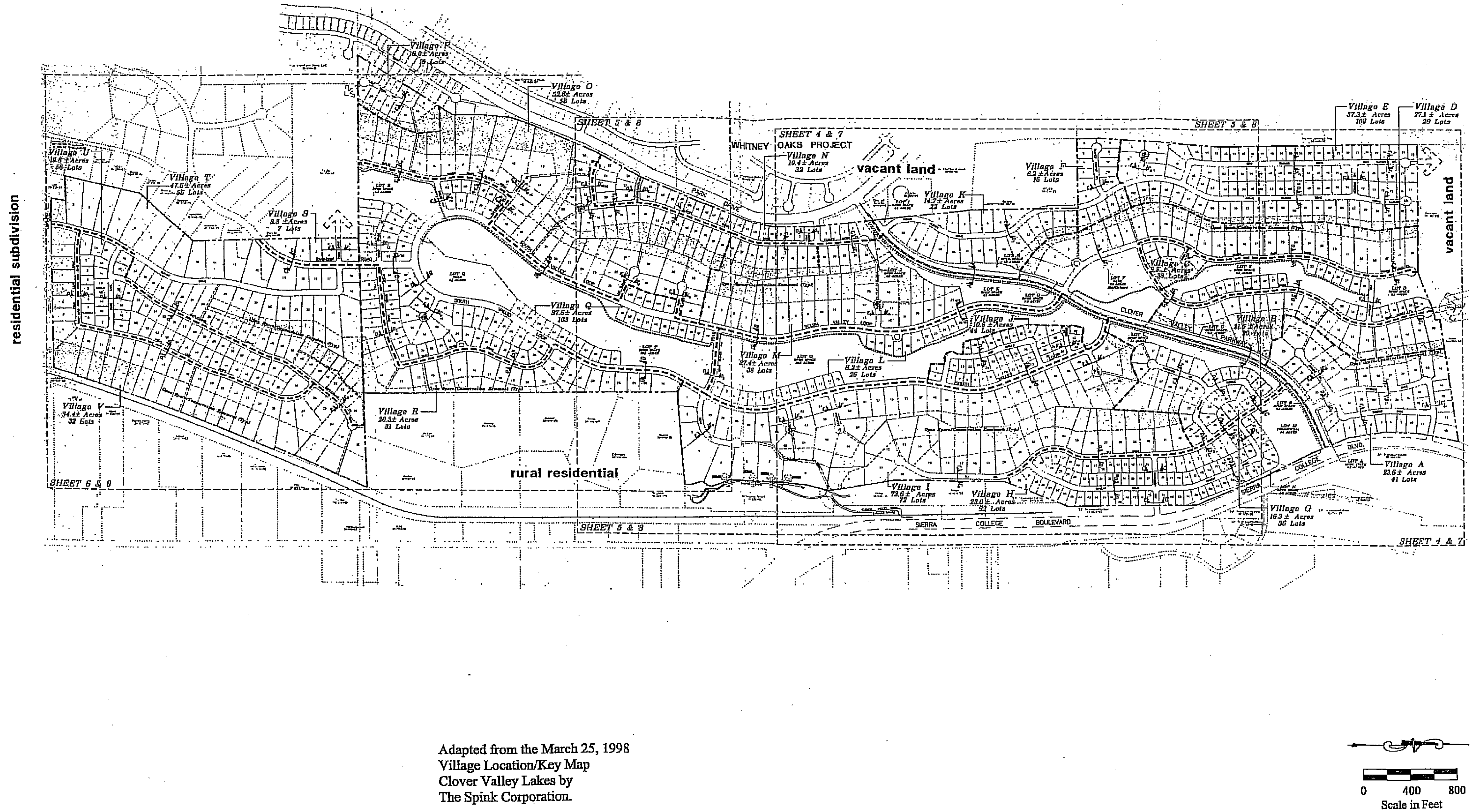
WALLACE • KUHL & ASSOCIATES, INC. GEOTECHNICAL ENGINEERING GEOLOGIC & ENVIRONMENTAL SERVICES	**VICINITY MAP** CLOVER VALLEY LAKES Rocklin, California	WKA NO: 4657.01 DATE: 5/01 PLATE NO: 1



Adapted from the U.S. Geological Survey 7.5 minute topographic map of the Rocklin quadrangle, California, photorevised 1981.

0 1000 2000
Scale in Feet

WALLACE - KUHL & ASSOCIATES, INC. GEOTECHNICAL ENGINEERING GEOLOGIC & ENVIRONMENTAL SERVICES	TOPOGRAPHIC MAP CLOVER VALLEY LAKES Rocklin, California	WKA NO: 4657.01 DATE: 5/01 PLATE NO: 2



Adapted from the March 25, 1998
Village Location/Key Map
Clover Valley Lakes by
The Spink Corporation.

WALLACE · KUHL & ASSOCIATES, INC. GEOTECHNICAL ENGINEERING GEOLOGIC & ENVIRONMENTAL SERVICES		DRAWN BY: HLA CHECKED BY: Jmb	SITE PLAN CLOVER VALLEY LAKES Placer County, California	WKA NO: 3799.02 DATE: 3/01 PLATE NO: 3

LOGS OF TEST PITS

Test pits 1 through 30 were excavated with a Case 580K rubber-tire backhoe in November 2000.

TEST PIT 1

0 to 4'	Dark brown, silty sand (SM) Light brown and firm below one foot A few rocks at 3 feet, coarse sand at 4 feet
4' to 9'	Brown, severely weathered, granitic rock, very firm at 6 feet
9' to 14'	Light brown, less weathered, granitic rock (very firm) Bottom of test pit at 14 feet

TEST PIT 2 **test pit excavated near berry vines**

0 to 4'	Dark brown and brown, silty sand (SM) Coarser sand at 4 feet, less silty
4' to 7'	Brown, silty, medium to coarse sand (SM) Minor seepage at 6 feet, very dense at 7 feet
7' to 10'	Brown, moderately weathered, granitic rock Bottom of test pit at 10 feet (could have gone deeper if needed)

TEST PIT 3 **test pit excavated near granite outcrops**

0 to 12'	Dark brown, firm silty sand (SM) Very firm at 3 feet, less silty at 10 feet Bottom of test pit at 12 feet

TEST PIT 4 **test pit excavated near granite rock outcrops**

0 to 3'	Dark brown, silty sand (SM)
3' to 10'	Brown, moderately weathered, granitic rock Embedded granite boulder within very firm to slightly cemented, silty, medium to coarse sand Bottom of test pit at 10 feet

TEST PIT 5

0 to 4'	Dark brown, firm, silty sand (SM) Less silty and more firm at 3 feet with medium to coarse sand
4' to 12'	Brown to light brown, very firm to dense, granitic sand (SM) Bottom of test pit at 12 feet

LOGS OF TEST PITS

TEST PIT 6

0 to 3'	Dark brown, silty sand (SM)
3' to 5'	Brown, slightly silty sand (SM)
5' to 10'	Light brown granitic sand
	Bottom of test pit at 10 feet

TEST PIT 7 test pit excavated on hillside

0 to 3'	Dark brown, silty, firm to medium sand (SM)
3' to 10'	Brown, very dense, granitic sand
	Moderately to slightly weathered granitic rock, but not hard rock
	Bottom of test pit at 10 feet

TEST PIT 8 test pit excavated near creek

0 to 4'	Dark brown, silty sand (SM) - firm at 2 feet
4' to 10'	Brown, clayey medium to coarse sand (SC)
	Less clayey with seepage below 7 feet
10' to 12'	Brown, very dense sand with gravel and cobbles (SM/GM)
12' to 14'	Brown, severely weathered, granitic rock (medium to coarse sand)
	Bottom of test pit at 14 feet

TEST PIT 9 test pit excavated just below tree line

0 to 3'	Dark brown, silty sand (SM)
3' to 4'	Brown, clayey, medium to coarse sand (SC)
4' to 6'	Brown, silty, medium to coarse sand (SM) with occasional rocks at 5 feet
6' to 12'	Light brown and brown, dense to very dense, granitic sand
	Bottom of test pit at 12 feet

TEST PIT 10

0 to 1'	Dark brown, silty sand (SM)
1' to 5'	Brown, firm, silty sand (SM)
5' to 8'	Brown, stiff sandy clay (CL)
8' to 12'	Brown, slightly clayey, medium and coarse sand (SC)
	Wet and gray-brown at 11 feet
	Bottom of test pit at 12 feet

LOGS OF TEST PITS

TEST PIT 11

0 to 6'	Dark brown, silty fine to medium sand (SM) Brown and firm at 2 feet, some cobbles at 3 feet, less silt at 4 feet Sample TP11 obtained from upper 3 feet
6' to 14'	Dark brown, fine to coarse sand with gravel and cobbles (SW/GW) More cobbles at 11 feet Bottom of test pit at 14 feet

TEST PIT 12

0 to 4'	Dark brown and brown, silty, fine to medium sand (SM) Less silt at 3 feet, medium to coarse sand
4' to 9'	Brown, moist to wet, slightly clayey, medium to coarse sand (SC) Less clay and seepage at 8 feet
9' to 12'	Brown, dense, medium to coarse sand with gravel and cobbles (SP/GP) Some caving above cobbles; no cobbles at 12 feet Bottom of test pit at 12 feet

TEST PIT 13

0 to 5'	Dark brown, silty and clayey sand (SM/SC) Brown and firm at 2 feet Sample TP13 obtained from upper 5 feet
5' to 7'	Brown, fine to medium sandy clay (CL)
7' to 8'	Brown, silty, medium to coarse sand (SM) Seepage at 8 feet
8' to 10'	Brown sand with gravel and cobbles (SW/GW) Dense sands at 9 feet, minor caving Bottom of test pit at 10 feet

TEST PIT 14 test pit excavated near creek (75 feet)

0 to 9'	Dark brown and brown, silty fine to medium sand (SM) Less silt and firm with medium to coarse and water at 5 feet Bottom of test pit at 9 feet due to caving

LOGS OF TEST PITS

TEST PIT 15

0 to 5'	Dark brown and brown, silty, fine to medium sand (SM) Firm to dense and some rocks at 3 feet
5' to 6'	Dense, cemented cobbles (GM) Dense, slightly clayey, granitic sand (SC) at 6 feet Bottom of test pit at 6 feet, but could have gone deeper

TEST PIT 16

0 to 7'	Dark brown and brown, silty, fine to medium sand (SM) Firm to dense at 3 feet Clayey at 4 feet Sample TP16 obtained at 4 feet
7' to 8'	Cemented cobbles (GM)
8' to 11'	Brown, silty, medium to coarse sand with small gravel (SM) Soil is wet with minor seepage at 10 feet Bottom of test pit at 11 feet

TEST PIT 17

0 to 6'	Dark brown and brown, silty sand (SM) Dense at 3 feet with minor gravel and small cobbles Slightly clayey at 5 feet
6' to 11'	Brown, medium to coarse sand with gravel (SP) Wet, with cobbles at 8 feet No cobbles at 9 feet, dense sand at 11 feet Bottom of test pit at 11 feet

TEST PIT 18 test pit excavated near creek

0 to 10'	Dark brown and brown, silty, fine to medium sand (SM) Very firm at 2 feet, clayey and dense at 3 feet Less clayey and less dense at 6 feet Bottom of test pit at 10 feet

LOGS OF TEST PITS

TEST PIT 19

0 to 7'	Dark brown and brown, silty sand (SM) Less silt and firm at 3 feet; small cobbles at 4½ feet No cobbles and wet at 5½ feet, medium dense
7' to 8'	Brown, clayey fine to medium sand (SC) Water seepage into test pit at 8 feet
8' to 10'	Brown, medium dense to dense, medium to coarse sand (SP) Bottom of test pit at 10 feet

TEST PIT 20

0 to 3'	Dark brown, brown and reddish brown, silty fine to medium sand (SM) Less silty with medium to coarse sand at 3 feet
3' to 5'	Reddish brown, dense, slightly clayey medium to coarse sand (SC) Brown at 5 feet
5' to 12'	Brown, dense, severely weathered, granitic rock Bottom of test pit at 12 feet

TEST PIT 21

0 to 10'	Dark brown and brown, silty fine to medium sand (SM) Firm to dense at 4 feet. Less silty, more coarse sand and wet at 7 feet Seepage at 8 feet, dense sand at 9 feet Bottom of test pit at 10 feet

TEST PIT 22

0 to 7'	Brown and reddish brown, silty, fine to medium sand (SM) Dense at 3 feet; medium to coarse sand at 4 feet Less silt and very dense at 7 feet
7' to 10'	Light brown and brown, very dense, severely weathered, granitic rock Bottom of test pit at 10 feet

LOGS OF TEST PITS

TEST PIT 23

0 to 4'	Dark brown, wet, silty fine to medium sand (SM) Caving and perched water at 4 feet
4' to 6'	Brown, dense, sandy gravel and cobbles (GM) Bottom of test pit at 6 feet due to caving sidewalls

TEST PIT 24 **test pit excavated near rock outcrops**

0 to 1½'	Dark brown, silty sand (SM) Hard rock at 18 inches Bottom of test pit at 1½ feet

TEST PIT 25

0 to 7'	Dark brown and brown, silty sand (SM) Less silt at 3 feet; firm to dense with medium to coarse sand at 5 feet Very dense at 7 feet Bottom of test pit at 7 feet

TEST PIT 26

0 to 6'	Brown, silty sand (SM) Less silt and more coarse sand at 4 feet Seepage at 5 feet, very dense at 5½ feet, could go deeper. Bottom of test pit at 6 feet

TEST PIT 27 **rock outcrops nearby**

0 to 5'	Brown, silty sand (SM) Dense with embedded rocks at three feet
5' to 10'	Light brown, very dense, moderately weathered, granitic rock with some rock fragments Bottom of test pit at 10 feet

LOGS OF TEST PITS

TEST PIT 28 **test pit excavated in old road cut**

0 to 3'	Brown, very dense, severely weathered granitic rock Bottom of test pit at 3 feet, but could have gone deeper

TEST PIT 29

0 to 2'	Dark brown, silty sand (SM)
2' to 10'	Brown, dense, silty medium to coarse sand (SM) Rock fragments at 4 feet, moderate excavation to 10 feet Bottom of test pit at 10 feet

TEST PIT 30

0 to 3'	Dark brown, silty sand (SM)
3' to 4'	Brown, sandy clay (CL)
4' to 8'	Brown, clayey sand (SC) with some cobbles
8' to 10'	Gray and brown, severely weathered granitic rock Bottom of test pit at 10 feet

Test pits 31 through 41 were excavated with a Takeuchi TB 145 track excavator in January 2001.

TEST PIT 31

0 to 7'	Gray, wet, soft, sandy clay with organics (CL)
7' to 11'	Gray, wet, loose to moderately dense, silty sand (SM) More difficult to excavate below 10 feet. Bottom of test pit at 11 feet

TEST PIT 32

0 to 6'	Gray, wet, soft, sandy clay (CL) Firm below 4 feet Undisturbed sample TP 32 obtained at 5 feet
6' to 10'	Gray and brown, wet, clayey sand (SC) Rounded gravel below 9 feet Bottom of test pit at 10 feet

LOGS OF TEST PITS

TEST PIT 33

0 to 6'	Gray, wet, loose, clayey sand (SC)
	Seepage at four feet
6' to 9'	Mottled gray and brown, wet, loose to moderately dense, silty sand (SM)
	Coarse sand and small gravel below 8 feet
	Bottom of test pit at 9 feet

TEST PIT 34

0 to 6'	Gray, wet, loose, clayey sand (SC)
	Seepage at 4 feet
6' to 10'	Mottled gray and brown, loose, silty sand (SM)
	Small gravel below 8 feet; cobbles below 9 feet
	Bottom of test pit at 10 feet

TEST PIT 35

0 to 7'	Gray, wet, loose, clayey and silty sand (SC/SM)
	Seepage at 5 feet (not as much seepage as at Test Pit 33 or 34)
7' to 11'	Mottled gray and brown, very moist, moderately dense, silty sand (SM)
	Bottom of test pit at 11 feet

TEST PIT 36

0 to 1'	Dark brown, silty and clayey sand (SM/SC))
1' to 6'	Brown, severely weathered, granitic rock - easily broken by hand
	Disturbed sample obtained from upper 2 feet, and between 4 and 6 feet
	Bottom of test pit at 6 feet

TEST PIT 37

0 to 1'	Dark brown, moist, silty sand (SM)
1' to 13'	Light brown to reddish brown, moist, dense, severely weathered, granitic rock
	Undisturbed sample obtained at 4 feet; disturbed bulk sample at 7 feet
	Weathered rock is similar to partially cemented silty sand, pieces of weathered rock can be easily broken by hand; no seepage observed
	Bottom of test pit at 13 feet

LOGS OF TEST PITS

TEST PIT 38

0 to 1'	Dark brown, moist, silty sand with some rounded andesitic cobbles (SM)
1' to 6'	Reddish brown to light brown, damp, severely weathered, granitic rock
	Undisturbed sample obtained from 3 feet
	Disturbed bulk sample obtained from 4 to 6 feet
	Bottom of test pit at 6 feet due to difficult excavation

TEST PIT 39

0 to 4'	Dark gray, wet, soft, sandy clay (CL)
4' to 6'	Gray, wet, firm to stiff, sandy clay (CL)
	Undisturbed sample TP 39 obtained at 5 feet
6' to 8'	Gray, wet, moderately dense, silty sand (SM)
	Coarse sand grains at 7 feet
8' to 9'	Mottled gray and brown, wet, clayey sand (SC) with a few rounded cobbles
	Surface water flows into test pit
	Bottom of test pit at 9 feet

TEST PIT 40

0 to 3'	Dark gray, wet, soft, sandy clay (CL)
3' to 6'	Mottled gray and brown, wet, firm to stiff, sandy clay (CL)
6' to 8'	Mottled gray and brown, wet, moderately dense, silty sand (SM)
	Course sand grains at 7 feet
8' to 10'	Mottled gray and brown, wet, firm to stiff, sandy clay (CL)
	Surface water flows into test pit
	Bottom of test pit at 10 feet

TEST PIT 41

0 to 2½'	Dark gray, wet, soft, sandy clay (CL)
2½' to 6'	Mottled gray and brown, wet, firm to stiff, sandy clay (CL)
6' to 8'	Gray, wet, moderately dense, silty sand (SM)
8' to 10'	Mottled gray and brown, wet, clayey sand (SC)
10' to 11'	Brown, wet, moderately dense, silty sand (SM)
	Bottom of test pit at 11 feet

LOGS OF TEST PITS

Test pits 42 through 49 were excavated with a Case 580K rubber-tire backhoe in February 2001.

TEST PIT 42

0 to 3½'	Black, slightly moist, clayey fine sand (SC)
3½' to 10'	Brown, slightly moist, silty fine to medium sand (SM) - partially cemented
10' to 13'	Brown, moist, clayey, silty medium to coarse sand (SC/SM) Water at 11 feet Bottom of test pit at 13 feet

TEST PIT 43

0 to 2'	Brown, moist, silty and sandy, gravel and cobbles (GM)
2' to 5'	Light brown, damp, partially cemented, silty and sandy, gravel and cobble conglomerate (GM) About 50 % cobbles, 20% gravel, 30% silt and sand A few boulders up to 16 inches across; Most cobbles are 6 to 12 inches in diameter Sample TP43 obtained between 2 and 4 feet Bottom of test pit at 5 feet

TEST PIT 44

0 to 1'	Gray, well cemented, mudflow breccia Less than four inches of sandy silt topsoil Sample TP44 obtained from upper foot Bottom of test pit at one foot

TEST PIT 45

0 to 1'	Gray, well cemented, mudflow breccia Less than four inches of sandy silt topsoil Sample TP45 obtained from upper foot Bottom of test pit at one foot

LOGS OF TEST PITS

TEST PIT 46

0 to 1'	Gray, well cemented, mudflow breccia Less than four inches of sandy silt topsoil Bottom of test pit at one foot

TEST PIT 47

0 to ½'	Brown, moist, sandy silt with rock (ML)
½' to 1'	Gray, damp, well cemented mudflow breccia Bottom of test pit at one foot

TEST PIT 48

0 to 1'	Brown, moist, sandy silt with rock (ML)
1' to 3'	Gray, well cemented mudflow breccia Sample TP48 obtained between 1 and 3 feet Bottom of test pit at 3 feet

TEST PIT 49

0 to 2'	Brown, moist, silty and sandy, gravel and cobbles (GM)
2' to 5'	Light brown, moist, partially cemented, silty and sandy, gravel and cobble conglomerate (GM) Sample TP49 obtained between 2 and 5 feet
5' to 6'	Gray, damp, partially cemented, andesitic sandstone Bottom of test pit at 6 feet

BORING NUMBER:	D1	DRILL RIG/METHOD:			
DATE DRILLED:	2/2/01	CME-55 / 6-INCH			
LOGGED BY:	DLP	HOLLOW STEM AUGERS			

DEPTH (feet)	SAMPLER	SAMPLE NUMBER	BLOWS/FT.	DRY UNIT WT. (PCF)	MOISTURE CONTENT (%)	OTHER TESTS	USCS	GRAPHIC LOG	SOIL DESCRIPTION AND REMARKS
0							CL		Black, slightly moist, fine to medium sandy clay
							SM		Brown, slightly moist, medium dense, silty fine to medium sand
		D1-1I	19	104	9.1				
5									
		D1-2I	17	111	10.6	TR			
							CL		Brown with greenish blue mottling, moist, stiff, fine to medium sandy clay
		D1-3I	13	84	32.5				
							SC		Gray, moist, medium dense, clayey, granitic, medium to coarse sand
10									
		D1-4I	14	85	28.2				
									Gray, wet, moderately weathered, granitic rock
		D1-5I	70/5"						
15									
20									

Notes:

1. This log depicts conditions only at the boring location, see Plate No. 3, and only on the date of field exploration.
2. Ground water was not encountered in the boring.
3. For an explanation of the symbols used in the boring log, see Plate No. 17.

WALLACE • KUHL & ASSOCIATES, INC.
GEOTECHNICAL ENGINEERING
GEOLOGIC & ENVIRONMENTAL SERVICES

CLOVER VALLEY LAKES

Rocklin, California

WKA NO: 4657.01

DATE: 5/01

PLATE NO: 15

DEPTH (feet)	SAMPLER	SAMPLE NUMBER	BLOWS/FT.	DRY UNIT WT. (PCF)	MOISTURE CONTENT (%)	OTHER TESTS	USCS	GRAPHIC LOG	SOIL DESCRIPTION AND REMARKS
0							CL		Black, slightly moist, soft, fine to medium sandy clay
		D2-1I	5	95	23.6				
							SM		Brown, moist, loose, clayey, silty fine to coarse sand
5									
		D2-2I	11	108	18.0				
							SP		Gray, wet, medium dense, fine to coarse sand
		D2-3I	27	100	9.0				
10									
		D2-4I	13						
									Gray, wet, dense, severely weathered, granitic rock
		D2-5I	40	111	18.8				
15		D2-6I	50/3"						
20									

BORING NUMBER: D2
DATE DRILLED: 2/2/01
LOGGED BY: DLP

DRILL RIG/METHOD:
CME-55 / 6-INCH
HOLLOW STEM AUGERS

Notes:

1. This log depicts conditions only at the boring location, see Plate No. 3, and only on the date of field exploration.
2. Ground water was not encountered in the boring.
3. For an explanation of the symbols used in the boring log, see Plate No. 17.

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GEOTECHNICAL ENGINEERING
GEOLOGIC & ENVIRONMENTAL SERVICES

CLOVER VALLEY LAKES

Rocklin, California

WKA NO: 4657.01

DATE: 5/01

PLATE NO: 16

UNIFIED SOIL CLASSIFICATION SYSTEM

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

OTHER SYMBOLS

= Drive Sample: 2-1/2" O.D. California sampler

= Drive Sample: no recovery

i = Initial Water Level

f = Final Water Level

= Estimated or gradational material change line

= Observed material change line

Laboratory Tests

PI = Plasticity Index
EI = Expansion Index
UCC = Unconfined Compression Test
TR = Triaxial Compression Test
GR = Gradational Analysis (Sieve)
CON = Consolidation Test
CV = Compaction Test

GRAIN SIZE CLASSIFICATION

CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVEL coarse (c) fine (f)	3" to No. 4 3" to 3/4" 3/4" to No. 4	76.2 to 4.76 76.2 to 19.1 19.1 to 4.76
SAND coarse (c) medium (m) fine (f)	No. 4 to No. 200 No. 4 to No. 10 No. 10 to No. 40 No. 40 to No. 200	4.76 to 0.074 4.76 to 2.00 2.00 to 0.420 0.420 to 0.074
SILT & CLAY	Below No. 200	Below 0.074

CONSISTENCY CLASSIFICATION

COHESIVE SOILS		GRANULAR SOILS	
Description	Blows/ft.*	Description	Blows/ft.*
Very Soft	< 3	Very Loose	< 5
Soft	3 - 5	Loose	5 - 15
Medium (firm)	6 - 10	Medium Dense	16 - 40
Stiff	11 - 20	Dense	41 - 65
Very Stiff	21 - 40	Very Dense	> 65
Hard	> 40		* SPT

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CLOVER VALLEY LAKES

Rocklin, California

WKA NO: 4657.01

DATE: 5/01

PLATE NO: 17

APPENDIX A

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APPENDIX A

A. GENERAL INFORMATION

The preparation of a Geotechnical Engineering Report for the major infrastructure at the Clover Valley Lakes project in Rocklin, California, was authorized by Gerry N. Kamilos, LLC, whose mailing address is 2277 Fair Oaks Boulevard, Suite 285, Sacramento, California 95825; telephone (916) 649-8070; facsimile (916) 649-8072.

In performing this investigation, we made reference to Improvement Plans for Clover Valley Lakes prepared by the civil engineering consultant, Stantec Consulting Inc. whose mailing address is 2590 Venture Oaks Way, Sacramento, California 95833; telephone (916) 925-5550; facsimile (916) 921-9274.

B. FIELD EXPLORATION

Test Pits 1 through 30 and Test Pits 42 through 49 were excavated at the site in November 2000 and February 2001 utilizing a Case 580K rubber-tire backhoe along the proposed alignments of the major roads at Clover Valley Lakes. Test Pits 31 through 41 were excavated in January 2001 with a Takeuchi TB 145 track excavator. Test Pits 31, 32, 39, 40, and 41 were excavated with the excavator in areas that were not accessible with the rubber-tire backhoe due to wet site conditions. Our field engineer visually classified the materials encountered by the test pits; and disturbed and undisturbed soil samples were collected and taken to our laboratory for testing to determine the engineering characteristics of the soils. Undisturbed soil samples were recovered from the test pits with a 2½-inch O.D., 2-inch I.D. sampler driven by a hand-held slide hammer. The maximum depth penetrated by the trenching was about 14 feet.

Two test borings were accomplished on February 2, 2001, utilizing a CME 55 truck-mounted drill rig. The test borings were extended to a maximum depth of about 15 feet using six-inch diameter hollow-stem augers. At various intervals, relatively undisturbed soil samples were recovered with a 2½-inch O.D., 2-inch I.D. California sampler driven by a 140-pound hammer freely falling 30 inches. The number of blows of the hammer required to drive the 18-inch long sampler each 6-inch interval was recorded with the sum of the blows required to drive the sampler the lower 12-inch interval being designated the penetration resistance or "blow count" for that particular drive.

Undisturbed samples were retained in 2-inch diameter by 6-inch long, thin-walled brass tubes contained within the sampler. Immediately after recovery, the soils in the tubes were visually classified by the field engineer and the ends of the tubes were sealed to preserve the natural moisture contents. The undisturbed samples were taken to our laboratory for soil classification and selection of samples for testing.

The Logs of Test Pits, Plates No. 4 through 14 contain descriptions of the soils encountered in each test pit. The Logs of Test Borings are included as Plates No. 15 and 16. A legend explaining the Unified Soil Classification System and the symbols used on the logs is contained in Plate No. 17.

C. LABORATORY TESTING

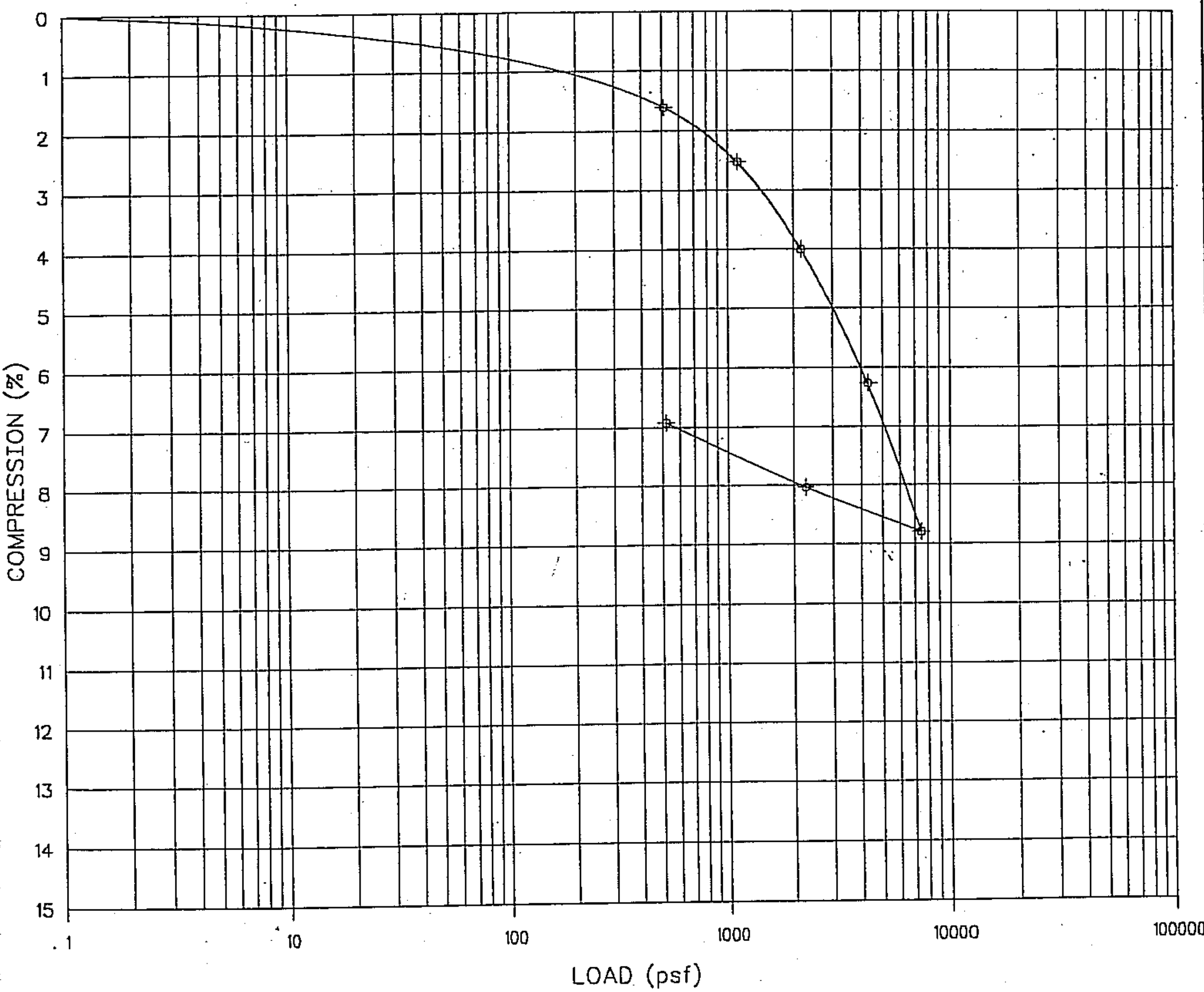
Selected undisturbed samples were tested to determine dry unit weight (ASTM D2937) and natural moisture content (ASTM D2216). Two consolidation tests were performed on undisturbed soil samples (ASTM D2435), with results presented on Plates No. A1 and A2. Nine samples of anticipated subgrade soils were subjected to Resistance ("R") value testing in accordance with California Test 301. Results of the R-value tests are contained on Plates No. A3 through A7.

The gradation (California Test 202) of six soil samples was determined; the results are presented on Plates No. A8 through A13. The sand equivalent (California Test 217) of three disturbed soil samples was determined with results included on Plate No. A14. The maximum dry density and optimum moisture of three disturbed soil samples was determined in accordance with the ASTM D1557 test method (Plates No. A15 through A17), and three remolded triaxial compression tests (ASTM D4767) were performed. Triaxial compression tests also were performed on four undisturbed soil samples. The results of the triaxial compression tests are presented as Plates No. A18 through A24.

The pH and minimum resistivity (California Test 643), chloride concentration (California Test 417), and sulfate concentration (California Test 422) of three soil samples also were determined. The tests were performed by Sunland Analytical, and the results are presented on Plates No. A25 through A27.

CONSOLIDATION TEST

ASTM D2435



						MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT SATURATION	HEIGHT (INCHES)
SAMPLE NO.:	Test Pit 32	DEPTH:	5 feet						
SPECIFIC GRAVITY:	---	DIAMETER (IN.):	1.9		INITIAL	24.6	101	-	1.0000
SOIL DESCRIPTION:	Gray sandy clay				FINAL	24.2	111	-	0.9120

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CLOVER VALLEY LAKES

Rocklin, California

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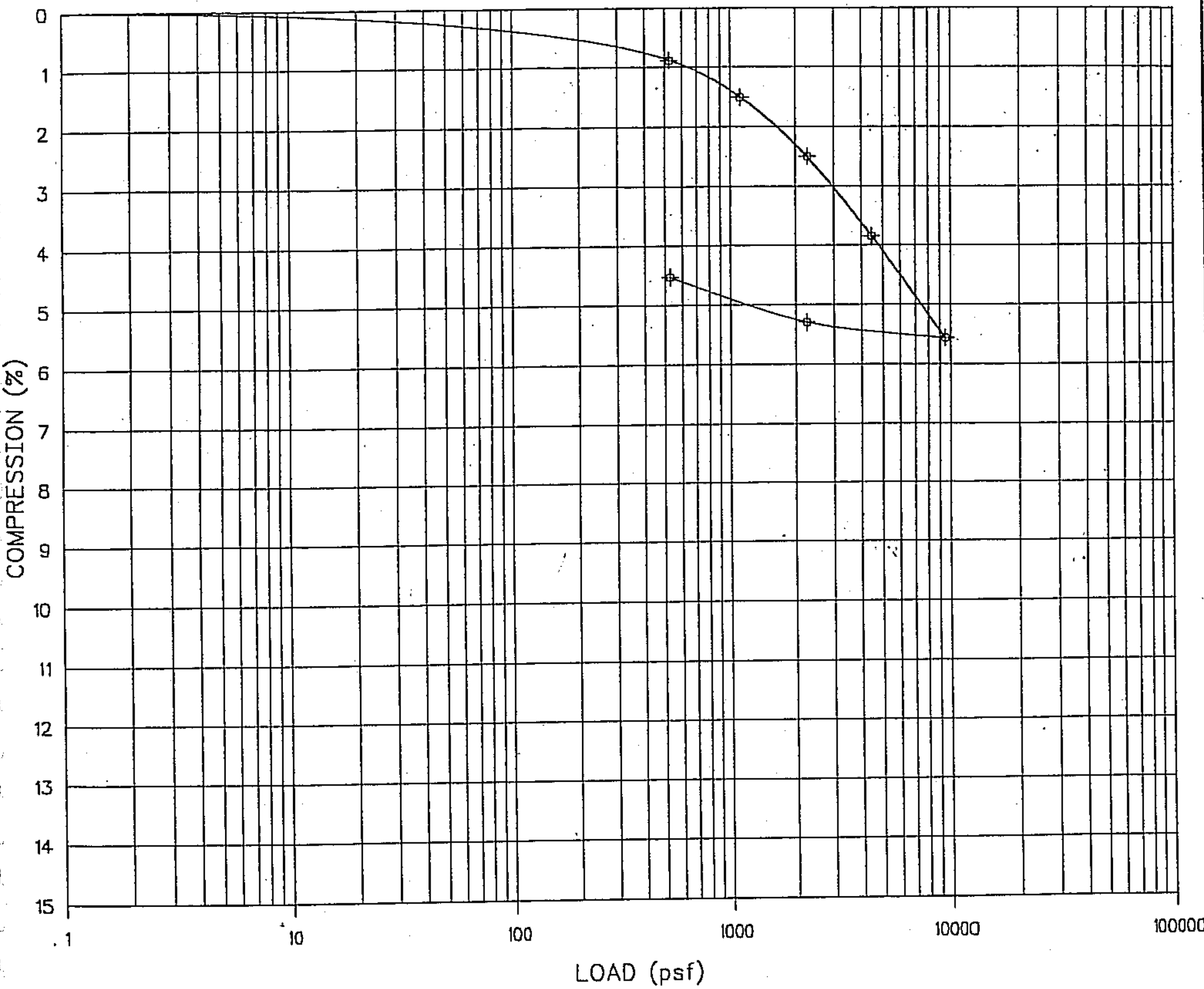
DATE: 5/01

PLATE NO: A1

CONSOLIDATION TEST

ASTM D2435



SAMPLE NO.: Test Pit 39 DEPTH: 5 feet

SPECIFIC GRAVITY: --- DIAMETER (IN.): 1.9

SOIL DESCRIPTION: Gray sandy clay

	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT SATURATION	HEIGHT (INCHES)
INITIAL	18.4	112	-	1.0000
FINAL	17.6	119	-	0.9440

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CLOVER VALLEY LAKES

Rocklin, California

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DATE: 5/01

PLATE NO: A2

RESISTANCE VALUE TEST RESULTS
(CT 301)

Material Description: Brown silty sand

Location: Test Pit 11 (upper three feet)

Specimen No.	Dry Unit Weight (pcf)	Moisture @ Compaction (%)	Exudation Pressure (psi)	Expansion Pressure (dial)	Expansion Pressure (psf)	R Value
1	126	10.3	430	3	13	57
2	125	11.1	247	-	-	33
3	126	10.7	334	-	-	42

R-Value at 300 psi exudation pressure = 38

Material Description: Brown clayey sand

Location: Test Pit 13 (upper five feet)

Specimen No.	Dry Unit Weight (pcf)	Moisture @ Compaction (%)	Exudation Pressure (psi)	Expansion Pressure (dial)	Expansion Pressure (psf)	R Value
1	123	13.1	581	27	117	42
2	116	14.8	295	1	4	11
3	119	14.0	422	17	74	28

R-Value at 300 psi exudation pressure = 12

RESISTANCE VALUE TEST RESULTS
(CT 301)

Material Description: Brown silty clayey sand

Location: Test Pit 16 (upper four feet)

Specimen No.	Dry Unit Weight (pcf)	Moisture @ Compaction (%)	Exudation Pressure (psi)	Expansion Pressure (dial)	Expansion Pressure (psf)	R Value
1	123	12.0	502	22	95	61
2	120	12.9	358	14	61	44
3	118	13.7	247	-	-	30

R-Value at 300 psi exudation pressure = 36

Material Description: Brown silty clayey sand

Location: Test Pit 36 (upper two feet)

Specimen No.	Dry Unit Weight (pcf)	Moisture @ Compaction (%)	Exudation Pressure (psi)	Expansion Pressure (dial)	Expansion Pressure (psf)	R Value
1	122	12.4	263	-	-	52
2	123	11.5	398	6	26	69
3	124	10.6	613	17	74	78

R-Value at 300 psi exudation pressure = 57

RESISTANCE VALUE TEST RESULTS
(CT 301)

Material Description: Brown rocky sand (conglomerate)

Location: Test Pit 43 (two to four feet)

Specimen No.	Dry Unit Weight (pcf)	Moisture @ Compaction (%)	Exudation Pressure (psi)	Expansion Pressure (dial)	Expansion Pressure (psf)	R Value
1	98	25.4	422	-	-	60
2	95	26.4	199	-	-	49
3	96	25.9	287	-	-	55

R-Value at 300 psi exudation pressure = 56

Material Description: Brown rocky sandy silt / silty sand (mudflow breccia)

Location: Test Pit 44 (0 to 1 foot)

Specimen No.	Dry Unit Weight (pcf)	Moisture @ Compaction (%)	Exudation Pressure (psi)	Expansion Pressure (dial)	Expansion Pressure (psf)	R Value
1	107	20.5	143	-	-	33
2	106	19.6	311	-	-	71
3	109	18.6	510	-	-	81

R-Value at 300 psi exudation pressure = 70

RESISTANCE VALUE TEST RESULTS
(CT 301)

Material Description: Brown rocky sandy silt / silty sand (mudflow breccia)

Location: Test Pit 45 (0 to 1 foot)

Specimen No.	Dry Unit Weight (pcf)	Moisture @ Compaction (%)	Exudation Pressure (psi)	Expansion Pressure (dial)	Expansion Pressure (psf)	R Value
1	106	21.1	112	-	-	31
2	107	19.1	334	3	13	73
3	107	20.1	199	-	-	53

R-Value at 300 psi exudation pressure = 69

Material Description: Brown rocky sandy silt (mudflow breccia)

Location: Test Pit 48 (1 to 3 feet)

Specimen No.	Dry Unit Weight (pcf)	Moisture @ Compaction (%)	Exudation Pressure (psi)	Expansion Pressure (dial)	Expansion Pressure (psf)	R Value
1	103	21.9	374	-	-	66
2	100	22.9	183	-	-	45
3	100	22.4	263	-	-	55

R-Value at 300 psi exudation pressure = 59

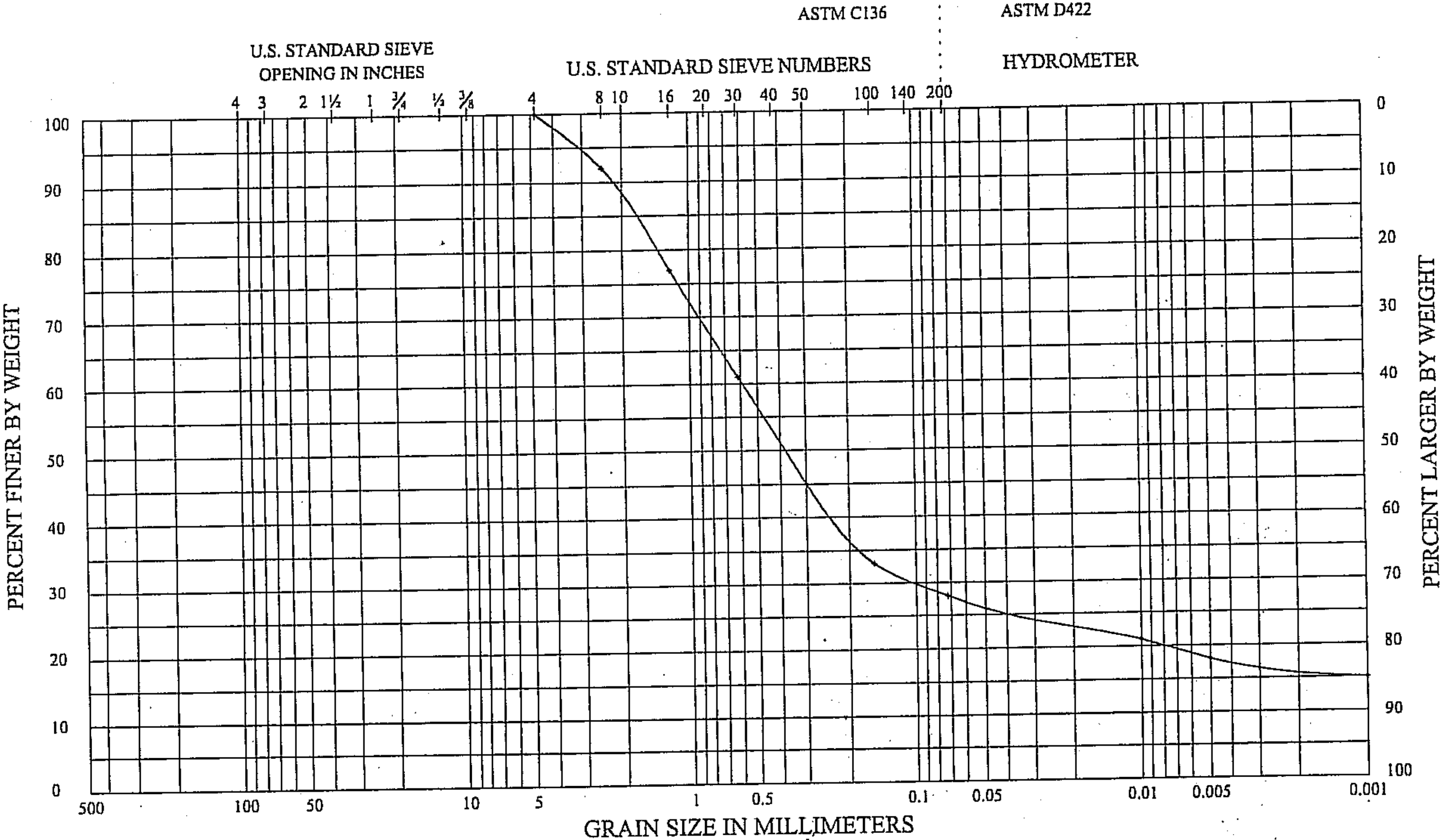
RESISTANCE VALUE TEST RESULTS
(CT 301)

Material Description: Brown rocky silty sand (conglomerate)

Location: Test Pit 49 (2 to 5 feet)

Specimen No.	Dry Unit Weight (pcf)	Moisture @ Compaction (%)	Exudation Pressure (psi)	Expansion Pressure (dial)	Expansion Pressure (psf)	R Value
1	101	23.2	223	-	-	13
2	106	21.2	358	-	-	42
3	104	22.2	279	-	-	23

R-Value at 300 psi exudation pressure = 28



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO. Test Pit 11

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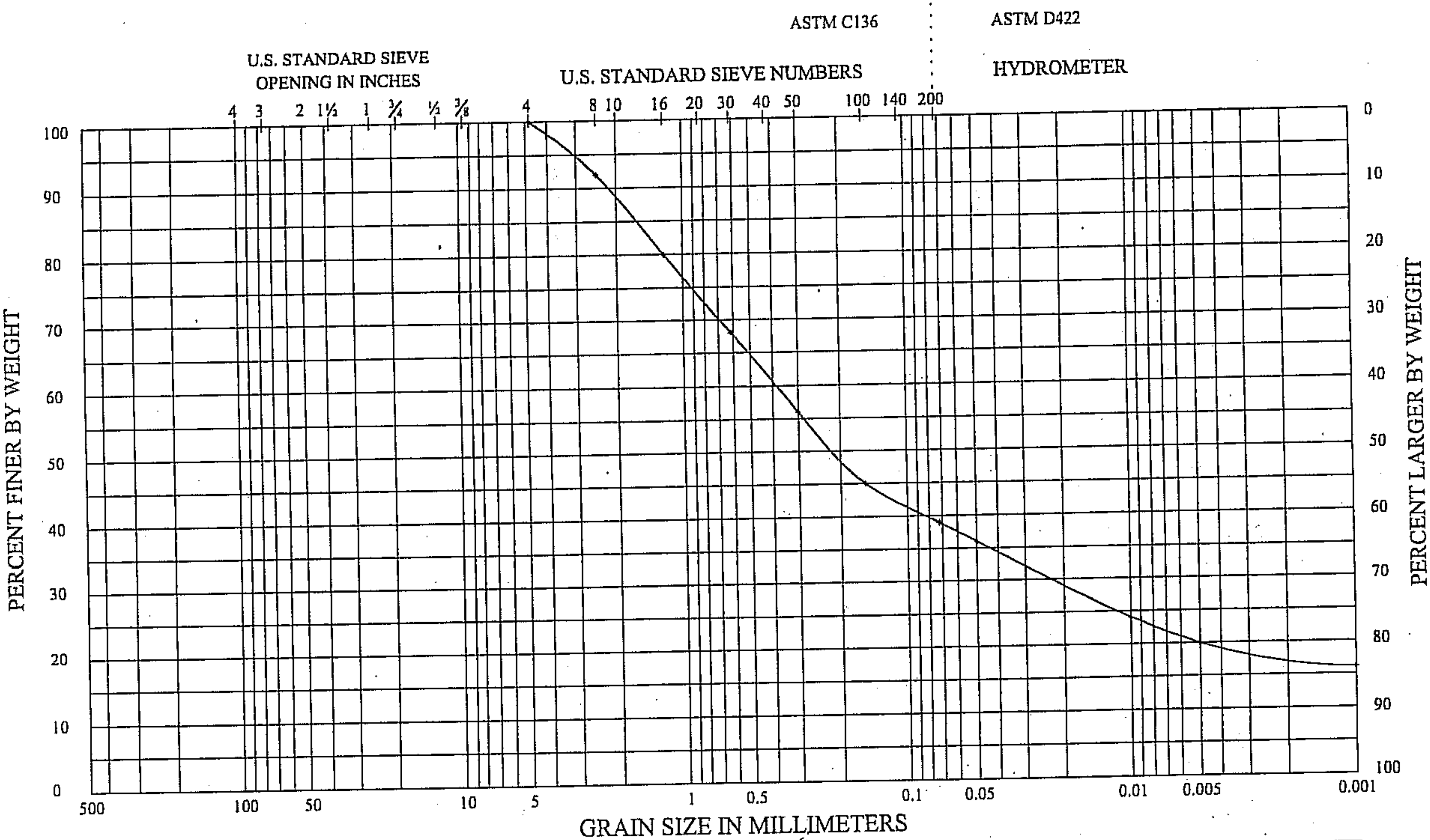
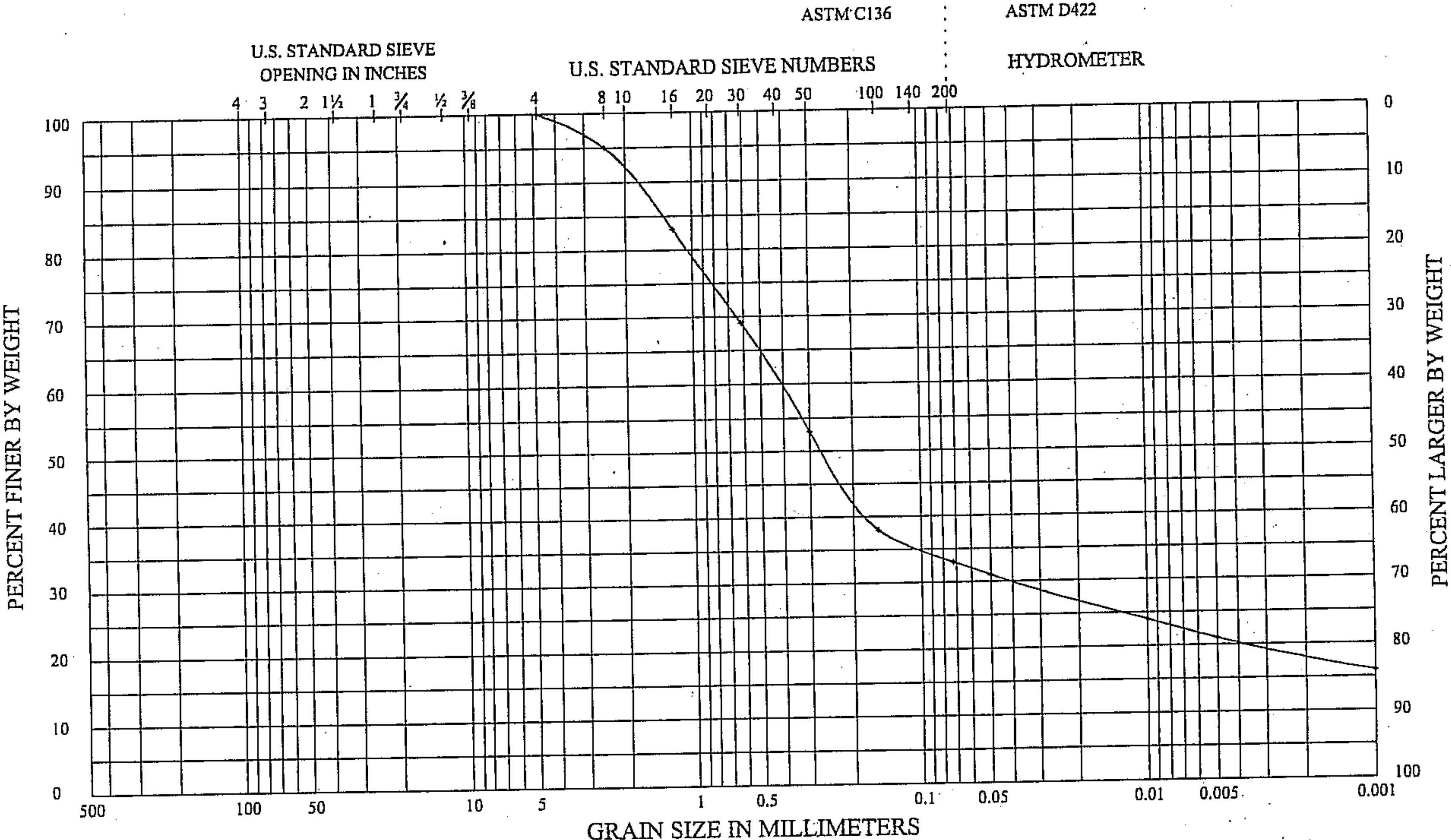


COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO. Test Pit 13

WALLACE - KUHL & ASSOCIATES, INC. GEOTECHNICAL ENGINEERING GEOLOGIC & ENVIRONMENTAL SERVICES	Drawn By: BPM Checked By: EJU	**CLOVER VALLEY LAKES** Rocklin, California	WKA NO: 4657.01 DATE: 5/01 PLATE NO: A9



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO. Test Pit 16

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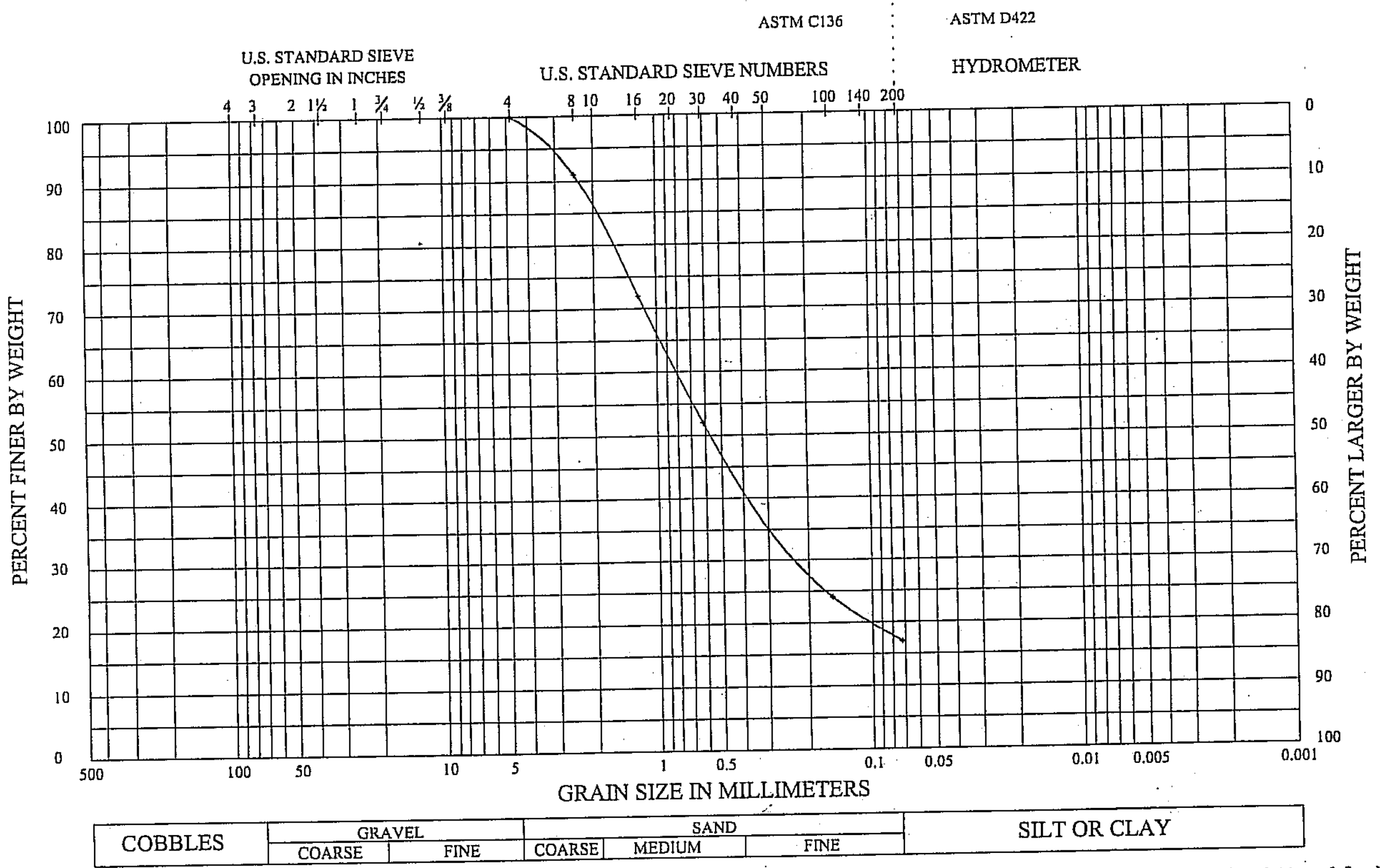
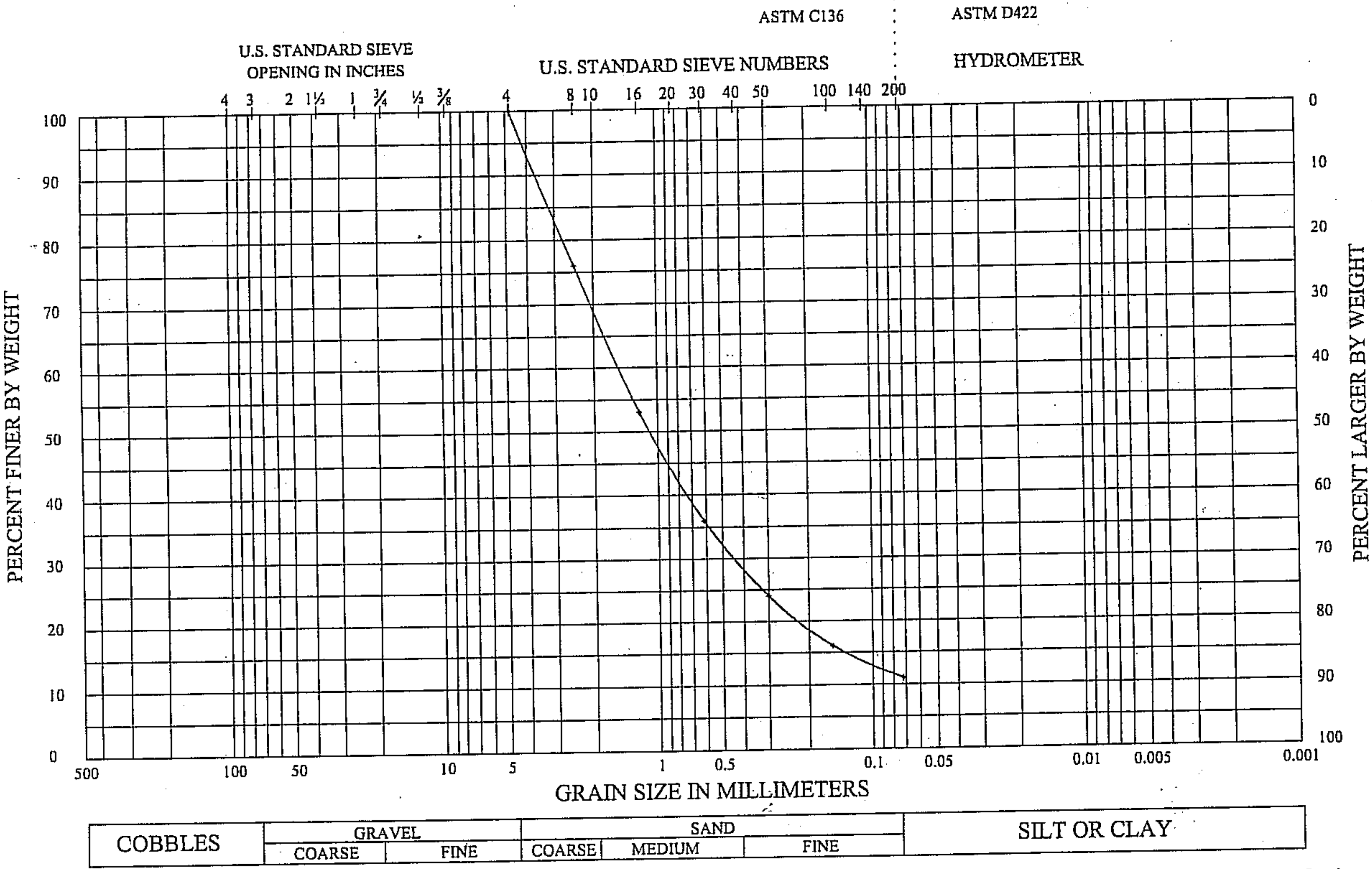


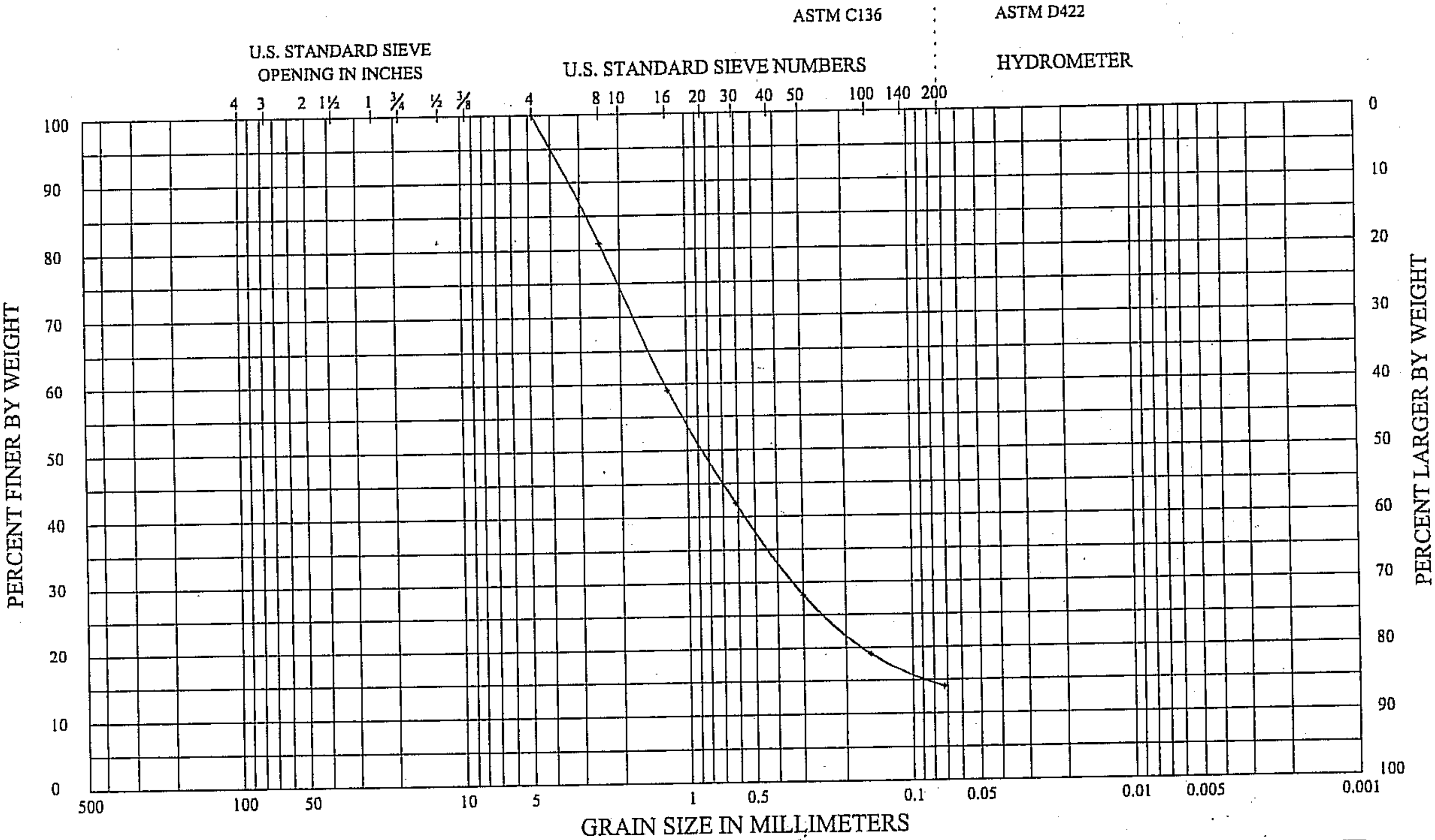
SAMPLE NO. Test Pit 36 (4 to 6 feet)

WALLACE • KUHL & ASSOCIATES, INC. GEOTECHNICAL ENGINEERING GEOLOGIC & ENVIRONMENTAL SERVICES	Drawn By: BPM Checked By: EJU	**CLOVER VALLEY LAKES** Rocklin, California	WKA NO: 4657.01 DATE: 5/01 PLATE NO: A11



SAMPLE NO. Test Pit 37 (7 feet)

WALLACE • KUHL & ASSOCIATES, INC. GEOTECHNICAL ENGINEERING GEOLOGIC & ENVIRONMENTAL SERVICES	Drawn By: BPM Checked By: EJU	**CLOVER VALLEY LAKES** Rocklin, California	WKA NO: 4657.01 DATE: 5/01 PLATE NO: A12



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO. Test Pit 38 (4 to 6 feet)

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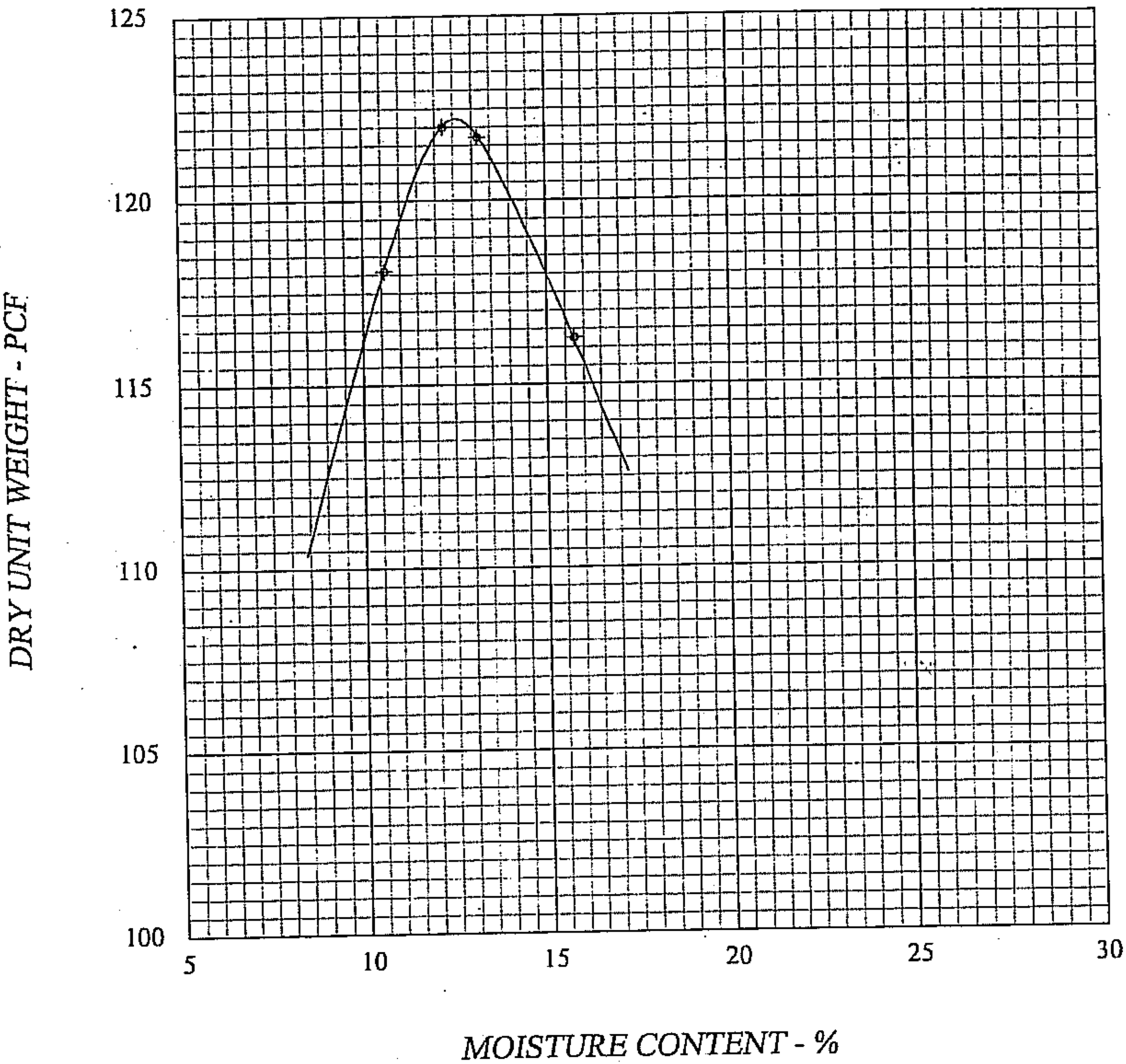
SAND EQUIVALENT TEST RESULTS
(CAL 217)

Sample Location		Material Description	Sand Equivalent
Test Pit 36	4 to 6 feet	Weathered granitic rock	20
Test Pit 37	7 feet	Weathered granitic rock	26
Test Pit 38	4 to 6 feet	Weathered granitic rock	22

MOISTURE-DENSITY RELATION



Material: Test Pit 36 (4 to 6 feet) Brown, severely weathered granitic rock

Test Method: ASTM D1557 "A"

Maximum Dry Unit Weight - PCF: 122

Optimum Moisture - %: 12.5

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CLOVER VALLEY LAKES

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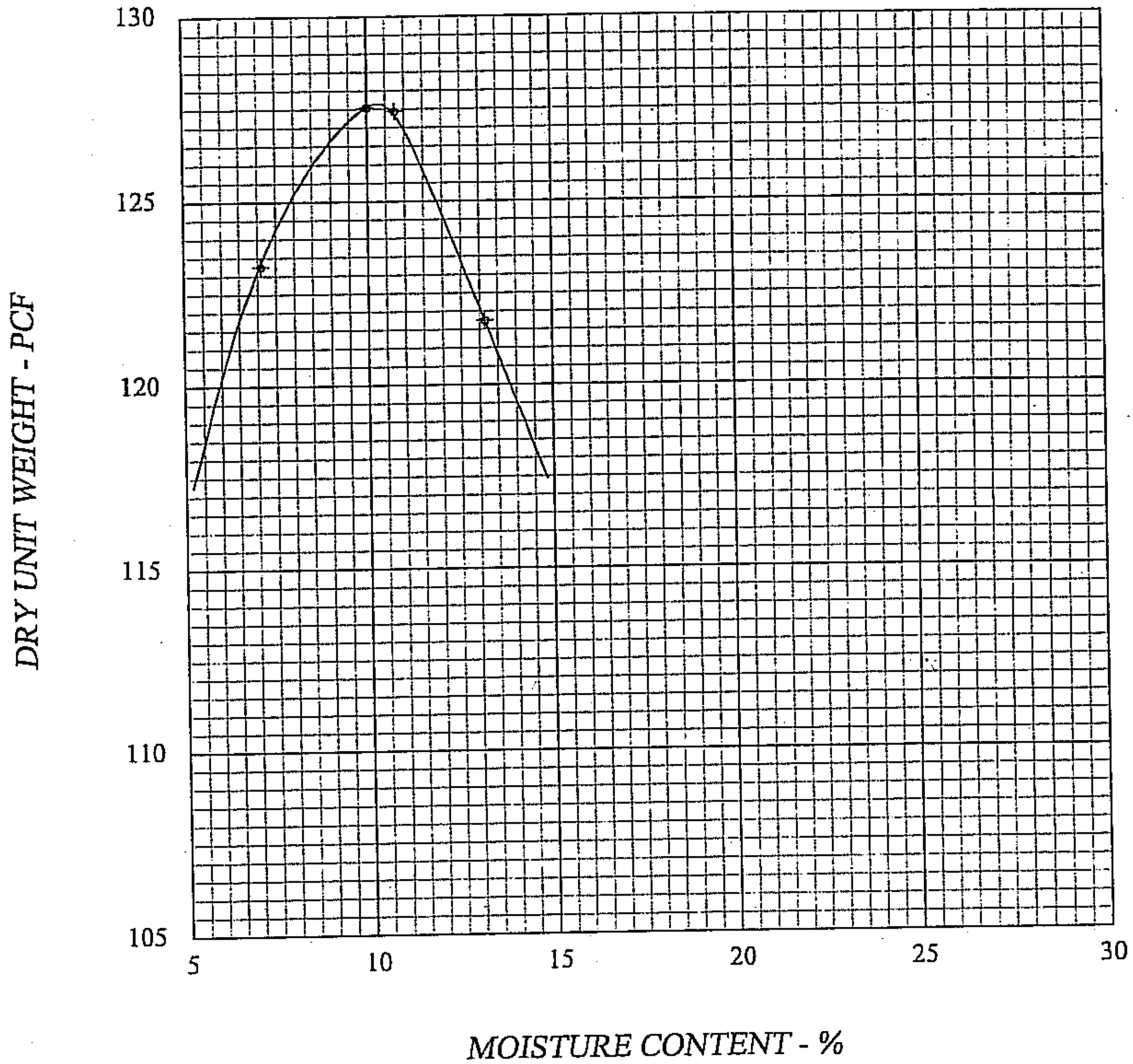
MOISTURE-DENSITY RELATION



Material: Test Pit 37 (7 feet) Light brown, severely weathered granitic rock

Test Method: ASTM D1557 "A"

Maximum Dry Unit Weight - PCF: 127.5

Optimum Moisture - %: 10.0

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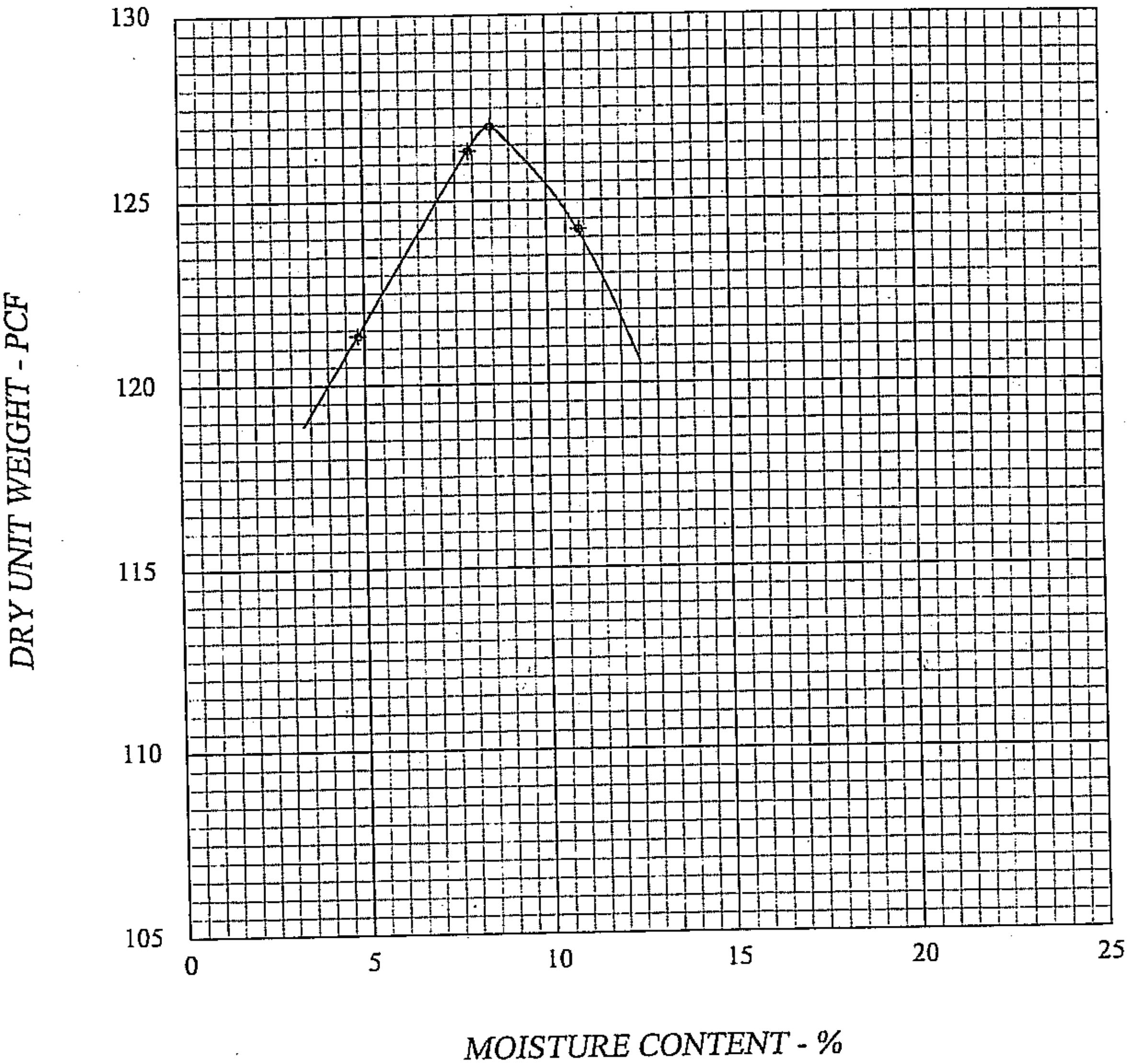
MOISTURE-DENSITY RELATION



Material: Test Pit 38 (4 to 6 feet) Brown, severely weathered granitic rock

Test Method: ASTM D1557 "A"

Maximum Dry Unit Weight - PCF: 127

Optimum Moisture - %: 8.5

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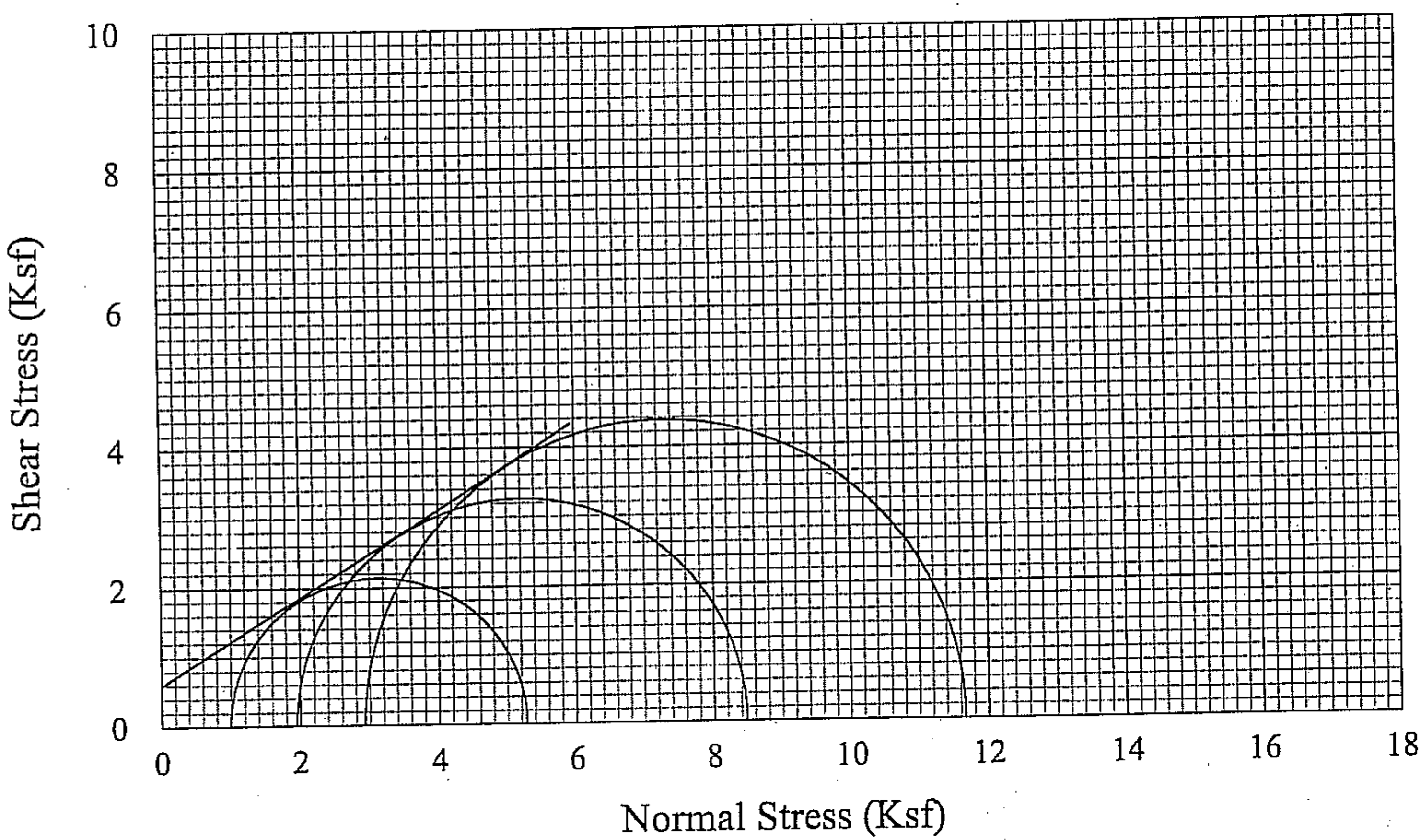
TRIAXIAL COMPRESSION TEST

ASTM D4767-88



SAMPLE NO. :	Test Pit 38	DRY DENSITY (PCF) :	115
SAMPLE CONDITION :	remolded 90%	INITIAL MOISTURE (%) :	8
SAMPLE DESCRIPTION :	Light brown, severely weathered granitic rock	FINAL MOISTURE (%) :	12.5
		ANGLE OF INTERNAL FRICTION (ø) :	32
		COHESION (PSF) :	600

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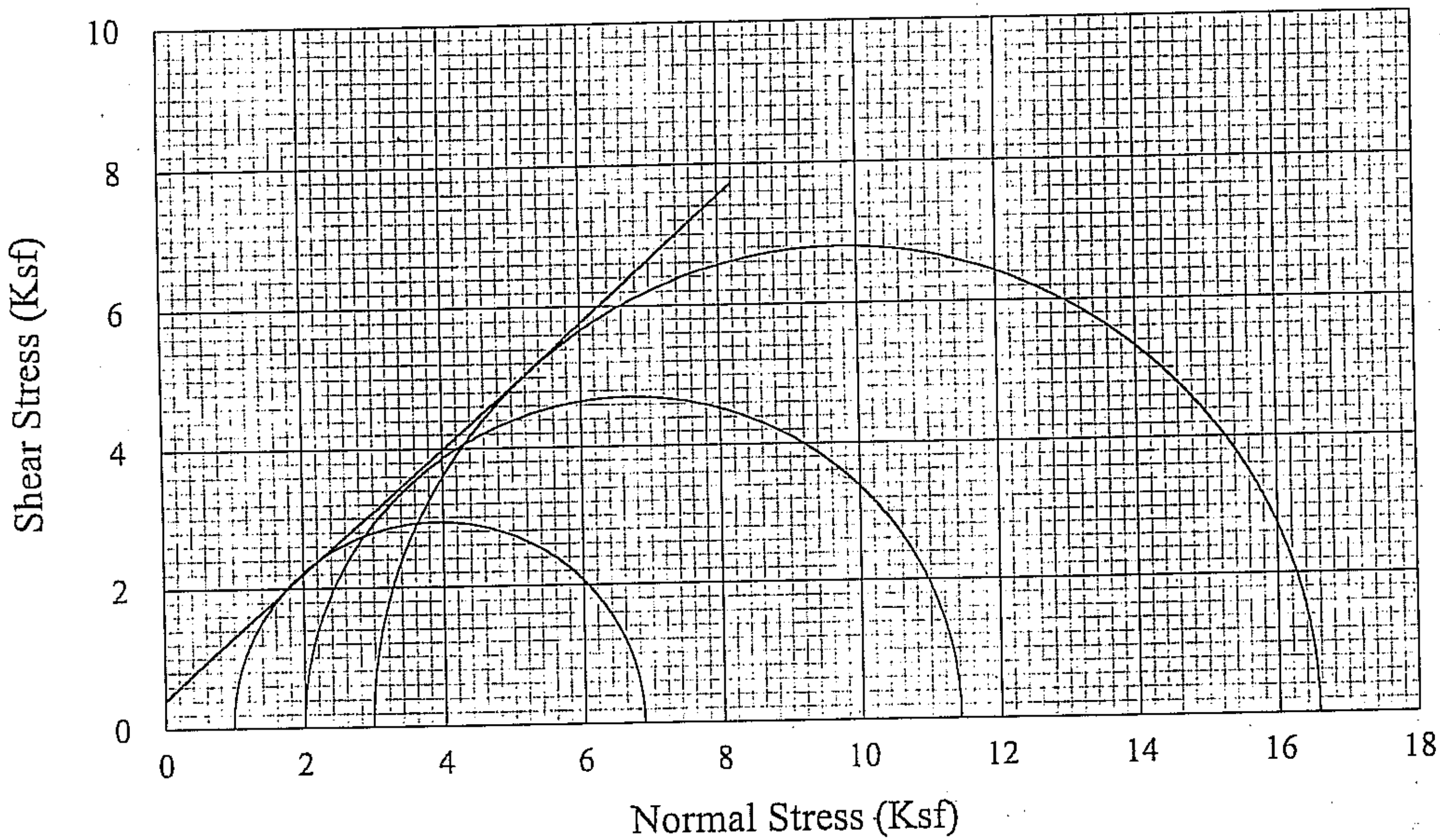
CLOVER VALLEY LAKES
Rocklin, California

WKA NO: 4657.01
DATE: 5/01
PLATE NO: A18

TRIAXIAL COMPRESSION TEST

ASTM D4767-88



SAMPLE NO. :	Test Pit 37	DRY DENSITY (PCF) :	121
SAMPLE CONDITION :	undisturbed	INITIAL MOISTURE (%) :	6.1
SAMPLE DESCRIPTION :	Light brown, severely weathered granitic rock	FINAL MOISTURE (%) :	22.6
		ANGLE OF INTERNAL FRICTION (ø) :	41
		COHESION (PSF) :	415

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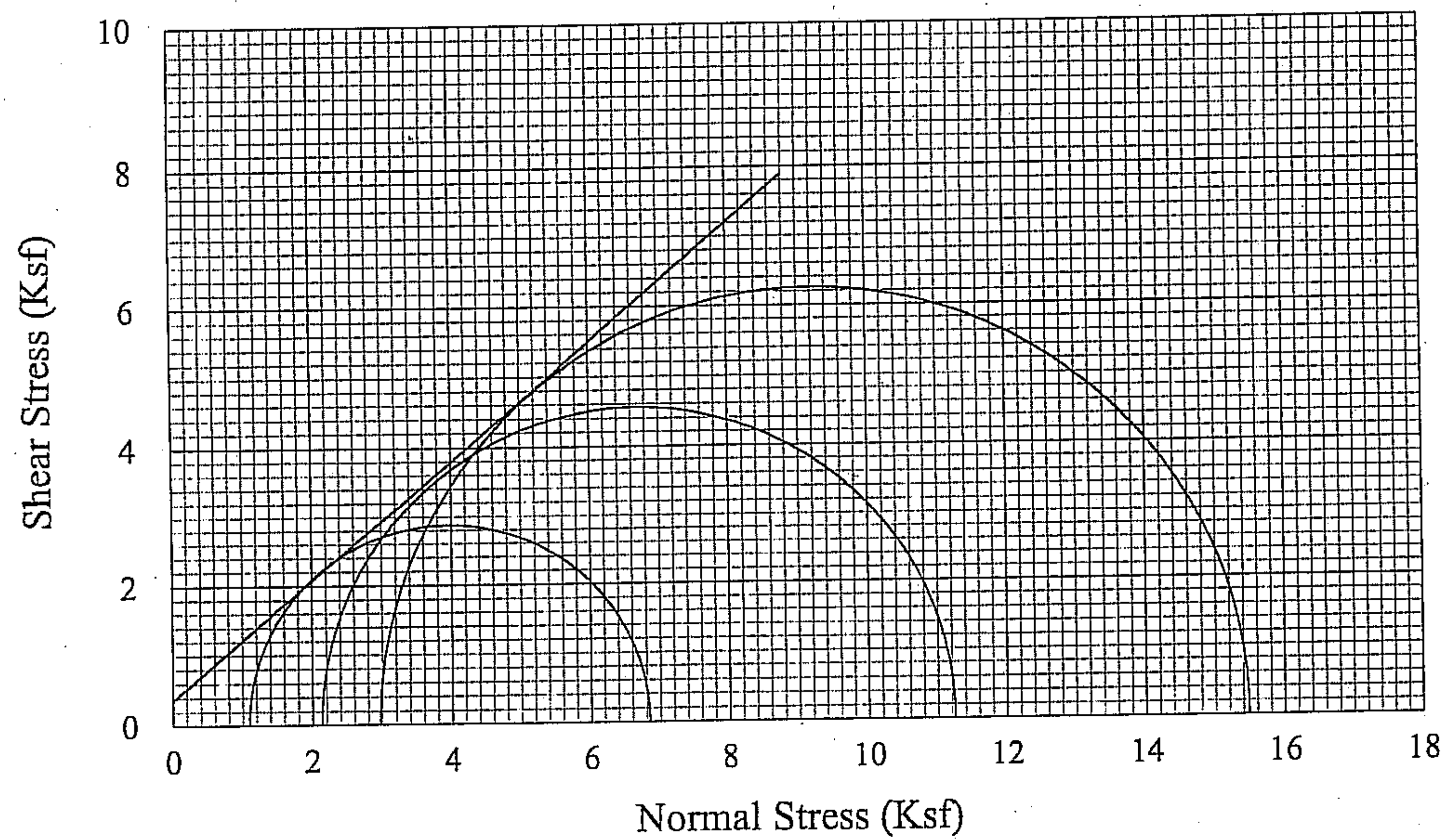
CLOVER VALLEY LAKES

Rocklin, California

WKA NO: 4657.01
DATE: 5/01
PLATE NO: A19

TRIAXIAL COMPRESSION TEST

ASTM D4767-88



SAMPLE NO. :	Test Pit 38
SAMPLE CONDITION :	undisturbed
SAMPLE DESCRIPTION :	Light brown, severely weathered granitic rock

DRY DENSITY (PCF) :	128
INITIAL MOISTURE (%) :	6.2
FINAL MOISTURE (%) :	10.7
ANGLE OF INTERNAL FRICTION (ø) :	40
COHESION (PSF) :	350

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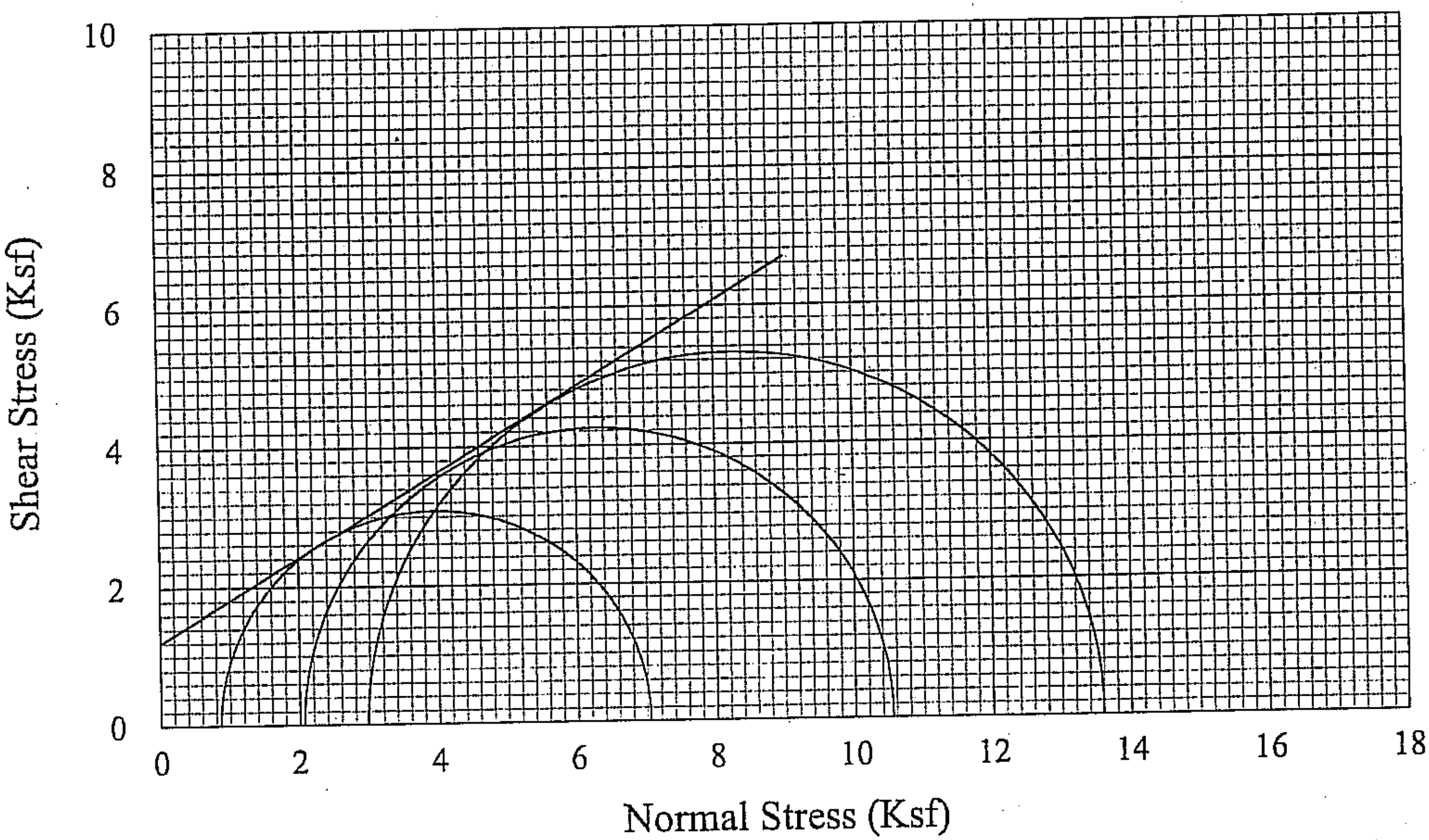
CLOVER VALLEY LAKES
Rocklin, California

WKA NO: 4657.01
DATE: 5/01
PLATE NO: A20

TRIAXIAL COMPRESSION TEST

ASTM D4767-88



SAMPLE NO. : D1-2I

SAMPLE CONDITION : undisturbed

SAMPLE DESCRIPTION : Brown silty fine to medium sand

DRY DENSITY (PCF) : 111

INITIAL MOISTURE (%) : 10.6

FINAL MOISTURE (%) : 10.6

ANGLE OF INTERNAL FRICTION (ø) : 31

COHESION (PSF) : 1200

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Drawn By: BPM

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CLOVER VALLEY LAKES

Rocklin, California

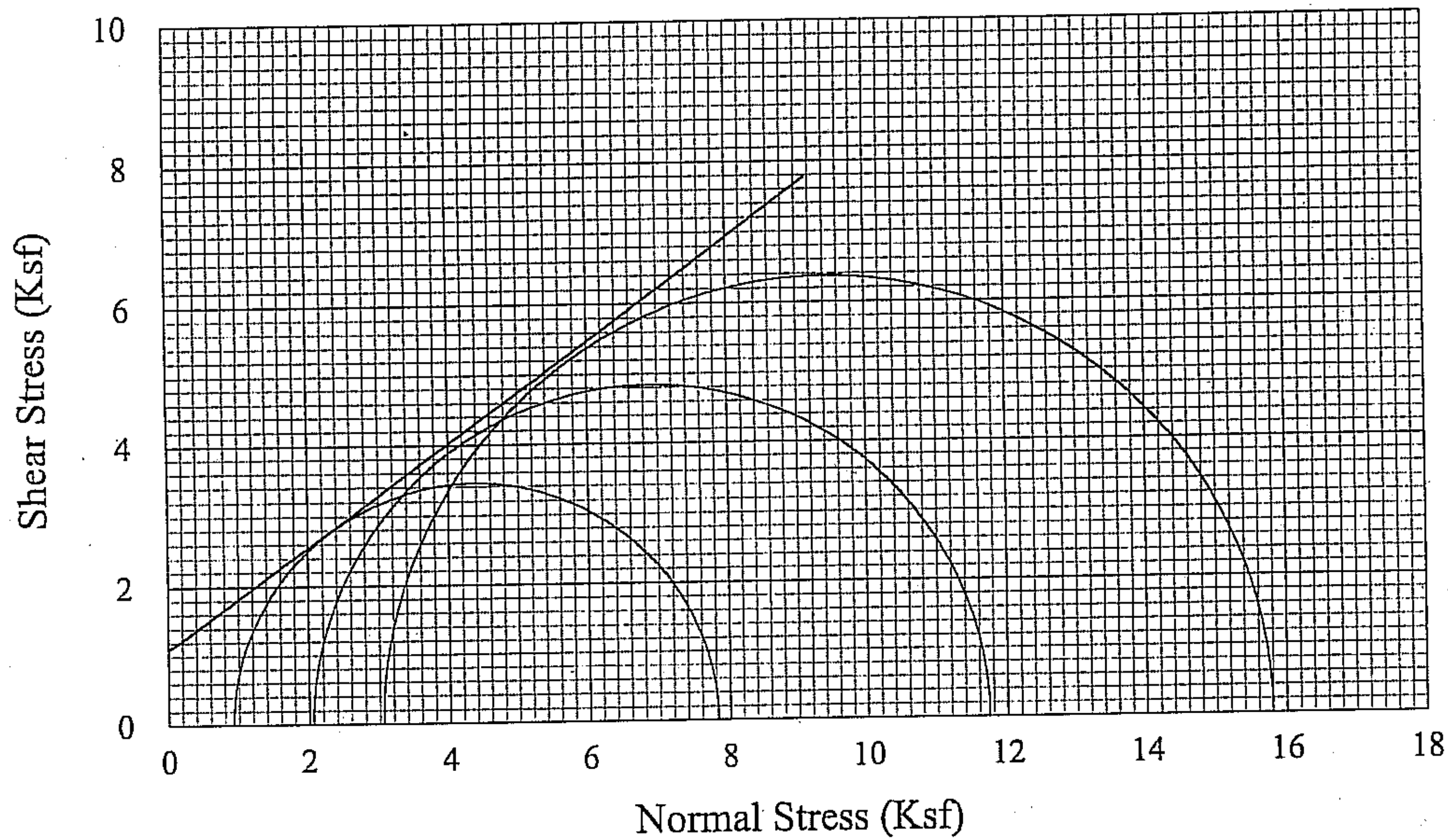
WKA NO: 4657.01

DATE: 5/01

PLATE NO: A21

TRIAXIAL COMPRESSION TEST

ASTM D4767-88



SAMPLE NO. :	Test Pit 36
SAMPLE CONDITION :	remolded to 95%
SAMPLE DESCRIPTION :	Brown severely weathered granitic rock

DRY DENSITY (PCF) :	117
INITIAL MOISTURE (%) :	11.7
FINAL MOISTURE (%) :	12.8
ANGLE OF INTERNAL FRICTION (ø) :	35
COHESION (PSF) :	1100

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Drawn By: BPM
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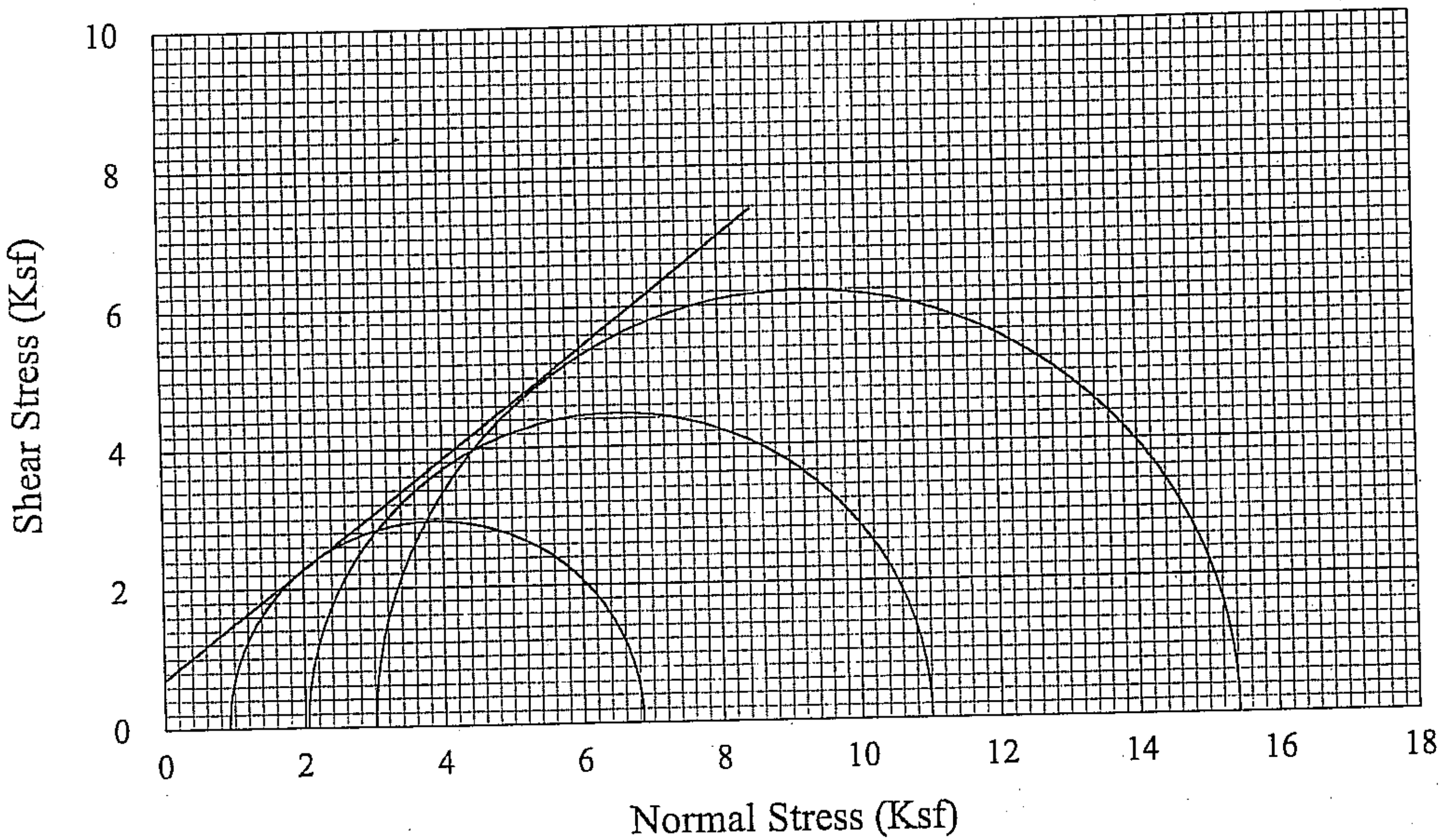
CLOVER VALLEY LAKES
Rocklin, California

WKA NO: 4657.01
DATE: 5/01
PLATE NO: A22

TRIAXIAL COMPRESSION TEST

ASTM D4767-88



SAMPLE NO. :	Test Pit 37
SAMPLE CONDITION :	remolded to 95%
SAMPLE DESCRIPTION :	Brown severely weathered granitic rock

DRY DENSITY (PCF) :	121
INITIAL MOISTURE (%) :	9.3
FINAL MOISTURE (%) :	11.5
ANGLE OF INTERNAL FRICTION (ø) :	38
COHESION (PSF) :	700

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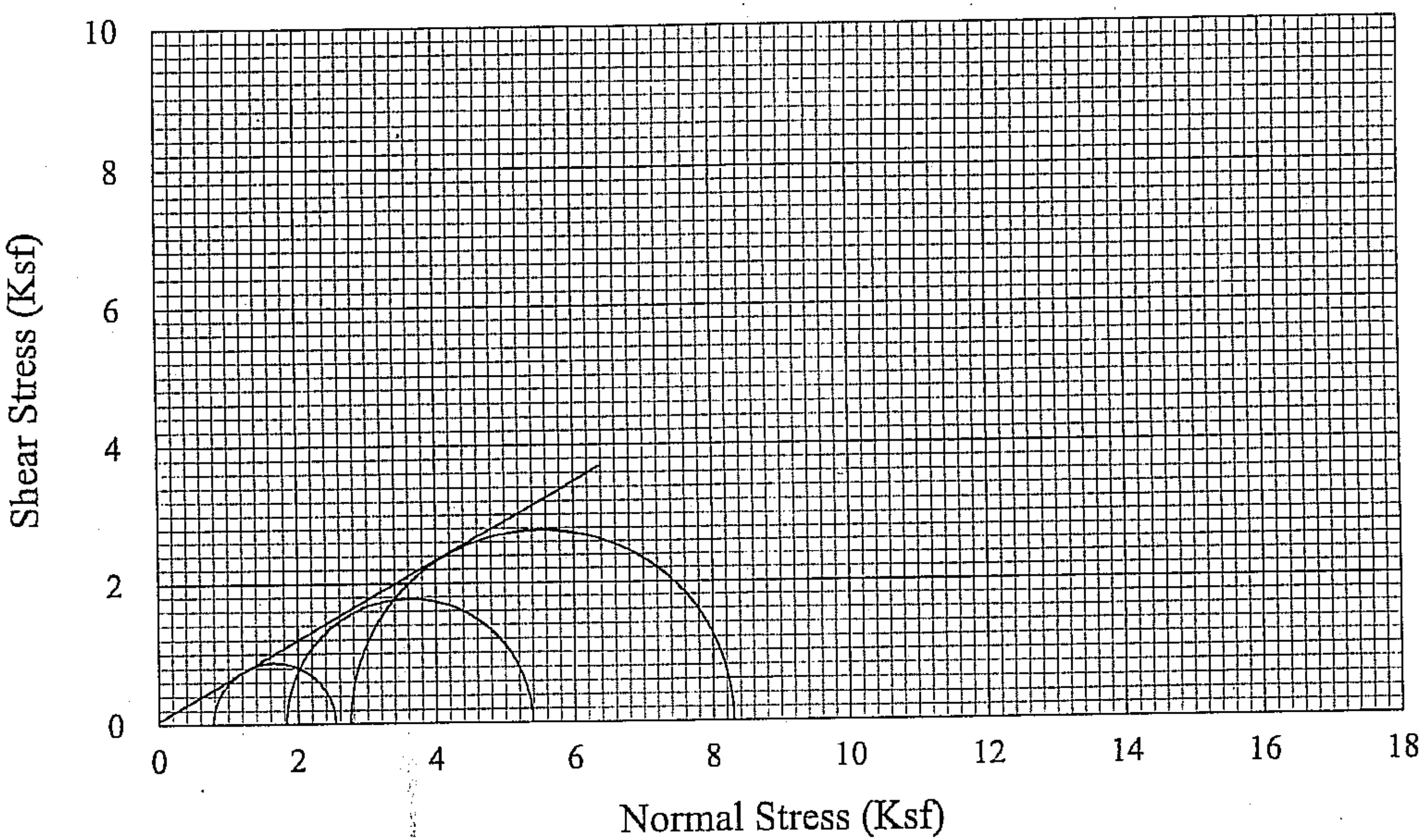
CLOVER VALLEY LAKES
Rocklin, California

WKA NO: 4657.01
DATE: 5/01
PLATE NO: A23

TRIAXIAL COMPRESSION TEST

ASTM D4767-88



SAMPLE NO. :	Test Pit 42
SAMPLE CONDITION :	undisturbed
SAMPLE DESCRIPTION :	Brown silty fine to medium sand (partially cemented)

DRY DENSITY (PCF) :	103
INITIAL MOISTURE (%) :	10.9
FINAL MOISTURE (%) :	14
ANGLE OF INTERNAL FRICTION (ø) :	29
COHESION (PSF) :	35

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Drawn By: BPM

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CLOVER VALLEY LAKES

Rocklin, California

WKA NO: 4657.01

DATE: 5/01

PLATE NO: A24

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 05/02/2001
Date Submitted 04/27/2001

To: Ed Uhlir
Wallace-Kuhl & Associates, Inc.
3050 Industrial Blvd.
West Sacramento, Ca 95691

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : CLOVER VLY/ 4657.01 Site ID : TP36
Your purchase order number is 3002.
Thank you for your business.

* For future reference to this analysis please use SUN # 34894-66138.

EVALUATION FOR SOIL CORROSION

Soil pH	5.52		
Minimum Resistivity	5.90	ohm-cm (x1000)	
Chloride	7.2 ppm		00.00072 %
Sulfate	0.7 ppm		00.00007 %

METHODS
pH and Min.Resistivity CA DOT Test #643 Mod.(Sm.Cell)
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

Sunland Analytical

11353 Pyrites Way, Suite 4
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Date Reported 05/02/2001
Date Submitted 04/27/2001

To: Ed Uhlir
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West Sacramento, Ca 95691

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : CLOVER VLY/ 4657.01 Site ID : TP44.
Your purchase order number is 3002.
Thank you for your business.

* For future reference to this analysis please use SUN # 34894-66139.

EVALUATION FOR SOIL CORROSION

Soil pH	6.59		
Minimum Resistivity	3.22	ohm-cm (x1000)	
Chloride	7.9 ppm	00.00079	%
Sulfate	0.8 ppm	00.00008	%

METHODS
pH and Min.Resistivity CA DOT Test #643 Mod.(Sm.Cell)
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 05/02/2001
Date Submitted 04/27/2001

To: Ed Uhlir
Wallace-Kuhl & Associates, Inc.
3050 Industrial Blvd.
West Sacramento, Ca 95691

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : CLOVER VLY/ 4657.01 Site ID : TP49.
Your purchase order number is 3002.
Thank you for your business.

* For future reference to this analysis please use SUN # 34894-66140.

EVALUATION FOR SOIL CORROSION

Soil pH	6.12		
Minimum Resistivity	3.22	ohm-cm (x1000)	
Chloride	11.4 ppm	00.00114	%
Sulfate	0.4 ppm	00.00004	%

METHODS
pH and Min.Resistivity CA DOT Test #643 Mod.(Sm.Cell)
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

WALLACE - KUHL & ASSOCIATES, INC. GEOTECHNICAL ENGINEERING GEOLOGIC & ENVIRONMENTAL SERVICES	CLOVER VALLEY LAKES Rocklin, California	WKA NO: 4657.01 DATE: 5/01 PLATE NO: A27

APPENDIX B

APPENDIX B

GUIDE EARTHWORK SPECIFICATIONS

CLOVER VALLEY LAKES

Rocklin, California

WKA No. 4657.01

PART I: GENERAL

1.1 SCOPE

a. General Description

This item shall include all clearing of on-site rubble, debris, organics and associated items; preparation of surfaces to be filled, filling, spreading, compaction, observation and testing of the fill; and all subsidiary work necessary to complete the earthwork to conform with the lines, grades and slopes as shown on the accepted Drawings.

b. Geotechnical Engineer

Where specific reference is made to "Geotechnical Engineer" this designation shall be understood to include either the Geotechnical Engineer or the representative of the Geotechnical Engineer.

1.2 PROTECTION

a. Adequate protection measures shall be provided to protect workers and passers-by the site. Streets and adjacent property shall be fully protected throughout the operations.

b. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.

c. Any construction review of the Contractor's performance conducted by the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on or near the construction site.

d. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.

e. Surface drainage provisions shall be made during the period of construction in a manner to avoid creating a nuisance to adjacent areas.

f. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance.

1.3 GEOTECHNICAL REPORT

a. A Geotechnical Engineering Report (WKA No. 4657.01; dated May 9, 2001) has been prepared for this site by Wallace - Kuhl & Associates, Inc., Geotechnical Engineers of West Sacramento, California [(916) 372-1434]. A copy is available for review at the office of Wallace - Kuhl & Associates, Inc.

b. The Contractor is responsible for any conclusions the Contractor may draw from this report; should the Contractor prefer not to assume such risk, the Contractor should employ experts to analyze available information and/or to make additional explorations upon which to base conclusions, all at no cost to the Owner.

1.4 EXISTING SITE CONDITIONS

The Contractor shall become acquainted with all site conditions. If unshown active utilities are encountered during the work, the Owner shall be promptly notified for instructions. Failure to notify will make the Contractor liable for damage to these utilities arising from the Contractor's operations subsequent to discovery of such unshown utilities.

1.5 SEASONAL LIMITS

Fill material shall not be placed, spread or rolled during unfavorable weather conditions. When heavy rains interrupt the work, fill operations shall not be resumed until field tests indicate that the moisture contents of the subgrade and fill materials are satisfactory.

PART II: PRODUCTS

2.1 MATERIALS

a. All fill shall be approved local materials from required excavations, supplemented by imported fill, as needed. Approved local materials are defined as on-site soils and rock smaller than twelve inches (12") in maximum size free from significant quantities of rubble, rubbish and vegetation, and having been approved by the Geotechnical Engineer prior to use. Rocks exceeding twelve inches (12") in final size shall be avoided in the upper two feet (2') of the street subgrade, or in utility trench backfill. Rocks exceeding twelve inches (12") in size shall be reduced to a maximum twelve-inch (12") final size, or be used in the deeper portions of engineered fills if the rocks do not exceed thirty inches (30") in maximum dimension, if approved by the Geotechnical Engineer.

b. Imported fill materials shall be approved by the Geotechnical Engineer; they shall meet the above requirements; shall have a Plasticity Index less than fifteen (15); and, shall be of six-inch (6") maximum particle size. Imported fill materials placed in the upper two feet (2') of the street subgrade shall have a Resistance ("R") value of 40 or greater.

c. Asphalt concrete, aggregate base, and other paving products shall comply with the appropriate provisions of the latest editions of the State of California (Caltrans) Standard Specifications and the City of Rocklin standards.

PART III: EXECUTION

3.1 LAYOUT AND PREPARATION

Lay out all work, establish grades, locate existing underground utilities, set markers and stakes, set up and maintain barricades and protection of utilities--all prior to beginning actual earthwork operations.

3.2 CLEARING, GRUBBING AND PREPARING AREAS TO RECEIVE FILL

a. All oversized rubble and rubbish shall be removed and disposed of so as to leave the areas that have been disturbed with a neat and finished appearance, free from unsightly debris. Loose soil deposits, as determined by the Geotechnical Engineer, shall be cleaned out to firm, undisturbed soils and backfilled with suitable materials in accordance with these specifications.

b. Saturated, soft clayey soils and loose granular soils at the street crossings across Clover Valley Creek shall be removed and the bottom of the excavations shall be stabilized as described in the Geotechnical Engineering Report.

c. Thick concentrations of grass and weeds shall be stripped from construction areas. Strippings shall not be used as engineered fill, but may be stockpiled for later use as landscape fill. Sparse grass and weeds shall be thoroughly blended with near-surface soils, if approved by the Geotechnical Engineer.

d. If unstable subgrade conditions are encountered, the Geotechnical Engineer shall provide alternative recommendations for stabilizing the subgrade at the time of construction, and as conditions warrant.

e. The surfaces upon which fill is to be placed shall be plowed or scarified to a depth of at least six inches (6"), until the surface is free from ruts, hummocks or other uneven features which would tend to prevent uniform compaction by the selected equipment. Scarification shall not be required in areas where cemented materials are exposed, as verified by the Geotechnical Engineer.

f. When the moisture content of the subgrade is below that required to achieve proper compaction, water shall be added until the proper moisture content is achieved.

g. When the moisture content of the subgrade is too high to permit proper compaction to be achieved, the subgrade shall be aerated by blading or other methods until the moisture content is satisfactory for compaction.

h. After the foundations for fill have been cleared, plowed, or scarified, they shall be disced or bladed until uniform and free from large clods, brought to the proper moisture content and compacted to not less than ninety percent (90%) of the maximum dry density as determined by the ASTM D1557 Test Method if the material consists predominately of soil passing the three-quarter inch (¾") sieve. The surfaces upon which fill is to be placed shall be compacted by a Caterpillar 825 (or equivalent) self-propelled sheepsfoot compactor, making at least three (3) complete passes of the subgrades being compacted if the subgrade conditions are rocky. A pass is defined as the process necessary to assure that every square foot of subgrade has been traversed and compacted by the compaction equipment.

i. Compaction operations shall be performed in the presence of the Geotechnical Engineer who will evaluate the performance of the materials under compactive load.

3.3 PLACING, SPREADING AND COMPACTING FILL MATERIAL

a. Soil fill material consisting predominately of particles less than three-quarter inch (¾") shall be placed in level lifts which when compacted shall not exceed six inches (6") in thickness. Rocky fill material shall be placed in level lifts not exceeding a compacted thickness of about twelve inches (12"), as approved by the Geotechnical Engineer. Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to promote uniformity of material in each layer.

b. When the moisture content of the fill material is too high to permit the proper degree of compaction to be achieved, the fill material shall be aerated by blading or other methods until the moisture content is satisfactory.

c. When the moisture content of the fill material is below that required to achieve proper compaction, water shall be added until the proper moisture content is achieved.

d. Fill placed on slopes steeper than four horizontal to one vertical (4:1) shall be keyed into the natural ground at the toe. The key shall be at least fifteen feet (15') wide, shall be excavated into dense, hard or cemented materials to a depth of at least two feet (2') as verified by the Geotechnical Engineer. The key shall slope slightly into the hillside.

e. Fill placed on slopes steeper than six horizontal to one vertical (6:1) shall be benched into the existing ground. Benching shall be provided at two-foot (2') increments of vertical height. Benches shall be level and shall extend at least four feet (4') horizontally into the existing ground.

f. After each layer has been placed, mixed and spread evenly, it shall be thoroughly compacted by at least three (3) passes of a Caterpillar 825 (or equivalent) compactor if the fill material is rocky or to at least ninety percent (90%) relative compaction (ASTM D1557) if the fill material consists predominately of soil passing the three-quarter inch (¾") sieve. The Geotechnical Engineer or his representative shall observe and verify proper placement and compaction of "over-size" rock fill.

g. Fill exceeding twenty feet (20') in height and approach and abutment fills at the bridge sites shall be thoroughly compacted by at least three (5) passes of a Caterpillar 825 (or equivalent) compactor if the fill material is rocky or to at least ninety-five percent (95%) relative compaction (ASTM D1557) if the fill material consists predominately of soil passing the three-quarter inch (¾") sieve.

h. The filling operations shall be continued until the fills have been brought to the finished slopes and grades as shown on the accepted Drawings.

3.4 FINAL SUBGRADE PREPARATION

The upper six inches (6") of final street subgrades shall be compacted by at least five passes of a Caterpillar 825 (or equivalent) compactor or to at least ninety-five percent (95%) relative compaction, regardless of whether final subgrade elevations are attained by filling, excavation, or are left at existing grades.

3.5 TESTING AND OBSERVATION

a. Site clearing and grading operations shall be observed by the Geotechnical Engineer, serving as the representative of the Owner.

b. Field density tests shall be made by the Geotechnical Engineer after compaction of each layer of fill, if practical. Additional layers of fill shall not be spread until the field density tests, or performance criteria as defined in Sections 3.3f or 3.3g of these specifications, indicate that the proper compaction has been obtained.

c. Earthwork shall not be performed without the notification or approval of the Geotechnical Engineer. The Contractor shall notify the Geotechnical Engineer at least two (2) working days prior to commencement of any aspect of the site earthwork.

d. Compaction of rocky fill materials shall not proceed without the presence or approval of the Geotechnical Engineer.

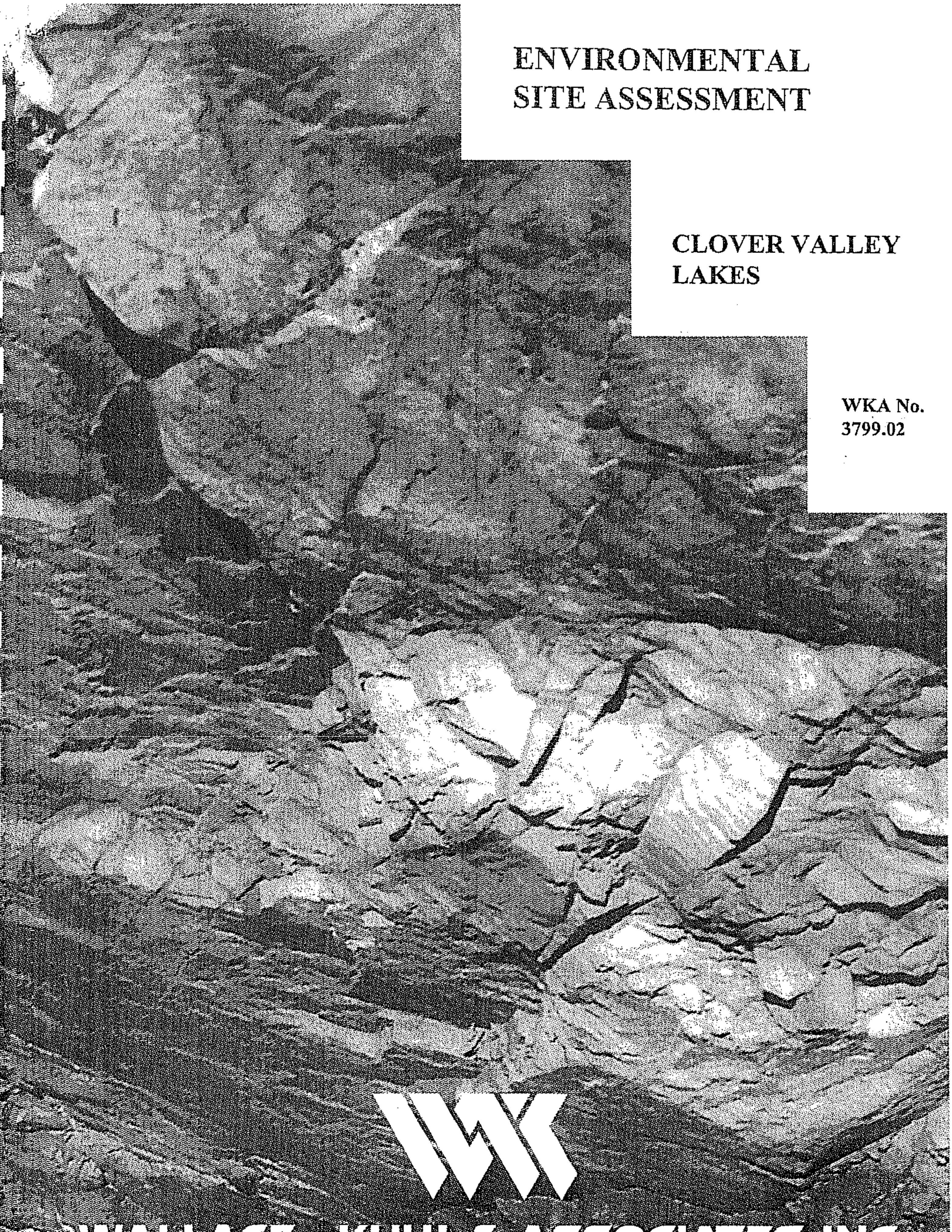
e. If the Contractor should fail to meet the technical or design requirements embodied in this document and on the applicable plans, the Contractor shall make the necessary readjustments until all work is deemed satisfactory, as determined by the Geotechnical Engineer and the Owner. No deviation from the specifications shall be made except upon written approval of the Geotechnical Engineer or Owner.

APPENDIX M

ENVIRONMENTAL SITE ASSESSMENT

CLOVER VALLEY LAKES

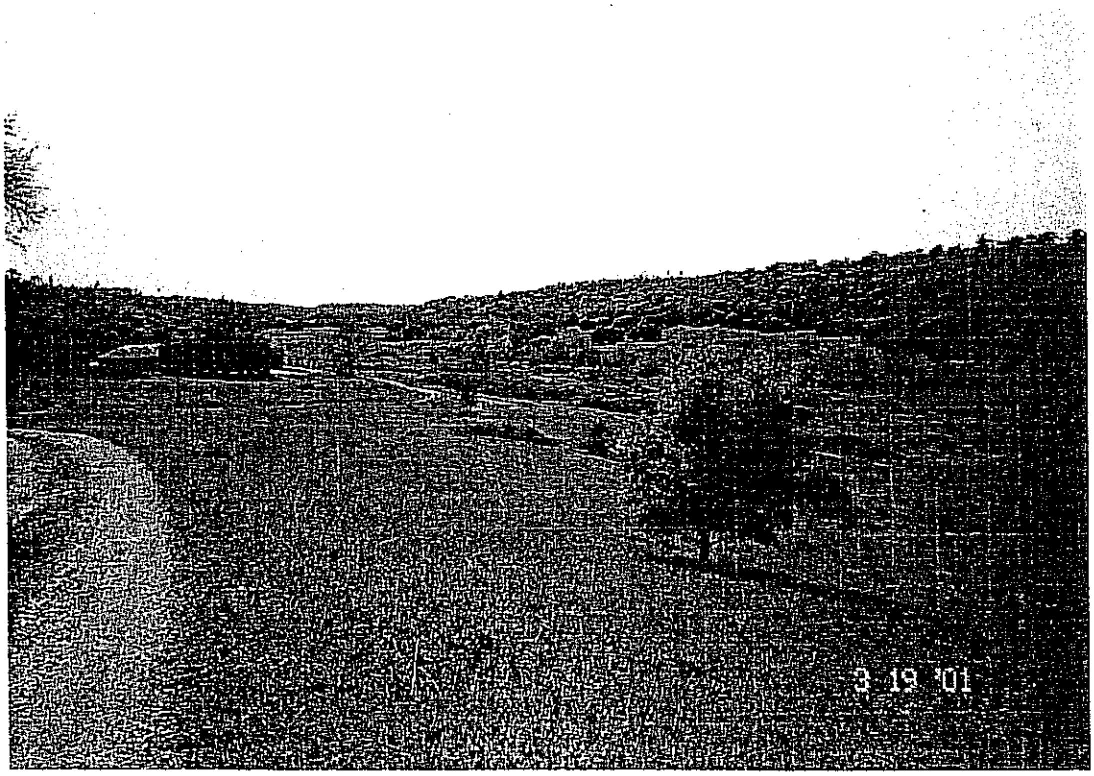
WKA No. 3799.02



ENVIRONMENTAL SITE ASSESSMENT

CLOVER VALLEY LAKES

WKA No. 3799.02



WALLACE · KUHL & ASSOCIATES INC. 3050 Industrial Boulevard, West Sacramento, CA 95691 (916) 372-1434 (916) 372-9065 Fax

GERRY N. KAMILOS, LLC
11211 GOLD COUNTRY BOULEVARD, SUITE 108
GOLD RIVER, CA 95670
(916) 631-8440
FAX (916) 631-8445

March 26, 2001

MASSIE & COMPANY
1801 Tribute Road
Sacramento, CA 95815

Attention: Mr. Rick Massie

Reference: Clover Valley

Subject: Environmental Site Assessment

Dear Rick:

Enclosed for your file is a copy of the Environmental Site Assessment for the above referenced project.

Should you have any questions, please contact me at your earliest convenience.

Sincerely,

Gerry Kamilos/cd

Gerry N. Kamilos

GNK/cd

Enclosures

cc: Carstens Consulting - Mr. Clif Carstens
Wells Fargo Bank - Mr. Blake Griffin

route: File

Environmental Site Assessment
CLOVER VALLEY LAKES
Rocklin, California

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WALLACE • KUHL
& ASSOCIATES INC.

Geotechnical Engineering
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Materials Testing

Environmental Site Assessment

CLOVER VALLEY LAKES

Vicinity of Clover Valley Road and Sierra College Boulevard
Placer County, California
WKA No. 3799.02
March 20, 2001

INTRODUCTION

Purpose and Scope

We have completed a Phase 1 Environmental Site Assessment for the proposed site of a single-family residential subdivision known as Clover Valley Lakes as shown on Plates 1 through 3. The purpose of our assessment was to evaluate the property for evidence of potential soil and ground water contamination resulting from current and/or former site activities.

Our work was authorized March 6, 2001 by Gerry Kamilos with Gerry N. Kamilos, LLC, on behalf of Rocklin 650 Partners. This report has been prepared in accordance with the American Society of Testing and Materials (ASTM) *Standard E 1527-00 for Environmental Assessments*. The scope of our services included the following:

- a field reconnaissance of the property to look for evidence of surface and potential subsurface sources of contamination

- a "windshield survey" performed in the immediate vicinity of the property to identify businesses that may use or produce hazardous materials

- a review of Placer County Assessor's office records to establish current property ownership (Plate 4)

- personal and telephone interviews with representatives of various regulatory agencies and those familiar with the site history of the property, including the Agricultural Commissioner's Office

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3050 Industrial Blvd
West Sacramento

- examination of stereoscopic aerial photographs of the property taken over the last 36 years (Plate 4), as well as review of historic USGS topographic maps and business directories, archived building records and/or Sanborn Map coverage of the property, as available, in order to develop a reasonably continuous site history over the past 50 years as minimally required by the ASTM standard

- review of the U.S. Department of Agriculture, Soil Conservation Service *Soil Survey of Placer County* for historic crop cultivation trends for the subject property and vicinity

- an evaluation of local and regional ground water conditions, including historical depths and flow direction

- discussion of existing or proposed municipal infrastructure for the property and vicinity, including potable water, wastewater and stormwater provisions, as required by the ASTM standard

- a review of federal, state and county regulatory agency lists indicating any known instances of hazardous materials contamination and registered underground and aboveground storage tanks (USTs/ASTs) on or near the property (Plate 5)

- a literature-based discussion of the low likelihood for radon to be problematic at the property

- color photography of the property (Plate 6).

Laboratory testing of the ground water beneath the property for hazardous materials and surveys of the existing structures for asbestos or lead-based paint were beyond the scope of this assessment.

FINDINGS

Site Description

The subject property is located northeast of a predominantly residential area (Plate 1), and approximately two miles northerly from the central business district of the City of Rocklin, California (Plate 2). Development proposed for the subject property consists of single-family residences on 964 lots with adjacent parkland and open space areas along Clover Valley Creek. The planned residential development for the subject property is divided into 22 residential villages (A through V), 16 open space areas, two parks and one commercial area (Plate 3). The irregularly-shaped property consists of approximately 622 acres of fallow land and range land having Placer County Assessor's Parcel Numbers (APNs) 030-010-011, 030-020-003, 030-030-059, 030-041-001, 030-050-013, 030-070-016 and -017, 032-010-010 and -021, 032-060-065, 032-070-065, -066 and -067.

The color photograph on the cover page of this report is a southwesterly view of the property from its east-central side. The cover page photograph shows the tree-covered slopes and grassy floor of Clover Valley. The building visible in the left background is located off the property.

Methodology

For ease of discussion in this report, we will present our findings simply divided into two categories, those being first the fallow land and rangeland on the property, and second, the currently and historically developed areas. Plate 6 contains additional color photographic overviews of the subject property that should be referred to as the following text is reviewed.

During our site reconnaissance we interviewed the on-site tenant Bob Jasper and the adjacent rancher Bud Taglio. Mr. Jasper has lived on the subject property for fourteen years. Mr. Taglio, who has lived in Clover Valley for over 30 years, supplied us with current and historical site activity and operational information regarding the subject property. As such, our discussions with both Mr. Jasper and Mr. Taglio meet the "Key Site Manager" interview requirement of the ASTM site assessment standard.

Fallow Land and Rangeland

The subject property is a portion of the north/south-trending Clover Valley. The perimeter of the subject property consists of fenced woods and grassland, and contained grazing cattle on the southeast ridge and in the valley on the dates of our field reconnaissance. The ridges of the valley are grassy with scattered native oak trees and volcanic rock outcrops. The moderate to steep slopes of the valley are grass covered and moderately to densely wooded with native oaks. The valley floor is also grass covered and has numerous granitic outcrops. The valley floor slopes gently downward towards the north/south-trending Clover Valley Creek, which bisects the valley (Plate 2). Dense vegetation, including native oaks, brush and berry vines, are located on both the east and west sides of the creek. No other noteworthy drainageways are located on site. Clover Valley Creek was swollen from recent rains at the time of our field reconnaissance.

The vast majority of this portion of the property is quite simply featureless woodland and grassland, which in our professional opinion do not warrant additional lengthy discussion. The area does contain several unique, small-sized features that are discussed in detail below. Given the rugged terrain and time and budget constraints during a Phase 1 assessment, we did not physically walk the highest and remotest areas of the property. Using binoculars and aerial photographs from high points elsewhere on the property, we saw no obvious potential areas of concern that warranted additional field reconnaissance of the remotest portions of the property.

Rock walls are located on the east and west ridges of the property. According to Mr. Taglio and the *Archaeology/Cultural Resources* report (completed by Foothill Archaeological Services for the Environmental Impact Report (EIR) on the Clover Valley), Parker Whitney appropriated the Clover Valley by the 1880s. The rock walls, which consist of native volcanic rock, were constructed by Mr. Whitney's Chinese laborers in order to control his grazing cattle and sheep. The rock walls were originally up to five feet in height; the tallest stands that we observed were approximately three feet in height (Plate 6).

Additionally, an irrigation water delivery canal is located on the ridge, west of the rock wall. The portion of the canal that we observed was concrete-lined and/or rock-lined, and contained clear flowing water (Plate 6). Mr. Whitney organized the Placer County Citrus Colony; a portion the colony settled in Clover Valley. Mr. Whitney constructed the water delivery canal to irrigate the orange orchards that the colony established. According to Mr. Taglio, a winter frost killed the orchards in 1906, and subsequently, the settlers moved out of the valley. We discussed the irrigation canal with PCWA representatives. The water that currently flows in the canal is owned by PCWA. The irrigation canal continues to supply irrigation water to area farmers.

We also observed a vertical clay pipe encased within a concrete foundation under a tree near the east side of the creek (Plate 6). The tree is located near the northerly property boundary. Standing water was observed at an approximate depth of six feet within the pipe. The concrete foundation has three bolts surrounding the clay pipe, which suggests anchors for a pump motor. This feature may be a well or an outlet for an old irrigation pipeline.

During our reconnaissance of the accessible portions of the valley floor, we observed grinding stones and a livestock corral. Mr. Taglio and Mr. Jasper made us aware of several cultural sites of the Maidu Indian, including grinding stone sites and the corral. Reportedly these sites will be preserved in the Open Land areas of the future development. The corral, located on the south side of the property, is "U" shaped with its entrance on the north side. The corral is constructed of a granitic outcrop and native granitic rocks stacked in the same way as the rock walls on the ridgelines of the property.

We observed numerous beer cans, glass bottles and other metal containers within the granitic outcrop adjacent to and west of the corral (Plate 6). Based on our observations of the partially-preserved artwork on the beer cans and the avoirdupois weight solely listed on the bottles (fractions of quarts and no metric weight), the cans and bottles are apparently several decades old. This site appears to be an old recreation site and is not considered a domestic dump. No evidence of buried trash, rubble or refuse was observed. The empty cans and bottles are simply strewn across the rocks (again, see Plate 6).

The property has been subjected to sporadic vehicular traffic, which has resulted in a few areas that are moderately less vegetated due to the wheel-marked trails. The trails trend north/south in the valley on both sides of the creek and on the ridge near the southeasterly boundary. Access roads to the subject property are located near the east-central and southerly boundaries and are marked by the granite pillars from the time of the Citrus Colony. No surficial soil staining or odors were noted on the dirt trails at the time of our field reconnaissance. Surface evidence of a buried Placer County Water Agency (PCWA) municipal water pipeline was observed on the northerly portion of the property (Plate 6).

Other than the area-specific comments made above, we have no additional noteworthy comments from a hazardous materials perspective concerning the vast fallow land and rangeland portion of the subject property. We are compelled to editorially comment that Clover Valley is a spectacularly picturesque land area, particularly when viewed from the higher elevation areas on which we completed much of our field reconnaissance.

Current and Historically Developed Sites

We observed the remnants of a former homestead site on the north side of the valley, east of the creek and west of the site access road (see the USGS map legend symbols for structures on Plate 2). Tall grasses obscured the majority of the homestead site, although we were able to observe four concrete foundations. A culvert with a granitic headwall is located in the site access road. A trench was visible leading from the culvert towards the creek. Mr. Taglio stated that a weir, located in the creek, historically diverted creek water to the homestead site for irrigation. Several debris piles were observed near the concrete foundations. Miscellaneous debris included rusted metal, barbed wire and wood posts, composition roofing material, concrete rubble and remnants of an electric fence. Additionally, one large pile includes two rusted refrigerators, mattress frames, metal piping and a portion of a cobble wall. We also observed a ten-feet diameter depression east of one of the concrete foundations. The depression contains concrete rubble, metal piping and tree limb debris. This feature may be the depression described as a smoke house in the project EIR. We observed no stained soils or stressed vegetation around the debris piles or foundations.

South of the main entrance to the property is an existing residence where Mr. Jasper resides (Plate 6). The house has concrete block walls and composition roofing. Mr. Jasper indicated that the house has a private water supply well and septic system. South of the residence is a dilapidated milking barn (again, please see Plate 6). The milking barn has a concrete floor, large clay brick and wood walls and a wood roof. We were unable to fully enter and observe the interior of the barn due to its dilapidated state and collapse potential.

Two debris piles were observed south of the milking barn. These piles are located near the site of a *former* barn. The former barn and livestock yard were visible in the historic aerial photographs, and are shown on the reviewed USGS topographic maps. The debris piles consist of rusted corrugated metal, metal feeding troughs, one or two empty, rusted 55-gallon drums, a wrecked Volkswagen Beetle, wood pallets and wire fencing (Plate 6). We were unable to observe this area more closely due to the tall grasses and the observed presence of one rattlesnake. The debris piles are unlikely to have caused hazardous materials contamination considering the dense green grasses throughout the area. We observed an old empty storage shed west of the previously discussed Indian corral. The shed consists of a wood-framed building with corrugated metal siding and a dirt floor.

No overhead high-voltage electrical transmission lines, capacitors, or pad-mounted electrical transformers were observed on or adjacent to the subject property. Neighborhood distribution lines powered at 12 kVs were observed bisecting the northerly and southeasterly portions of the property. One Pacific Gas & Electric Company (PG&E) pole-mounted electrical transformer was observed on the property adjacent to the existing residence. Cooling fluid leakage was not observed on the pole-mounted transformer or on the ground surface beneath its location on the date of our field reconnaissance.

To obtain information pertaining to the potential PCB content of the on-site electrical transformer, we contacted PG&E senior environmental coordinator Mark Hays. Mr. Hays indicated that no database exists at PG&E to ascertain a transformer's status regarding its PCB content, although some transformers are tagged "Non-PCB." The transformer on the subject property is not tagged on the exterior with respect to PCBs and is therefore of unknown PCB content.

Windshield Survey

The subject property is located within a residential area of Rocklin. The property is bounded to the north by undeveloped land. Sierra College Boulevard and rural residential sites bound the property to the east. A residential subdivision bounds the property to the south. Undeveloped land, the PCWA Water Filtration Plant and aboveground water storage tanks, and a residential subdivision currently under construction bound the property on the ridge from the northwest to southwest, respectively. The Taglio ranch bounds the southwesterly portion of the property, within Clover Valley. No industrial or heavy commercial facilities, or stationary sources of potential hazardous air emissions are located in the area of the property.

Site History

Ownership

Readily available Placer County Assessor's office records consisting of a computerized database accessed via APNs reveals that Marvin Oates trustee etal is the current owner entity of the property. The Placer County Assessor's office does not maintain an ownership history on the subject property.

Sanborn Maps

We reviewed Sanborn Maps with coverage of the Rocklin area at the California State Library. Sanborn Maps are detailed drawings of site development, and were typically used by fire insurance companies to determine site fire insurability. Sanborn Maps covering the years 1884, 1899, 1907, 1909, 1915 and 1925 (with updates through 1944) were reviewed. Coverage of the subject property was unavailable, attributable to its location outside of the central business district of Rocklin within a historically rural residential and undeveloped area.

Business Directories

We reviewed historic business (street) directories, published from 1960 through 1973, with coverage of the Rocklin area at the California State Library. The subject property vicinity street (Clover Valley Road) did not appear in any of the directories available for review, attributable to its remote location north of the City of Rocklin.

Structural Permit Records

We contacted the City of Rocklin Public Works, Building Department regarding archived building permits for the subject property. Building Department personnel indicated that only one archived building permit was on file for the subject property. The Building Permit Number W1843 was issued May 13, 1949, for the construction of a five-room, 1400-square feet dwelling. The permit indicates that the dwelling is constructed of pomice brick, is insulated and has a composition roof. The permit also states that the dwelling is hooked up to a septic tank.

In summary, the available archived building records revealed a rural residential history for the subject property since 1949. The available records did not indicate whether building materials containing friable or non-friable asbestos were used in the construction of the buildings. The available building department records did not reveal non-asbestos, potential hazardous materials issues, such as documenting the installation or removal of underground storage tanks.

Placer County Agricultural Commissioner

The Placer County Agricultural Commissioner's Office had no *Restricted Use Permits* (often associated with agricultural chemical applications to crops), *Notices of Violation, Cease and Desist Orders* or similar documentations on file for the subject property. This is consistent with our experience at similar fallow and grazing lands in Placer County, in that land use of those types generally does not require application of registered persistent pesticides.

We also contacted California State Department of Pesticide Regulation representative Howard Sallee. Mr. Sallee indicated that the earliest man-made pesticides used on citrus trees include Paris Green (an arsenic compound), lead arsenic and cyanide gas. Paris Green dates back to 1867 and was used to control scale insects, the most common insect threat to citrus orchards. Lead arsenate was commonly used after its initial use in Massachusetts in 1892 to control gypsy moths. Cyanide gas, a non-persistent pesticide, was also an effective treatment for scale. The orchard trees were "tarped" and then fumigated with the cyanide gas.

Mr. Sallee stated that these pesticides were commonly used in southern California in the late 1800s where older orchards existed. Scale was not a threat at that time in northern California because orchards were just being introduced into the area and the scale insects had not migrated to the area.

Mr. Sallee indicated that other persistent pesticides, including arsenic and cyanide compounds, spray oils and DDT, were not widely developed and used until *after* the timeframe that the on-site orchards existed. Therefore, the potential for significant concentrations of persistent pesticide residuals to exist in site soils is low. The potential for persistent pesticide residuals in surficial soils of the subject property is further discussed in the *CONCLUSIONS* section of this report.

Topographic Maps Review

We reviewed historic U.S. Geologic Survey (USGS) topographic maps with coverage of the subject and adjacent properties at the California State Library. Maps dated 1954, 1967, 1981 were available for review; the maps are each discussed below. The 1981 version of the topographic map containing the subject property is included as Plate 2.

1954 Map

The majority of the subject property is shown as undeveloped land in the central portion of Clover Valley. Clover Valley extends northerly and southwesterly beyond the property. Three dwellings are mapped on the northerly portion of the property, on the east side of the valley. A north/south-trending unimproved dirt road separates the dwellings; two are on the west side of the road and one is on the east side. We observed the foundations of these structures during our field reconnaissance. One dwelling and a barn structure are mapped on the southerly portion of the property, east of the dirt road near the easterly property boundary. The dwelling still exists on the property today. The barn is mapped 400 feet south of the dwelling. This structure does not exist today, although the metal debris piles we observed on the property are located in the vicinity of the former barn site. The north/south-trending unimproved dirt road is mapped on the east side of the valley and extends from the northerly property boundary to the southwesterly property boundary. Additionally, the main entrance to the subject property is mapped on the ridge near the east-central property boundary. North/south-trending unimproved dirt roads are also mapped either on or off the property along the east and west ridges. The irrigation canal is mapped on the east ridge and is identified as the Antelope Canal. A reservoir is mapped in the valley approximately 500 feet northwest of the northerly dwellings.

Numerous unimproved dirt roads are mapped west of the subject property. The Southern Pacific (now Union Pacific) Railroad tracks are mapped off the property and adjacent to the northerly and southerly portions of the easterly boundary. During our field reconnaissance we did not observe stained soils or stressed vegetation on the subject property near the railroad tracks, nor did we observe signage or abovegrade control structures for buried petroleum pipelines within the off-site railroad easement. Numerous orchards and vineyards are mapped east of the railroad tracks. The Town of Loomis is mapped approximately one and one-half miles easterly from the property.

1967 Map

Little change is apparent on the subject or adjacent properties relative to the 1954 topographic map. The northerly dwelling on the east side of the dirt road is no longer mapped. A "siphon" for delivering irrigation water is mapped on the property near the easterly entrance to the property. Several dwellings are now mapped east of the subject property on the east ridge. Additionally, increased rural residential development is mapped east of the ridge between the property and the Town of Loomis. Several orchards are no longer mapped in this area east of the property. A filtration plant and water storage tank are mapped off-site, near the northwesterly property boundary.

1981 Map

No change has occurred on the subject property relative to the 1967 mapping. Sierra College Boulevard is now mapped east of the property. Even fewer orchards and vineyards are mapped east of the property relative to the 1967 map.

In summary, each of the reviewed topographic maps reveals that the property is located in a historically undeveloped area northwest of the central business district of the City of Rocklin. The reviewed topographic maps indicate that the subject property has remained relatively unchanged through 1981. Additionally, the reviewed topographic maps reveal an overall pattern of residential development having occurred within the general vicinity of the property. No evidence was observed on the reviewed topographic maps to suggest that the subject property was disturbed by large-scale human activities typically mapped by the USGS, such as the following: quarrying; subsurface or surface mining or dredging; or, construction of historical buildings other than those described above. No data review or field reconnaissance evidence suggests that the property historically or currently contained any pits, ponds or lagoons. Based on the map review, the property does not appear to have historically received any USGS-mappable quantities of imported fill materials.

Aerial Photographic Review

We obtained historic aerial photographs of the subject property and general vicinity from Geonex Cartwright Aerial Surveys in Sacramento, California (Plate 4). Photographs covering the years 1962, 1970, 1986 and 1989 were reviewed; the results of the photographic review are discussed below by year.

1962 Air Photos
(Scale: 1"=1667')

The majority of the property is undeveloped fallow land. The westerly slope of the valley is densely covered with trees. The northerly and southerly portions of the east slope of the valley are moderately covered with trees. The ridge tops are sparsely to moderately wooded. With the exception of the densely wooded Clover Valley Creek, the majority of the valley floor is grassland. A portion of the western slope of the valley appears to have been terraced. This is a common agricultural practice in that the arable ground is more efficiently used. A remnant citrus orchard is visible on the northwesterly portion of the valley, west of the creek.

Directly east of the remnant orchard are the northerly dwellings mapped on the 1954 topographic maps. Two of the three mapped structures are visible in the photographs. Additionally, the existing house and milking barn are visible on the southeasterly portion of the property. A barn and livestock yard are visible southeast of the milking barn. The milking barn was not mapped on the USGS topographic maps. No settling ponds are visible near the dairy. Since the dairy was small-scale it would appear that a settling pond for the milking barn washout was not necessary. The unimproved dirt roads mapped by the USGS are clearly visible on the property. The Chinese rock wall and Antelope Canal are visible on and off the property. Additionally, rock walls and fences divide portions of the property. Fallow land is visible north, south and west of the property. Rural residential sites, orchards and vineyards are visible east of the subject property.

1970 Air Photos
(Scale: 1"=2000')

Minor change has occurred to the subject property relative to the 1962 photographs. The remnant orchard is not as prominent by this time. The filtration plant and water storage tank is visible on the west ridge, west of the property. The Taglio ranch is now visible off the property in the valley near the southwesterly property boundary. Sierra College Boulevard is constructed by this time.

1986 Air Photos
(Scale: 1"=1000')

Significant change has occurred to the subject property relative to the 1970 photographs. The barn and livestock yard are no longer visible. The dwellings that were located on the northerly portion of the property have also been razed by this time. Trails typical of grazing cattle are visible on the central portion of the valley. The remnant orchard is still visible on the west side of Clover Valley Creek. The larger water storage tank, located south of the filtration plant, is now visible west of the westerly property boundary. Residential development has increased east of the property.

1989 Air Photos
(Scale: 1"=2000')

Minor change is apparent on the subject property relative to the 1986 photographs. The vegetation that once existed under the electrical neighborhood distribution line that bisects the northerly portion of the property has been cleared from the easterly and westerly slopes of the valley. Residential development is now visible southwest of the property.

Hydrogeologic and Soil Conditions

Geology

The subject property is located on the eastern flanks of the Sierra Foothills, which lie adjacent to the Sacramento Valley. The 1987 California Division of Mines and Geology *Geologic Map of the Sacramento Quadrangle* shows the subject property to be underlain by the Mehrten Formation. The Mehrten Formation consists of andesitic mudflow breccia, gravel, sand, basalt and other volcanic rocks including tuff and rhyolite. The subject property also has outcrops of diorite (similar to granite) on the valley floor.

Soil Survey

Review of the July 1980 U.S. Department of Agriculture, Soil Conservation Service (SCS) *Soil Survey of Placer County, California Western Part* indicates the near-surface soils on the property are mapped as "Andregg course sandy loam, 2 to 9 percent slopes," "Caperton-Rock outcrop complex, 30 to 50 percent slopes," "Exchequer-Rock outcrop complex, 2 to 30 percent slopes," "Inks cobbly loam, 30 to 50 percent slopes,"."Inks-Exchequer complex, 2 to 25 percent slopes." and "Xerofluvents, frequently flooded." These undulating soils are on low terraces and long, broad volcanic ridges.

Andregg soil formed in residuum on low hills in the Loomis Basin. The surface layer typically consists of a 15-inch thick grayish brown coarse sandy loam underlain by a 14-inch thick pale brown and very pale brown coarse sandy loam. Highly weathered granodiorite is at a depth of 29 inches. The Caperton soils formed on granitic sideslopes of volcanic ridges. The surface layer typically consists of a twelve-inch thick grayish brown and brown gravelly coarse sandy loam underlain by a six-inch pale brown gravelly coarse sandy loam. Weathered granodiorite is at 18 inches. The Caperton-Rock outcrop complex contains rock outcrops of hard granitic rock that range in size from two to five feet up to one-half acre.

The Exchequer soils formed on long, broad volcanic ridges and their side slopes. The surface layer typically consists of an eleven-inch thick brown stony loam and cobbly loam underlain by hard andesitic breccia. The Exchequer-Rock outcrop complex contains rock outcrops of hard andesitic breccia that range in size from 50- to 500-square feet. Areas with these soils are reportedly used for annual rangeland; this agricultural land use is consistent with other site history information contained in this report.

The Inks soil is a shallow cobbly soil that formed in residuum from andesitic conglomerate. The surface layer typically consists of a 5-inch thick yellowish brown cobbly loam underlain by a 13-inch thick subsoil that is brown very cobbly clay loam. Andesitic conglomerate underlies the subsoil at a depth of 18 inches. Areas with the preceding soils are reportedly used for annual rangeland; this agricultural land use is consistent with other recent site history information contained in this report.

The Xerofluvents consist of narrow stringers of somewhat poorly drained recent alluvium (river deposits) adjacent to stream channels. Soil materials consist of variably colored, stratified gravelly sandy loams, gravelly loams, and gravelly clay loams that generally grade to sand and gravel with increasing depth to approximately 36 inches. These soils are mostly idle due to frequent flooding, although some areas are used for pasture.

Ground Water

The subject property is located within the Sacramento River Hydrologic Basin, as defined by the California Department of Water Resources (DWR). Information pertaining to ground water elevations and gradient data in the general property vicinity is limited. Personnel with DWR's *Surface and Ground Water Data Section* informed us that the state presently does not monitor ground water wells in the property vicinity. Additionally, ground water elevations and gradients in the area vary considerably, due to the highly fractured nature of the underlying rock. Ground water elevations in the subject property vicinity can typically range from 10 feet to greater than 100 feet below the ground surface, based on general information provided by DWR staff.

Review of the spring 1987 *Ground Water Elevations* map prepared by the Boyle Engineering Corporation for Western Placer County (the most current area-wide information available) reveals that regional ground water flow is predicted to be southwesterly.

Municipal Infrastructure

Water Supply

We conducted a telephone interview with the Placer County Water Agency (PCWA). PCWA representatives stated that the subject property is located within the PCWA treated-water district. PG&E-owned Lake Spalding is the sole water source. The water is routed through a canal system to the PCWA Water Treatment Plant in Newcastle, where the water undergoes filtration and chlorination before public consumption. The water supplied by the PCWA is sampled on a routine basis for organic chemicals, inorganic chemicals (including metals), clarity, and other parameters. The PCWA provided us with a copy of their most recent (2001) *Annual Water Quality Report,* which is included in the Appendix of this report.

Wastewater Disposal

We contacted Southern Placer Municipal Utility District (SPMUD) and confirmed that the subject property is within the district's service area. SPMUD personnel stated that when the property is developed the sanitary sewer line that exists on the property will be extended throughout the development and will then route wastewater from Rocklin to the City of Roseville Wastewater Treatment Plant in western Roseville.

Stormwater

No developed provisions for stormwater runoff currently exist on the subject property, although the majority of the surface runoff does discharge into the Clover Valley Creek. We anticipate that when the subject property is developed, constructed stormwater features will be tied to the municipal stormwater system. Existing residential subdivisions southwest of the subject property are serviced by in-place municipal stormwater infrastructure.

Agency Database Review

We have reviewed lists regarding hazardous materials contamination on or near the subject property that are prepared by the following agencies:

- United States Environmental Protection Agency (EPA)
- California Environmental Protection Agency (Cal-EPA)
- Cal-EPA Department of Toxic Substances Control (DTSC)
- Cal-EPA Office of Environmental Health Hazard Assessment (OEHHA)
- Cal-EPA Regional Water Quality Control Board (RWQCB)
- Cal-EPA Integrated Waste Management Board (CIWMB)
- California State Water Resources Control Board (SWRCB)
- California Department of Health Services (DHS)
- Cal-DHS Office of Drinking Water (ODW)
- California Division of Oil and Gas (DOG)
- Placer County Environmental Health Department (EHD).

Various search radii meeting or exceeding the ASTM site assessment standard were used during review of the regulatory agency lists shown on Plate 5. In summary, we identified no potential or confirmed, state or federal "Superfund" sites within one mile of the property during review of the former DHS's *Bond Expenditure Plan*, the EPA's *National Priorities List (NPL)*, the EPA's *Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS)*, and the Cal-EPA's *Active Annual Workplan Sites* list. Additionally, the subject and adjacent properties are not EPA *Resource Conservation and Recovery Act (RCRA) Generators*, nor does the property appear in the EPA *Emergency Response Notification System (ERNS)* database. No RCRA *Treatment, Storage and Disposal (TSD)* facilities exist on or within one mile of the property. No known contaminated municipal ground water wells, active or inactive landfills, or producing or abandoned DOG petroleum wells are listed on, adjacent to, or within one-half mile of the subject property.

Review of the RWQCB's *Tank Tracking System* database, the OEHHA's *Hazardous Waste and Substances Sites List*, as well as the Placer County EHD *Active/Inactive UST Facilities (Remediation Sites)*, reveal no known sites located on or within one-half mile of the subject property that have experienced subsurface hazardous materials contamination as a result of underground storage tank (UST) operation and/or leakage.

Additionally, the Placer County EHD lists reveal no county-registered UST facilities located on or within one-half mile of the subject property. The Placer County EHD lists also reveal no facilities registered for the use and/or storage of hazardous materials located on or within one-half mile of the subject property. The PCWA filtration plant does not appear on any of the reviewed lists.

Radon Potential

This discussion of the potential for radon exposure at the subject property and vicinity is based on review of available scientific literature on the topic. Radon isotope-22 is a colorless, odorless, tasteless radioactive gas that is a natural decay product of uranium. Uranium and radon are present in varying amounts in rocks and soil, and radon is present in background concentrations in the atmosphere. Current evidence indicates that increased lung cancer risk is directly related to radon-decay products.

Radon potential of rocks and soils and indoor radon exposure levels in the United States are currently areas of intense research by governmental regulators as well as the geoscience and medical communities. At this time, the EPA has recommended an "action" level for indoor radon concentrations at or exceeding 4 pico-curies per liter of air (pCi/l). The EPA has extrapolated a 1% to 3% lung cancer mortality rate due to a lifetime of exposure at 4 pCi/l; that is, 1 to 3 persons per 100 exposed to this concentration for life will die of lung cancer induced by radon.

The recently published *California Statewide Radon Survey Interim Results*, based on the EPA/State Department of Health Services State Radon Survey, predicts that only 3.7% of homes in Placer County would exceed the EPA's recommended level of 4 pCi/l. Additionally, California ranks as the third lowest for percentage of homes exceeding 4 pCi/l of the 33 states participating in the study.

Specific indoor radon information for the subject property can only be obtained subsequent to construction of site buildings where radon testing would be feasible. Based on the low percentage of homes predicted to exceed the EPA's recommended exposure level as described above, the potential for radon concentrations exceeding 4 pCi/l at the subject property is low.

CONCLUSIONS

Our field reconnaissance and review of agency records indicate no evidence of significant hazardous materials contamination on or adjacent to the subject property. We observed no obvious evidence of bulk storage of hazardous materials or industrial facilities during our windshield survey of the property surroundings. We identified no potential or confirmed Superfund sites within one mile of the property or leaky UST sites within one-half mile.

Our site history research dating back to the 1880s, which included reviews of historic Sanborn Maps, topographic maps, personal interviews and aerial photographs, reveals that the subject property in the early to mid-1800s was a summer campsite for the Maidu Indians until its development as part of the Placer County Citrus Colony settlement. A small portion of the subject property supported citrus orchards from the 1880s to approximately 1906 when a winter frost destroyed the citrus orchards. The property laid fallow until the 1920s when it became grazing land for an on-site dairy. In fact, the subject property is still used today as cattle grazing land.

Our field reconnaissance revealed that locations containing miscellaneous abandoned or discarded items are near the former homestead site, the dairy site and near the Indian corral. We simply recommend that the discarded and abandoned items, rubble and debris be removed from the property and properly disposed or recycled at an appropriate off-site facility during future earthwork clearing and grubbing operations.

A domestic well and possibly an irrigation water supply well are located on the subject property. If these wells will not be used in the future, each must be properly destroyed. Proper well abandonments require obtaining a destruction permit (issued on a per-well basis) from the Placer County Environmental Health Division. The well must then be abandoned by a properly licensed water well drilling contractor. Additionally, our research reveals that the property contains at least one on-site septic system. Based on our research, the on-site septic system is expected to have received domestic wastewater as opposed to commercial or industrial wastewater. The on-site septic system is unlikely to have caused hazardous materials soils contamination beneath the property, based on our research and the type of wastewater expected to have flowed into the system. The known septic system and other(s) potentially discovered during property redevelopment, should each be abandoned in accordance with the guide earthwork specifications typically contained in qualified geotechnical engineering reports.

The approximate 622-acre Clover Valley Lakes project area has consisted of fallow land, or has supported natural grass grazing land uses since the 1920s. These agricultural uses typically require little to no applications of environmentally persistent pesticides and we anticipate, therefore, that the potential for residual agricultural chemical concentrations in existing surficial soils of the project area is low.

Although portions of the Clover Valley Lakes project area supported citrus orchards in the distant past (prior to the 1910s), we do not believe that additional assessment is required for those locations with respect to potential persistent pesticide residuals. While the more modern, higher value citrus orchards have a somewhat increased potential for the past application of persistent pesticides, the vast length of time between the former orchards' cultivation in our opinion negates the concern for any significant levels of persistent pesticide residuals in existing surficial soils of the subject property. Natural biodegradation and microbial action in soil can, over large lengths of time, breakdown certain persistent pesticide residuals, particularly when sites are high in surface organic activity such as the subject property, which for decades has contained lush grasses used for livestock grazing. Furthermore, our interview with a knowledgeable representative of the California Department of Pesticide Regulation described how the earliest orchards in northern California were not typically subject to the kinds of pest attacks that could have triggered agricultural chemical applications. In most cases, our recommendation to sample and test surficial soils for persistent pesticide residuals is only made for sites that have seen rowcrop or orchard cultivation up to recent times.

We identified no known *regional* hazardous material impairments to ground water quality in the area of the subject property. Based on this finding, the outcome of our regulatory agency database review and the innocuous history of the property as described above, we do not believe that additional assessment of the subject property with respect to ground water quality is necessary.

In summary, we have performed a Phase 1 Environmental Site Assessment in conformance with the scope and limitations of ASTM Standard Practice E 1527-00 for the Clover Valley Lakes proposed residential subdivision, located in the vicinity of Clover Valley Road and Sierra College Boulevard in Placer County, California. We have made no exceptions to, or deletions from, the Standard Practice. This assessment has revealed no evidence of Recognized Environmental Conditions in connection with the subject property.

LIMITATIONS

The statements and conclusions in this report are based upon the scope of work described above and on observations made only on the date of our field reconnaissance, March 19, 2001. Our work was performed using a degree of skill consistent with that of competent environmental consulting firms performing similar work in the area, and we have attempted to obtain as much information regarding the property as possible, given what we consider to be a reasonable amount of research. Additional site assessment work or receipt of information regarding the property that was not disclosed or available to us during our assessment may result in revision of our conclusions.

The conclusions in this report should be reevaluated after if site conditions have changed. No recommendation is made as to the suitability of the property for any purpose. The results of our assessment do not preclude the possibility that materials currently or in the future defined as hazardous are present on the property, nor do the results of our work guarantee the potability of ground water beneath the property. This report is applicable only to the investigated property and should not be used for any other property. No warranty is expressed or implied.

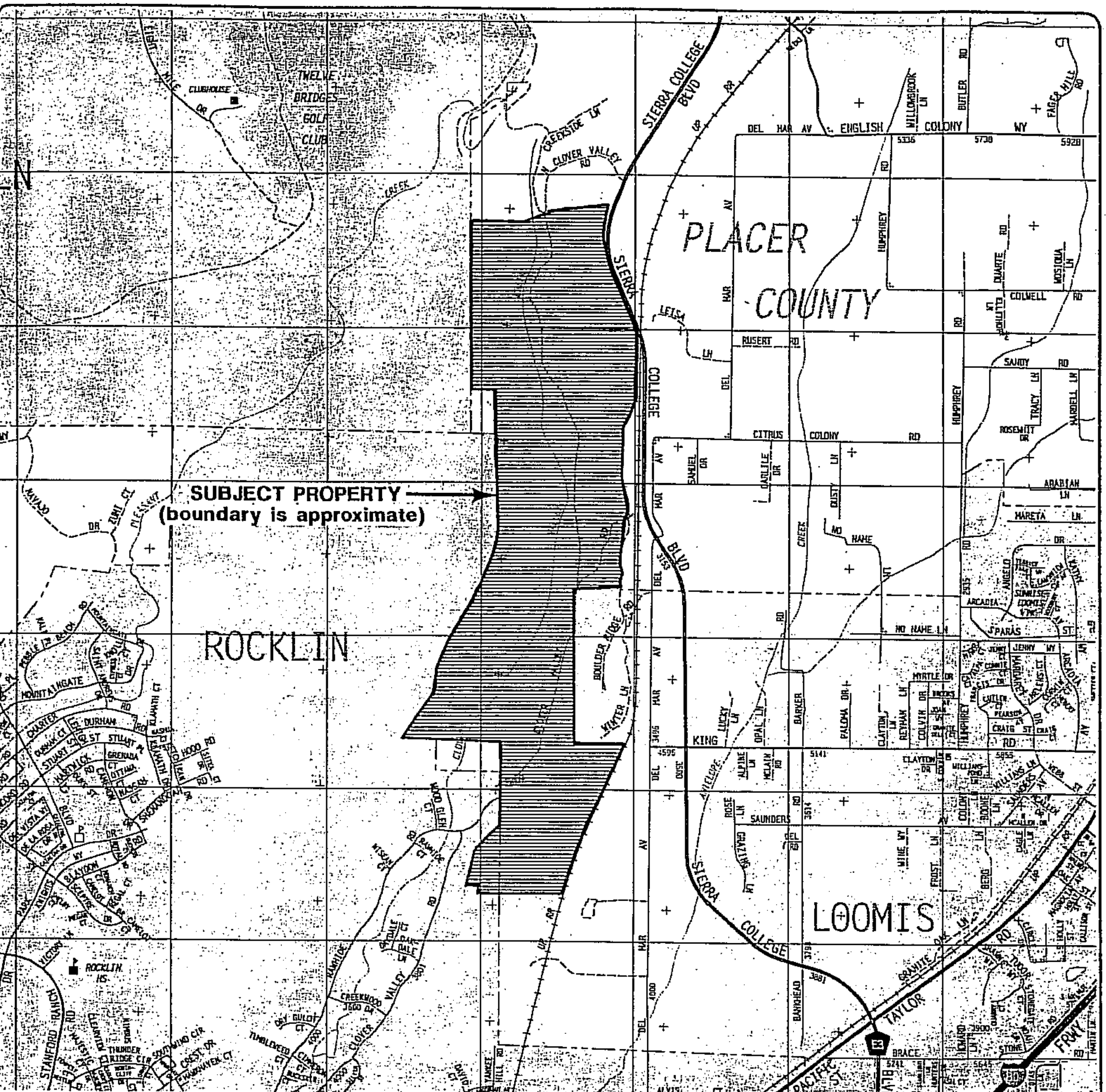
Wallace ▪ Kuhl & Associates, Inc.

REGISTERED ENVIRONMENTAL ASSESSOR
DAVID L. VON ASPERN
No. 05430
Exp. 6/01
STATE OF CALIFORNIA

Janine M. Brinkman
Site Assessment Geologist

David Von Aspern
Director, Site Assessment Group

JMB:DVA:lmb
J/3799-02.psa



Adapted from the Thomas Guide Sacramento County Street Guide and Directory, 1998 edition.

0 1200 2400
Scale in Feet

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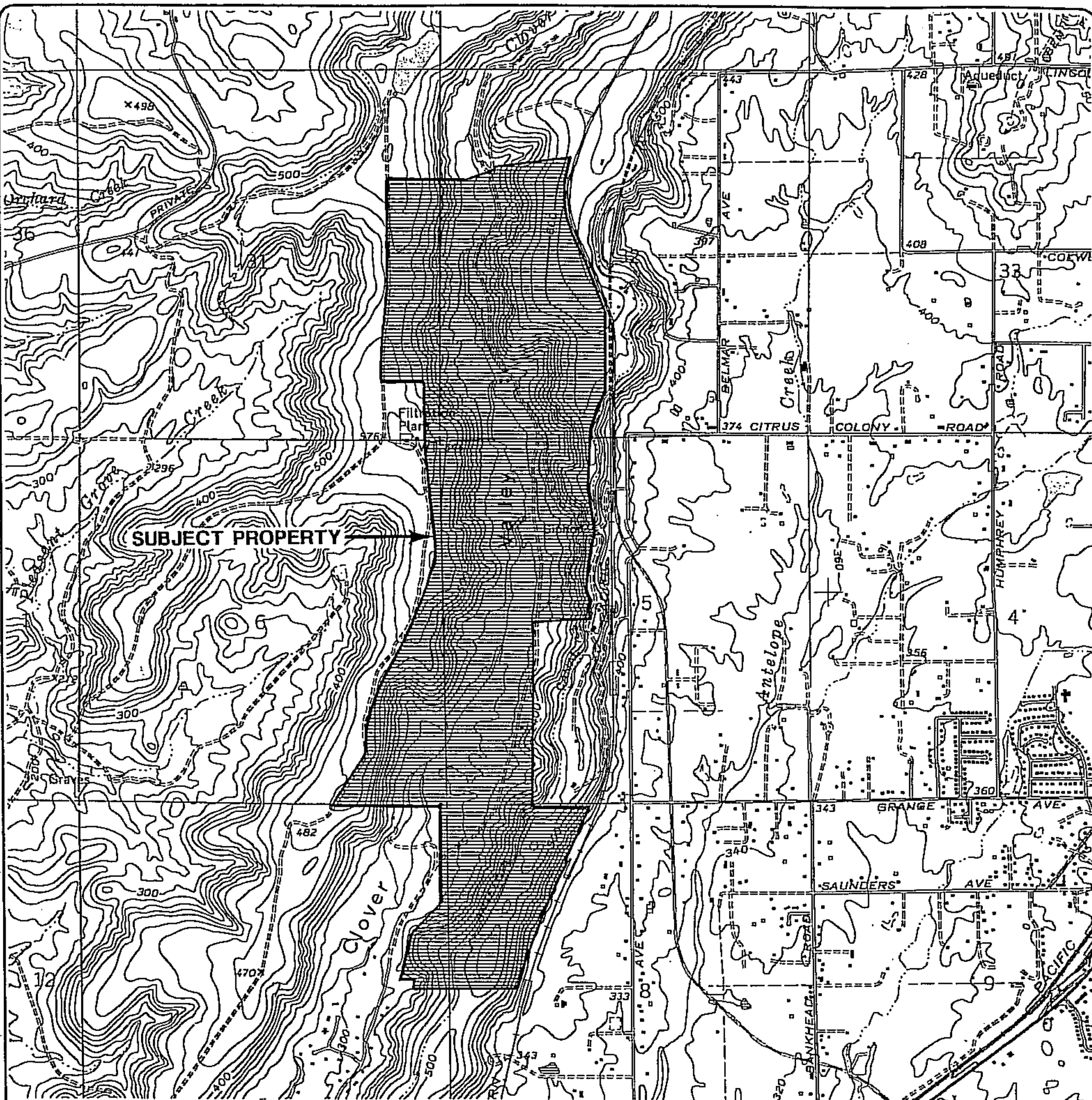
GEOTECHNICAL ENGINEERING
GEOLOGIC & ENVIRONMENTAL SERVICES

VICINITY MAP

CLOVER VALLEY LAKES

Placer County, California

WKA NO: 3799.02
DATE: 3/01
PLATE NO: 1



Adapted from the U.S. Geological Survey 7.5 minute topographic map of the Rocklin quadrangle, California, photorevised 1981.

0 1000 2000
Scale in Feet

WALLACE • KUHL & ASSOCIATES, INC.
GEOTECHNICAL ENGINEERING
GEOLOGIC & ENVIRONMENTAL SERVICES

TOPOGRAPHIC MAP

CLOVER VALLEY LAKES

Placer County, California

WKA NO: 3799.02
DATE: 3/01
PLATE NO: 2

PROPERTY OWNERSHIP HISTORY
(as of March 8, 2001)

Owner:	**Dates:**

APNs:

**030-010-011, 030-020-003, 030-030-059,
030-041-001, 030-050-013, 030-070-016 & -017,
032-010-010 & -021, 032-060-065, 032-070-065, -066 & -067**

Marvin Oates Trustee etal	? to present

AERIAL PHOTOGRAPHS
(From Geonex Cartwright Aerial Surveys, Inc.)

Date of Line	**Photo I.D.#**
July 28, 1962	Pla 1-138
	-139
	-140
October 11, 1970	2942-6-175
	-176
	-177
April 11, 1986	Line 29 86086-62
	-63
	-64
	-65
May 16, 1989	89189 1-12
	-13
	-14

NATIONAL PRIORITIES LIST (EPA)
(Run Date January 11, 2001)

None

CERCLIS LIST (EPA)
(Run Date January 25, 2001)

None

1989 BOND EXPENDITURE PLAN (DHS)
(Run Date January 10, 1990)

None

ACTIVE ANNUAL WORKPLAN SITES, FY 1999-2000 (DTSC)
(Run Date March 10, 2000)

None

CALIFORNIA EPA FACILITY INVENTORY DATA BASE
[TSD Facilities]
(Run Date March 2001)

None

CALSITES (DTSC)
(Run Date January 4, 2000)
(Updated March 2001)
[Formerly ASPIS]

None

HAZARDOUS WASTE AND SUBSTANCES SITES LIST (OEHHA)
(Run Date April 1998)
(Updated March 2001)
[Formerly CORTESE]

None

ASSEMBLY BILL 1803 CONTAMINATED WELLS (DHS-ODW)

Small Systems

(Run Date June 1990)

None

Large Systems

(Run Date April 1986)

None

WELL INVESTIGATION PROGRAM LIST OF POLLUTED WELLS (RWQCB)

(Run Date January 1992)

None

CALIFORNIA DIVISION OF OIL AND GAS (DOG)

(Map W6-1 Revised November 18, 2000)

None

CENTRAL VALLEY TANK TRACKING SYSTEM (RWQCB)

(Run Date January 1, 2001)

None

SPILLS, LEAKS, INVESTIGATIONS & CLEANUPS LIST (RWQCB)

(Run Date Fourth Quarter 2000)

None

TOXIC PITS CLEANUP ACT (RWQCB)

(Run Date July 1990)

None

LANDFILLS DATABASES (CIWMB)

Closed and Inactive Sites
(Run Date March 2001)

None

Active Landfills
(Run Date March 2001)

None

Proposed Landfills
(Run Date March 2001)

None

Transfer/Processing Stations and Material Recovery Facilities
(Run Date March 2001)

None

Transformation Facilities
(Run Date March 2001)

None

Composting Facilities
(Run Date March 2001)

None

RANKED SOLID WASTE DISPOSAL LIST (SWRCB)

Solid Waste Assessment Test (SWAT) Program
(Adopted June 22, 1989)

None

CALIFORNIA EPA FACILITY INVENTORY DATA BASE

[RCRA Generators]
(Updated March 2001)

None

PLACER COUNTY MASTER LIST OF FACILITIES (EHD)

Active/Inactive UST Facilities*

(Remediation Sites)

(Run Date January 24, 2001)

None

Active/Inactive UST & AST County Registered Facilities**

(Run Date January 24, 2001)

None

Active/Inactive Hazardous Materials Use County Registered Facilities

(Run Date January 24, 2001)

None

NOTES: Search radius for NPL, CERCLIS, Bond Expenditure, Active Annual Workplan sites and TSD Facilities is one mile from the subject property; for RCRA Generators the search included the subject and adjacent properties; and, for all other lists it is one-half mile from the property.

* Facilities listed include sites where unauthorized hazardous materials release(s) are known to have occurred.

** Facilities listed include sites where underground storage tanks are registered to be present or registered to have been removed.

Northerly view of the valley from the south-central portion of the property. The house and milking barn are visible in the right background of the photograph from left to right, respectively.

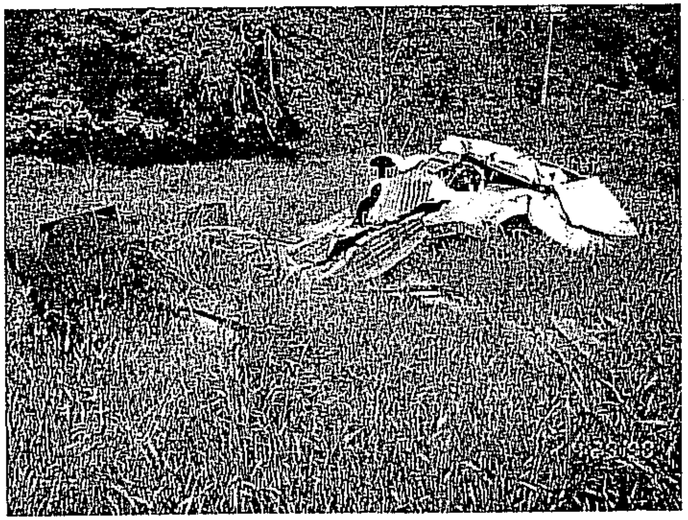
Westerly view of the PCWA water pipeline easement.

View of the vertical clay pipe and concrete foundation located near the northerly property boundary.

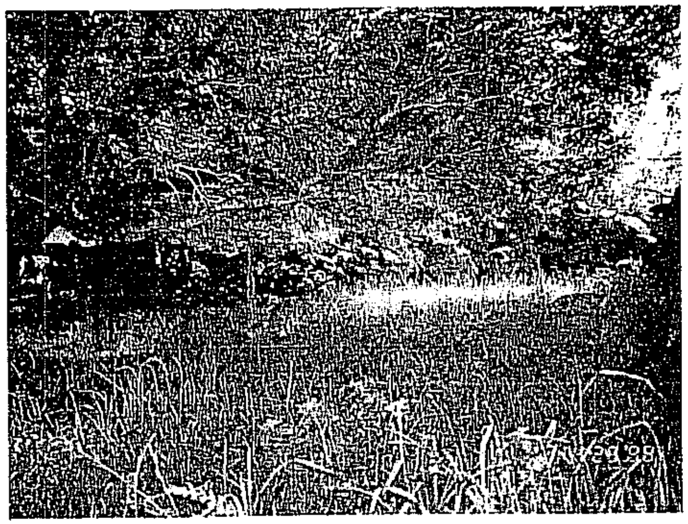
WALLACE · KUHL & ASSOCIATES, INC. GEOTECHNICAL ENGINEERING GEOLOGIC & ENVIRONMENTAL SERVICES		DRAWN BY: CHECKED BY: jmb	COLOR PHOTOGRAPHY CLOVER VALLEY LAKES Placer County, California	WKA NO: 3799.02 DATE: 3/01 PLATE NO: 6

Southeasterly view of Antelope Canal from near the southeasterly property boundary. A rural area northwest of Loomis is visible in the background.

Southerly view of the remnant Chinese rock wall located on the southeasterly portion of the property.



View of one of the metal debris piles located south of the milking barn.



View of the Indian Corral located on the southerly portion of the property.

View of the beer can and bottle debris area.

WALLACE · KUHL & ASSOCIATES, INC. GEOTECHNICAL ENGINEERING GEOLOGIC & ENVIRONMENTAL SERVICES	DRAWN BY: CHECKED BY: Jmes	COLOR PHOTOGRAPHY CLOVER VALLEY LAKES Placer County, California	WKA NO: 3799.02 DATE: 3/01 PLATE NO: 6 cont.

APPENDIX A

COPY OF MOST RECENT MUNICIPAL
WATER QUALITY REPORT DURING
TIMEFRAME OF THIS REPORT

Serving Placer County Residents Since 1957

IN THIS ISSUE
Annual Water Quality Report
FOOTHILL-SUNSET Water System
(Rocklin)

PCWA UPDATE

Placer County Water Agency

VOLUME 14 • NUMBER 2 • APRIL-MAY, 2000

Safe Water

PCWA Drinking Water Meets or Exceeds Public Health Standards

The Placer County Water Agency Board of Directors and professional staff are proud to report, as we have each year since 1991, that the treated drinking water supplied to you meets or exceeds state and federal standards for quality and safety.

California water retailers are required by law to inform customers about the quality of their drinking water.

Drinking water quality is regulated by the federal government through the Safe Drinking Water Act of 1974. Uniform standards for this regulation are established by the Environmental Protection Agency (USEPA). In California, these standards are enforced by the State Department of Health Services.

Ummm.....Good
Third-grader Erica Jarne, 8, samples some fresh and tasty PCWA water at Bowman School in Auburn.

New Report Format

Customers will notice that the format of this year's water quality report has changed again. This is because state and federal public health officials are calling for new and different ways of reporting to customers.

Our new Consumer Confidence Report has been prepared under guidelines from the USEPA and the California Department of Health Services.

Please turn to pages 2 and 3 for this year's Water Quality Report.

Additional Test Results

To better inform customers, PCWA has gone beyond the mandatory reporting requirements and also has included additional test results. These results are reported on page 4.

About Drinking Water

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the U.S. Environmental Protection Agency's Safe Drinking Water Hotline (1-800-426-4791).

Note to At-Risk Water Users

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Environmental Influences on Water

The sources of drinking water (both tap and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salt and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- Pesticides or herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff and septic systems.
- Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

Ensuring Safety

In order to ensure that tap water is safe to drink, USEPA and the state Department of Health Services prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. State regulations also establish limits for contaminants in bottled water that must provide the same protection for public health.

Understanding Your Water Quality Report: Definitions

MCLG: Maximum Contaminant Level Goal. The level of a contaminant in drinking water below which there is no known or expected risk to health. Set by the U.S. Environmental Protection Agency.

MCL: Maximum Contaminant Level. The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the PHG's (or MCLG's) as is economically and technologically feasible. Secondary MCL's are set to protect the odor, taste and appearance of drinking water.

PHG: Public Health Goal. The level of a contaminant in drinking water below which there is no known or expected risk to health. PHG's are set by the California Environmental Protection Agency.

PDWS: Primary Drinking Water Standard. MCL's for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

NTU: Nephelometric Turbidity Units. A measure of the clarity of water.

TT: Treatment Technique. A required process intended to reduce the level of a contaminant in drinking water.

pCi/l: picocuries per liter. A measure of radiation.

ppm: parts per million, or milligrams per liter (mg/l)

ppb: parts per billion, or micrograms per liter (ug/l)

umho/cm: Micromhoes per centimeter. Measurement of water's ability to conduct electrical current.

<: Less Than

APPENDIX N

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December 12, 2005

Ms. Cindy Gnos
Raney Planning and Management
1401 Halyard Drive, Suite 120
West Sacramento CA 95691

Project No.: 279-00-05-04

SUBJECT: Clover Valley EIR—Groundwater Impact Analysis

Dear Ms. Gnos:

West Yost & Associates (WYA) is pleased to present the findings of our evaluation of potential groundwater impacts from the "Clover Valley Large and Small Lot Tentative Maps" Development Project.

The objective of this evaluation is to identify the impacts on groundwater from the project's construction and completion. It was determined that a qualitative assessment using existing data sources was appropriate for this EIR. Accordingly, no new field investigations or quantitative analyses were conducted.

PROJECT DESCRIPTION

The project is located in Clover Valley, a narrow and relatively undeveloped valley in the low foothills close to the urbanized Loomis and Rocklin area in western Placer County. The project includes development of 558 single family homes on 199 acres within a total project area of 622 acres. The project includes the land uses shown in Table 1.

Table 1. Proposed Land Uses

Use	Number of Units	Acres
Single Family Residential Lots (including minor roads)	558	199
Open Space (including roadway landscape lots)	-	366
Core Roadways	-	46
Neighborhood Park	-	5
Neighborhood Commercial	-	5
Fire Station	-	1
Total	558	622

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EXISTING CONDITIONS

The project area is undeveloped, with land use consisting primarily of ranching and cattle grazing. A single-family home and former barn have been reported on the eastern side of the property, approximately halfway between the north and south boundaries. An east-west oriented Placer County Water Agency (PCWA) water line traverses the northern part of the project site [1]. The PCWA Antelope Canal runs along the east ridge, and the Caperton Canal runs along the north portion of the west ridge. PCWA water is conveyed in Clover Valley Creek to the Sunset Whitney Golf Course.

A portion of the southern part of the project area is currently in use for cattle grazing, and a modern residence associated with the ranching operation is presently occupied. It is likely that domestic wells are or were associates with both residences.

Historic water use within the valley is largely unknown. It does not appear likely that irrigated agriculture has been a significant activity in the valley.

No water quality or well information for Clover Valley was obtained. As a result, depth to groundwater could not be accurately assessed, existing groundwater quality could not be evaluated, and lithological data were not available for depths greater than approximately 15 feet below ground surface.

HYDROGEOLOGIC SETTING

Geology

Clover Valley is located in a north-south trending valley in the low foothills of the Sierra Nevada Mountains near Rocklin and Loomis. The valley floor is enclosed on the east and west by ridges which rise 150 to 200 feet above the valley floor. Ridge slopes typically exceed 30 percent. Clover Valley Creek flows from north to south through the valley [3].

Four identifiable geologic units are found in Clover Valley. From oldest to youngest these include: granitic bedrock; Mehrten Formation cobble conglomerate; Mehrten Formation mudflow breccia and recent alluvial sediments. The mudflow breccia is associated with Pliocene volcanic activity in the Sierra Nevada 5 to 10 million years ago. The material flowed westward through existing river valleys and was then reworked by streams and rivers, forming the cemented cobble conglomerates. The most recent mudflows covered the conglomerate and formed the hard cap found on the existing ridges on either side of the valley. The creek preferentially eroded the earlier, uncapped material and cut down into the granitic bedrock, forming present day Clover Valley. More recently, alluvial sediments consisting primarily of sand, silt and clay have been deposited near the creek to estimated depths of at least 10 feet at the test pit locations [1, 2].

Test Pit Results

Test pits were excavated to evaluate the geotechnical properties of the soils in the project area [1]. The test pits were dug along the alignments of proposed new roads, including three that would cross Clover Valley Creek. All of the test pits were excavated during the rainy season, when

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seepage through the soil could be expected to be most prevalent. Test pits 1 through 30 were logged in November 2000, and test pits 31 through 49 were logged in February 2001.

A number of the test pit logs contain references to "seepage", along with a depth. In a number of test pits, the soil was logged as wet, but no seepage was reported, and groundwater was not considered to be encountered at those locations. In one instance the presence of free water was reported as "perched", and in two others as "water".

Groundwater was observed in 11 of the 25 test pits logged where alluvial soils were mapped at the surface. Groundwater was observed in two of the remaining 24 test pits, located in areas where bedrock or the Mehrten Formation were mapped at the surface. Where encountered, groundwater was observed at depths between 4 and 11 feet below ground surface. The depth at which water is first observed in a test pit or boring is generally not representative of the water table elevation when water levels have been allowed to stabilize. For that reason, and since groundwater was encountered inconsistently from test pit to test pit, it is difficult to draw general conclusions about the behavior of shallow groundwater.

CURRENT GROUNDWATER CONDITIONS

Occurrence

Groundwater in Clover Valley is expected to occur primarily in the weathered and fractured bedrock, and in the alluvial soils along the creek. The permeability of the bedrock is expected to vary widely depending on the degree of fracturing and weathering. Weathering is likely confined to the near-surface portion of the bedrock, while the degree of fracturing at depth is unknown. Based on test pit information, there appears to be a continuum between coarse granitic sands near the surface that represent highly weathered bedrock, to more competent, less weathered material at greater depths.

The combination of fractured bedrock and the limited amount of alluvial material overlying it means that the amount of groundwater storage in the proposed project area is expected to be relatively small.

The available data is insufficient to determine whether groundwater discharges to the creek or the creek recharges groundwater. It is possible that both situations may occur, depending on the hydrologic regime. It is also possible that a perched groundwater zone may exist or develop in the alluvium as a result of low permeability in the underlying granitic rocks.

Flow

Overall groundwater flow is generally expected to follow the topography, that is, from the ridges to the valley, and along the valley to lower elevations. Groundwater recharge through infiltration of surface water into the bedrock along the ridges and upper slopes of the valley is likely limited due to the relatively impermeable nature of the geologic materials in those areas.

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Winter

During periods of rain, substantial surface runoff is likely along the slopes. A small portion of the runoff may be expected to infiltrate the bedrock along the lower slopes, with the remainder traveling overland to the creek or entering the alluvial soils along the valley floor.

Because of the relatively low amount of groundwater storage available in the valley, the aquifer materials are expected to be fully recharged early in the rainy season, after which further recharge will be rejected and leave the valley as surface water flow.

Summer

Under present, undeveloped conditions, some water may percolate into the ground from the PCWA canals on the east and west ridges of Clover Valley or from PCWA water conveyed in Clover Valley Creek. If groundwater elevations in the alluvium and the adjacent granitic ridges are high enough, groundwater discharge to the creek may provide a base flow during the dry season.

GROUNDWATER CONDITIONS WITH THE PROPOSED PROJECT

Conditions after Project Completion

Winter

The proposed project area consists of approximately 622 acres, of which 130 acres, or approximately 21 percent, will be covered with impermeable surfaces if the project is constructed. During the winter months, these impermeable surfaces will reduce the amount of precipitation which infiltrates into the subsurface and will increase surface water runoff.

Summer

During the summer months, substantial amounts of water will be applied to the ground surface for landscape irrigation. Little of this water is expected to reach the creek as surface water. Some will be lost through evapotranspiration, while the remainder will be retained in the subsurface and potentially travel to groundwater. The quality of the infiltrating water will depend on the quality of the irrigation water and soluble substances at the ground surface.

Conditions during Construction

During project construction, the land surface is expected to be disturbed across a portion of the project area. The disturbance may increase the potential for surface water infiltration during wet months. Excavations and earth moving may also create areas of temporary ponding from which water could percolate into the groundwater.

During dry months, water will be applied to construction areas to control dust, however little of that water is expected to enter the subsurface, and none is expected to reach groundwater.

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POTENTIAL PATHWAYS OF GROUNDWATER CONTAMINATION

There are four potential pathways for groundwater contamination during construction and completion of the proposed project:

1. A portion of the rain falling in the valley will not run off but will infiltrate directly to the subsurface through permeable areas. Many contaminants are captured by the soil; nevertheless, this localized direct infiltration has the potential to carry surface contaminants into the subsurface and ultimately to groundwater. Infiltration is expected to be a concern in areas of permeable soils and low slopes, which will occur primarily within the valley floor.
2. Surface runoff will move down-slope to the alluvial floodplain and the creek. From there, a portion may infiltrate to groundwater in the alluvium or in the bedrock beneath it.
3. Water in the creek may move through the creek bed and into groundwater via the alluvial sediments underlying the creek. This pathway has the potential for contaminants originating upstream from the proposed project to be transported into groundwater. PCWA uses the creek to transmit water originating outside Clover Valley, which may infiltrate to groundwater. Infiltration through the creek bed is more of a concern in areas where creek flow is detained and allowed to pond for extended time periods. The only areas where ponding is expected to occur are the points where the creek passes under Valley Clover Way and Nature Trail Way. In both cases, the amount of detention is controlled by flow under the bridges. Results from a modeling study using the HEC-1 model show that for the 100-year storm water will be detained for about 24 hours [4]. Surface water detention is therefore not viewed as a significant contributor to infiltration.
4. While not confirmed, there is a possibility that there are one or more existing groundwater wells in the valley. Such wells may present a preferential path into the subsurface groundwater if they were improperly sealed at construction, inadequately capped, or inappropriately abandoned.

POTENTIAL SOURCES OF CONTAMINATION

The bulk of the proposed project would consist of residential development, with approximately five acres designated for commercial uses. Nearly all surface water associated with the proposed project has the potential to infiltrate to groundwater, either during overland flow or while resident in the creek. For that reason, all of the potential sources of surface water contamination, as detailed in the surface water quality evaluation, are relevant to groundwater.

Potential sources of groundwater contamination during construction of the project and following completion include:

- Leaking sewers and storm drains. Any discharge from sewer and storm drain lines may go directly to groundwater if the surrounding soil is below the watertable, or may flow downward to the watertable.

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- Leaking underground storage tanks. Underground storage of potential contaminants presents the possibility of releases to groundwater.
- Lawn and garden pesticides, herbicides and fertilizer. Pesticides and herbicides are toxic, while fertilizers are a source of nutrients. Normal use of these chemicals involves broad application of limited amounts. The potential also exists for a point spill of a substantial amount.
- Traffic and parking area runoff, which could include oil, metals, and coolant. These materials would typically enter the storm drain system. The potential for direct infiltration
is small.
- Spills or leaks on land, particularly during construction, which could include diesel fuel, hydraulic oil, and lubricating oil. A spill of these materials could soak into the ground surface. With successive precipitation events, the material would be carried to groundwater.

POTENTIAL IMPACTS AND MITIGATION MEASURES

This section describes potential impacts to groundwater and mitigation measures which will reduce them to a less than significant level.

Standard of Significance

A groundwater impact would be considered significant if implementation of the proposed project would:

- substantially degrade groundwater quality within Clover Valley relative to pre-construction conditions;
- result in degradation of groundwater quality at any location outside the project boundary;
- reduce the availability of groundwater to users outside the project boundaries or reduce groundwater storage.

Project Specific Impacts and Mitigation Measures

Impact: Infiltration of polluted surface water may contaminate the underlying groundwater.

Stormwater runoff in the project area will include pollutants. This water may infiltrate to the groundwater and thereby pollute the groundwater.

This impact is potentially significant.

Mitigation Measures: Implementation of the following mitigation measures will reduce this impact to a less than significant level.

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1. Implement the stormwater quality mitigation measures to reduce pollutants in the storm water runoff, which will also reduce the pollutants that could infiltrate into the groundwater.
2. Develop a public education program to provide residents with information on the proper use of pesticides and fertilizers.

Impact: Polluted water (from stormwater runoff, chemical spills, etc.) could enter wells that were improperly sealed at construction, inadequately capped, or inappropriately abandoned, and thereby enter the groundwater.

This impact is potentially significant.

Mitigation Measures: Implementation of the following mitigation measures will reduce this impact to a less than significant level.

1. Locate and destroy abandoned wells according to State of California Well Standards (Bulletins 74-81 and 74-90) at the beginning of project construction. Destroy abandoned wells discovered during project construction according to State of California Well Standards. Information for existing or abandoned wells may be obtained from the California Department of Water Resources, Central District. Contact: Anne Roth, (916) 227-7632.

Impact: Leakage from sanitary sewers could allow wastewater to leave the sewer pipe and enter the groundwater.

This impact is potentially significant.

Mitigation Measures: Implementation of the following mitigation measures will reduce this impact to a less than significant level.

1. Sewers and storm drains should be designed constructed according to the City of Rocklin's Engineering Standards and sound engineering practices.
2. During project construction, a qualified construction inspector should be on-site to ensure that sewers and storm drains are constructed according to the design.

Impact: Leaking underground or above ground storage tanks could allow gasoline or other chemicals to enter the groundwater.

This impact is potentially significant.

Mitigation Measures: Implementation of the following mitigation measures will reduce this impact to a less than significant level.

1. Underground storage tanks included in the development should be designed and constructed using the best current practices and materials to eliminate potential for undiluted leakage.

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REFERENCES AND DOCUMENTS

This evaluation is based on the following references/documents:

1. Geotechnical Engineering Report, Clover Valley Lakes Roads (Wallace·Kuhl & Associates, Inc., May 9 2001). The investigation included 49 test pits and two shallow soil borings. The report included descriptions of the soils and geologic units, and where encountered, observations of groundwater.
2. Geologic Map of the Sacramento Quadrangle, published by the California Geological Survey. The map delineates the geologic materials and formations that appear at the land surface.
3. Rocklin quadrangle map (7.5 minute), United States Geological Survey (USGS). This map provided topographic information and limited mapping of previous improvements.
4. HEC 1 model results in support of the Conditional Letter of Map Revision for Clover Valley Creek, City of Rocklin, CA January 24, 2001, Volumes 1 and 2, prepared by the Spink Corporation.

Please call if you have any questions or comments.

Sincerely,

WEST YOST & ASSOCIATES

Douglas T. Moore
Principal Engineer

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APPENDIX O

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December 12, 2005

Ms. Cindy Gnos
Raney Planning and Management
1401 Halyard Drive, Suite 120
West Sacramento CA 95691

Project No.: 279-00-05-04

SUBJECT: Clover Valley EIR - Hydrology Evaluation

Dear Ms. Gnos:

West Yost & Associates (WYA) is pleased to present the findings of our evaluation of potential hydrologic impacts from the "Clover Valley Large and Small Lot Tentative Maps" (LSLTM) Development Project. The objective of this evaluation was to identify the impacts on hydrology from the project and its construction.

Presented below are descriptions of existing conditions (as related to the site hydrology), the proposed project description, and how the hydrology within the project area would change. Also presented is the regulatory context for the proposed project, and lastly, the impacts and recommended mitigation measures are identified.

EXISTING CONDITIONS (ENVIRONMENTAL SETTING)

Clover Valley is a narrow and relatively undeveloped valley in the low Sierra Nevada foothills close to the urbanized Loomis and Rocklin areas. Ridges of up to 640 feet in elevation, forested hillsides, and grasslands bracket the Clover Valley Creek corridor, which traverses the site north to south. Clover Valley Creek is a relatively undisturbed natural creek.

The Clover Valley watershed (mostly upstream of Midas Avenue) includes about 2,100 acres, of which about 200 acres are developed with residential land uses along Clover Valley Road and Rawhide Road (downstream of the proposed development). The remainder of the watershed is natural or rural. Overall, this watershed is only about 10 percent developed, and watershed wide, the overall impervious coverage is probably about 4 or 5 percent.

The 622 acre proposed project site is located just upstream of Clover Valley Road and Rawhide Road. This site is essentially a natural area; however, there may have been a single family house and barn within the project area at one time.

Rainfall on the site either infiltrates into the ground or runs down the valley sides to Clover Valley Creek. Rainfall that infiltrates into the ground likely flows through the soil and bedrock to the valley floor and enters the valley water table or Clover Valley Creek. Rainfall that runs down the valley sides likely flows as sheet flow over the ground surface and then is concentrated into

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small swales or rivulets before reaching Clover Valley Creek. However, this runoff remains relatively unconcentrated and is spread relatively evenly over the valley sides.

Regional drainage, including the City of Rocklin (City), is dominated by a variety of watersheds flowing westward from the Sierra Nevada foothills east of the City. The urban drainage system consists of gutters, drain inlets, underground pipes, and open channels, which in turn discharge into a several creeks, including Clover Valley Creek, Antelope Creek, Secret Ravine, Miners Ravine, Strap Ravine, and Cirby Creek. These creeks discharge into Dry Creek, which ultimately discharges into the Sacramento River.

PROJECT DESCRIPTION

This project includes development of 558 single family homes on 199 acres within a total project area of 622 acres. The project includes the land uses shown in Table 1.

Table 1. Proposed Land Uses

Use	Number of Units	Acres
Single Family Residential Lots (including minor roads)	558	199
Open Space (including roadway landscape lots)	-	366
Core Roadways	-	46
Neighborhood Park	-	5
Neighborhood Commercial	-	5
Fire Station	-	1
Total	558	622

Development of these land uses would likely result in the creation of about 130 acres of impervious coverage (roads, parking lots, rooftops, etc) within the project area for an impervious coverage of about 21 percent. The project also includes construction of 17 storm drain systems that will collect the runoff from the developed areas within the project site and convey it to Clover Valley Creek. Water quality treatment structures are proposed at the end of each storm drain system. Some of the runoff from the undeveloped hillsides would be collected and conveyed to the Creek through a system of ditches and culverts. These ditches would also collect and convey flow from five of the storm drain systems that discharge near the top of the hillsides. Also included in the project are two detention basins located at the Valley Clover Way and Nature Trail Way bridge crossings of Clover Valley Creek.

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EFFECTS OF THE PROPOSED PROJECT

The development of the proposed project would result in a decrease in the amount of runoff that infiltrates into the ground and effects of the proposed project would increase the quantity and rate of stormwater runoff due to the construction of the impervious surfaces. The proposed detention basins would reduce the peak flows in Clover Valley Creek nearly back to the same rates as under existing conditions by detaining water upstream of the roadways for time periods of about 24 hours.

The proposed project would also result in urban pollutants being introduced into the stormwater. Some of these pollutants would infiltrate into the groundwater with the rainfall that infiltrates. Some of the pollutants would be conveyed in the stormwater runoff to the storm drain systems, and of these pollutants, some would be removed by the water quality treatment structures. Nevertheless, some pollutants would enter Clover Valley Creek.

The proposed project would also result in water being applied to the project area from yard and landscape irrigation that does not occur under existing conditions. Some of this water would infiltrate into the ground and some of it would runoff into the storm drain system. This applied water would likely contain urban pollutants like herbicides, pesticides, and fertilizers, and others pollutants.

REGULATORY CONTEXT

Existing policies, laws and regulations that are related to hydrology and would apply to the proposed project are summarized below.

Federal Emergency Management Agency (FEMA)

FEMA operates the National Flood Insurance Program, which issues maps of Special Flood Hazard Areas (SFHA) based on water surface elevations of the 1% (100-year) flood event. For any project that would result in a change to the designated 100-year floodplain, a Conditional Letter of Map Revision (CLOMR) is required to be issued by FEMA prior to the initiation of any construction activities. FEMA will issue CLOMRs to modify the elevations and/or boundaries of the SFHAs (based on the 100-year flood event). FEMA requires assurance by the participating community that minimum floodplain management requirements are complied with, including minimum floor elevations above the "base flood," existing lands and structures or proposed structures are "reasonably safe from flooding," and that all supporting analysis and documentation used to make that determination is on file and available upon request. The supporting hydraulic analysis and documentation includes new topographic data and is required to be certified by a registered professional engineer or licensed land surveyor.

The designated floodplain along Clover Valley Creek has been established by FEMA in its most recent Flood Insurance Rate Map (FIRM). The FEMA FIRM for Cover Valley Creek was published on June 8, 1998. The FEMA FIRM identified floodplain areas along Clover Valley Creek. The 100-year floodplain is used to identify unacceptable safety hazards and indicates the geographic areas having a one-percent chance of being flooded in any given year.

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Subsequent to the preparation of the 1998 FIRMs, the City annexed the Clover Valley Lakes area and approved the Clover Valley development plan. The approved Clover Valley Lakes development plan included five creek crossings, the creation of which resulted in the initiation of a CLOMR request (January 2001) for the Clover Valley Area. The request for a CLOMR was based on new topographic data and the proposed design of the creek crossings (approved CLOMR maps are on file at the City). The CLOMR for this project was issued by FEMA on August 6, 2001, and accepted the proposed changes to the 100-year floodplain [4, 11].

Placer County Flood Control and Water Conservation District (PCFCWCD)

The design of the drainage system for the Clover Valley Lakes area is based on the Placer County Flood Control Stormwater Management Manual developed by the PCFCWCD. The PCFCWCD standards provide guidance for the development of flood control measures throughout the county, particularly for stormwater drainage issues regarding new development.

General Plan Policies

Existing policies, laws, and regulations established in the 1991 City of Rocklin General Plan, also guide the project design and development as applicable:

Open Space, Conservation, and Recreation:

Policy #6 To cooperate in a coordinated regional approach to the management of drainage basins and flood plains with regional agencies such as the PCFCWCD.

Community Safety:

Policy #2 To cooperate with and support the formation of a coordinated city-wide and/or regional approach for the construction, operation, and maintenance of drainage and flood control facilities.

Policy #3 To require master drainage plans as a condition of approval for large development projects.

Policy #4 To require new residential construction to have its lowest habitable floor elevated at least two feet (2') above the base flood level elevation (i.e., the 100-year floodplain elevation).

Policy #5 To ensure that 100-year floodplain elevations, based upon the most current information, both up and downstream are not adversely affected by new development.

Policy #6 To require new developments to detain on-site drainage such that the rate of runoff flow is maintained at pre-development levels and to coordinate with other projects' master plans to ensure no adverse cumulative effects. In lieu of detention, the City may require off-site drainage improvements that are more beneficial to the community's overall drainage system.

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IMPACTS AND MITIGATION MEASURES

The hydrologic impacts from the proposed project are analyzed and assessed in this section.

Standards of Significance

For the purpose of this EIR, hydrologic impacts are considered significant if the proposed project would:

- 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.
- Substantially alter the existing drainage pattern in a manner that would increase the rate or amount of surface runoff resulting in flooding on- or off-site.
- Create or contribute runoff that would exceed the capacity of existing or planned storm water drainage systems.
- Expose people or structures to increased risk of flooding by placing structures within a 100-year floodplain, which is either mapped by FEMA FIRM maps or other hazard delineation map.
- Expose people or structures to risk of flooding by locating structures where they could impede or redirect flood flows.

Method of Analysis

The hydrology impact analysis for the proposed Clover Valley LSLTM is based primarily on the 2005 Clover Valley Preliminary Drainage Study [3], the 2001 Clover Valley Lakes Drainage Study Revisions [5], and the CLOMR [4]. These studies included hydrologic and hydraulic modeling that evaluated the proposed drainage facilities and provided the necessary data to ascertain the project's potential impacts.

Additionally, the 1995 Clover Valley Annexation EIR [6] and the Clover Valley Lakes Large Lot Tentative Subdivision Map Draft EIR (August 2002) were also utilized.

Project Impacts and Mitigation Measures

Impact: The Proposed Project would Cause Changes in Peak Flows and Drainage Patterns

The development of the Proposed Project would result in increases in peak stormwater runoff volumes and rates due to the introduction of impervious surfaces like roads, sidewalks, parking areas, rooftops, etc. Stormwater runoff from the developed areas of the project site and portions of the open space, totaling about 259 acres, will be collected and conveyed to Clover Valley Creek via 17 storm drain systems. This drainage system of drain inlets, pipes, and manholes, collect and convey runoff to several points of discharge along Clover Valley Creek or near the adjacent hilltops. Storm runoff from the undeveloped hillsides will be conveyed to Clover Valley Creek through a separate system of ditches and culverts.

The proposed storm drain systems were analyzed by Stantec Consulting, Inc. [3]. The project storm drain systems were analyzed using the Rational Method with rainfall data from the Placer County Flood Control and Water Conservation District Stormwater Management Manual [9]. The storm drain system consists of relatively small diameter pipes, ranging in size from 12 to 24 inches, with a few reaches of 30- and 36-inch diameter pipes. Based on PCFCWCD design criteria, these drainage systems appear adequate to convey storm runoff from the proposed project to Clover Valley Creek. Final review and approval of the proposed storm drain system would be conducted by the City.

The proposed project includes roads that cross Clover Valley Creek at four locations. The two southern (downstream) creek crossings would be used to create detention storage to mitigate for the increased runoff that would result from development of this project. The two northern (upstream) crossings would be designed to convey the 100-year storm flows with little restriction of flow.

The detention basins located at the two downstream creek crossings would be created by the proposed road embankment and the existing creek topography. The culverts under the roadway would be designed to allow flow in the creek to backup behind the proposed roadway, holding back a portion of the flow in Clover Valley Creek. The result would be an increase in the water surface elevation upstream of the creek crossing, but the flow downstream of the creek crossing would be reduced. During smaller, routine storm events the flow in Clover Valley Creek would pass through the culverts with only minor reduction in peak flow and minor detention storage. Table 2 provides a summary of the proposed detention basins.

Table 2. Proposed Detention Basin Summary from Reference [5]

	Low-Flow Outlet		Overflow Structure		Detention Storage During 100-Year Event	
Detention Basin/Location	Culvert	U/S Flowline Elevation, feet	Type & Size	U/S Flowline Elevation, feet	Storage, acre-feet	Peak Stage, feet
Pond 1/Upstream of Valley Clover Way (most upstream basin)	one – 54"	343.5	three – 7' X 4' Box Culverts	353.5	13.4	357.4
Pond 2/Upstream of Nature Trail Way (downstream basin)	one – 72"	321.5	five – 10' X 4' Box Culverts	328.5	34.3	331.1

There are two general types of detention basins. "On-line" detention basins consist of a restriction in the conveyance capacity of the creek that backs up the flow during large storm events. Small, routine storm event flows are not restricted. The proposed detention basins for this project are on-line basins. For this project, the restrictions would be provided by the Valley Clover Way and Nature Trail Way bridge crossings of Clover Valley Creek. Low flows would pass the bridges by

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using an open span over the primary channel of Clover Valley Creek. High flows would be restricted by partially blocking the floodplain with the bridge structure. This type of basin generally requires a relatively large storage volume, because the entire flow from a given drainage system must be routed through the on-line detention basin.

The other type of detention basin is "off-line", which stores only the high flow (greater than a set design flow rate) of the given storm event by diverting a portion of the high flows into the detention basin. This type of detention basin allows low flows to bypass the basin. High flows are diverted from the creek and into the detention basin. Thus, the volume of water that must be stored is generally less than in comparison to on-line basins.

Off-line basins were considered during the early planning stages of this project [1], but are not included in the proposed project. Off-line basins are inappropriate for this location for the following reasons:

- Because Clover Valley is relatively narrow, an off-line basin would have to be constructed by building levees on a segment of the creek's floodplain. Construction of the levees would damage the floodplain and associated riparian habitat. The extensive grading that would be required for construction of off-line basins could increase the sediment loadings in Clover Valley Creek during construction.
- The road crossings would still have to be constructed, so use of off-line basins would not eliminate any impacts from the construction of the road crossings.
- Off-line basins would not provide peak flow reduction over a wide range of flows (e.g. 10-year to 100-year storms) as would be achieved with the proposed on-line basins.

The two proposed on-line detention basins upstream of Valley Clover Way and Nature Trail Way would reduce post-development flows to pre-development levels. Hydrologic and hydraulic computer models were developed by the project proponent to determine the size and location of the proposed culverts that would provide the necessary detention to mitigate the increased flow that would result from development of the proposed project. The results of the hydrologic models are summarized in Table 3, which shows the proposed detention basins would reduce the flows in Clover Valley Creek to below the flows under existing conditions, except for one location during the 100-year storm event and another downstream location during the 2-year event. Although these increases are less than one percent of the total flow, to fully mitigate the increased runoff resulting from development of the proposed project, the proposed release rates should be decreased, which would result in higher upstream water surface elevations and increased detention storage.

Table 3. Summary of Existing and Post-Development Flows in Clover Valley Creek [a]

Location	2-Year Storm		10-Year Storm		100-Year Storm	
	Existing, cfs	Proposed, cfs [b]	Existing, cfs	Proposed, cfs [b]	Existing, cfs	Proposed, cfs [b]
Valley Clover Way (Basin 1)	129	102	382	338	687	659
Nature Trail Way (Basin 2)	134	104	398	309	725	727
Confluence of Clover Valley Creek and Antelope Creek	562	521	1,653	1,537	3,047	2,992
Antelope Creek at the Confluence with Dry Creek [c]	611	579	1,736	1,629	3,274	3,211
Dry Creek at the Confluence with Antelope Creek [d]	1,654	1,619	4,982	4,875	10,612	10,512
Dry Creek at the Confluence with Cirby Creek [e]	2,195	2,168	6,341	6,245	13,728	13,618
Dry Creek at Vernon Street	2,203	2,177	6,340	6,249	13,679	13,573
Dry Creek at the Natomas East Main Drainage Canal	1,490	1,504	4,020	4,021	11,077	11,042

(a) Results are based on the hydrologic modeling developed for the *Dry Creek Watershed Flood Control Plan* [10], with modifications for the proposed project.
(b) Proposed flows include proposed detention storage.
(c) Antelope Creek Watershed (including Clover Valley Creek), just upstream of confluence with Dry Creek.
(d) Dry Creek just downstream of the confluence with Antelope Creek, includes Antelope Creek, Secret Ravine, and Miners Ravine Watersheds.
(e) Dry Creek, includes the Strap Ravine, Linda Creek, and Cirby Creek Watersheds.

The results of the hydraulic model identified the additional areas just upstream of the road crossings to be designated within the 100-year floodplain, which was included as part of the request for a CLOMR from FEMA. FEMA has issued the CLOMR to the project applicant [4, 12].

The approved CLOMR is based upon a drainage system that includes two pond areas along Clover Valley Creek working in combination to mitigate the increased flows from the proposed project. Staggered construction of the crossings may result in temporary drainage impacts and could result in the potential for increased flows downstream of the project if only one crossing was constructed for an interim time period.

Additionally, if the proposed detention basins fill with sediment, their storage capacity would be reduced; consequently, flows in Clover Valley Creek could increase, causing potential impacts to downstream properties.

The Placer County Water Agency (PCWA) has indicated that there is a potential for stormwater runoff and overflow from Whitney Reservoir, located northwest of the proposed project. PCWA staff have indicated that at any time (particularly during large storms) the reservoir could spill up to 10 cfs into Clover Valley Creek. Although this flow is minor compared to the high flows in Clover Valley Creek, the hydrologic and hydraulic modeling of the proposed detention basins and of the Clover Valley Creek floodplain should include this flow.

The 2001 CLOMR modeled five creek crossings while the currently proposed project only has four creek crossings. Further, both the Preliminary Drainage Study [3] and the *Clover Valley Project Overview Map* [2] do not indicate what culverts would be installed at the creek crossings. Also, the conceptual sketches of the road crossings are not consistent with the culverts identified in the flood control planning and CLOMR application.

In summary, the proposed project would cause changes in peak flows and drainage patterns. The conceptual bridge designs are inconsistent with the CLOMR application and the hydrologic/hydraulic modeling need to be revised. Also an operations and maintenance (O&M) plan must be developed and a long-term funding mechanism must be established for the O&M costs. This is a significant impact.

Mitigation Measures: The following mitigation measures (some of which were identified in the 1995 Clover Valley Annexation EIR and the 2002 Clover Valley Lakes LLTSM Draft EIR) would reduce this impact to a less-than-significant level.

1. The applicant shall prepare a final master drainage plan. The final master drainage plan shall include the final design of the bridge crossings of Clover Valley Creek. The Valley Clover Way and Nature Trail Way bridge crossings must restrict flows slightly more than the proposed structures to ensure no peak flows are increased. The final LOMR must include the final design of the bridge crossings. The final drainage plan must be approved by the City.
2. The final hydrologic and hydraulic modeling for the final master drainage plan should include the 10 cfs overflow from Whitney Reservoir.
3. The final master drainage plan shall establish an O&M program for drainage facilities not addressed in the City's standard maintenance program to ensure the proposed drainage facilities are free of obstructions, excess sediment deposition, and inappropriate vegetation. The program shall include the following:
    - Clearly identify the agency(s) and/or organization(s) responsible for maintenance for the following drainage facilities:
        a. Detention basins and associated bridges
        b. Drainage easements
        c. Underground piped drainage systems
        d. Ditches and open channels

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e. Clover Valley Creek

- The project applicant shall form a stormwater assessment district that collects funds from the private property owners (not from City owned park or open space lands) to fund the above maintenance and monitoring activities in perpetuity. The stormwater assessment district and the collected funds shall be dedicated to these activities and not used for other activities. The City shall have the ability to increase or decrease the value of the assessment as needed to continue to fund these activities in perpetuity. The assessment district shall be managed by the City. A Home Owners Association (HOA) is not an adequate mechanism for collecting these funds since the home owners can change the activities or assessments of the HOA.
- Provide access easements to drainage facilities for agency(s) and organization(s) responsible for maintenance activities, including the ditches that will be located behind houses.
- Obtain the regulatory permits required for ongoing maintenance activities.

4. Each small lot tentative subdivision map application shall include provisions to participate in the City-wide drainage program which may include payment of the Dry Creek Watershed drainage fee. The project shall pay the drainage fee being collected by the City for the Dry Creek Watershed. These fees are used to fund improvements that are planned by the PCFCWCD to address regional or cumulative flooding problems.
5. The applicant shall construct both the Nature Trail Way and Valley Clover Way crossings within the first summer of project construction.

Impact: Storm Drain Systems D, G, H, J and P discharge near the top of the hillsides and would cause significant erosion of the hillsides.

Storm Drain Systems D, G, H, J and P would discharge near the top of the hillsides and then the stormwater would flow down the hillsides to ditches or culverts and then to Clover Valley Creek. The hillside slopes are quite steep at about 40 percent. The flow rates from these storm drains systems are summarized in Table 4. Flows of 2 cfs to 35 cfs down hillsides with slopes of 40 percent would cause significant erosion and scouring of the hillside, and the sediment would accumulate in the proposed ditches, storm drains systems, and in Clover Valley Creek. This is a significant impact.

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Table 4. Summary of Flows from Strom Drains Discharging Near the Tops of Hillsides [3]

Storm Drain System	2-Year Flow, cfs	10-Year Flow, cfs	100-Year Flow, cfs
D	7.9	15.7	25.1
G	10.2	19.6	35.1
H	6.6	12.9	21.7
J	6.1	11.9	20.9
P	2.2	4.0	7.1

Mitigation Measure: The following mitigation measure would reduce this impact to a less-than-significant level.

1. Redesign the storm drain systems to include piped systems down the hillsides (with energy dissipaters at the ends of the pipes) or extend the storm drains systems to the Creek along the proposed roads.

Impact: Houses may be flooded by overflow from the ditches along the backs of some of the yards.

Stormwater runoff from the hillsides of many the open space areas would be conveyed to Clover Valley Creek through a system of ditches/culverts located behind houses/yards at the toe of the hillside. The drainage report did not show the locations of the ditches or ditch maintenance roads. The report did not include ditch capacity calculations or design criteria for the ditches. If the ditches are not designed with adequate capacity or clog from lack of maintenance, the flow from the ditches may flood the adjacent houses. This is a potentially significant impact.

Mitigation Measures: The following mitigation measures would reduce this impact to a less-than-significant level.

1. These ditches are actually open channels for conveying stormwater and shall be designed according to the PCFCWCD Stormwater Management Manual open channel design criteria. The final master drainage plan shall include sizing calculations for these open channels and the locations of the channels and culverts shall be shown on the drainage plan.
2. An access/maintenance road shall be designed/constructed along each open channel.
3. Drainage easements shall be provided for each channel/access road.
4. In the final master drainage plan, the annual operations and maintenance costs for these open channels/culverts shall be determined. Funding for the operations and maintenance of the channels/culverts shall be included in the stormwater assessment district.

Impact: Exposure of Properties Adjacent to Clover Valley Creek to Flood Hazards

The potential for flooding along Clover Valley Creek could expose adjacent houses or buildings to flood hazards. Further, the potential for increased flows in Clover Valley Creek resulting from

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development of the Proposed Project and the proposed construction of two on-line detention basins within the Creek could increase the risk for flooding of residences along the Creek within the project area and downstream of the project. The 1995 Clover Valley Annexation EIR [6] states that "within the Clover Valley Creek floodplain, adjacent residences could be exposed to significant flooding risk. This is a project-level impact in that it depends upon the location of home sites; it is also a cumulative effect in that future developments in the watershed, including the northern Clover Valley properties, increase the flooding potential."

The proposed development increases the Clover Valley Creek flow at the location of the upstream detention basin from 687 cfs to 861 cfs. The increased flow raises the 100-year water surface elevation by 0 to 4 feet (higher than the existing FEMA 100-year floodplain) with an average increase of about 3 feet. At the detention basins, water is backed up by the bridge crossings, and the water surface elevation increases by about 5 to 7 feet. At the upstream and downstream ends of the project, the proposed floodplain is essentially unchanged from the existing FEMA 100-year floodplain.

The proposed building pad elevations [2] for the project are a minimum of 5 feet higher than the proposed 100-year water surface elevations in Clover Valley Creek. In most cases the building pads are more than 10 feet higher the proposed 100-year water surface elevations. Therefore, the potential to expose adjacent residences to flood hazards is considered ***less-than-significant.***

Mitigation Measure(s): *None required.*

Cumulative Impacts and Mitigation Measures

<u>Cumulative Hydrological Impacts Related to the Potential for Localized Flooding</u>

The 1995 Clover Valley Lakes Annexation EIR cited the following comments from the PCFCWCD [12] related to regional hydrology and cumulative effects:

> This project is located within the Dry Creek Watershed...wherein incidence of flooding along Dry Creek and its tributaries were well documented. Major flooding has occurred periodically along Linda, Cirby and Dry Creeks in and near Roseville...areas in Loomis and Rocklin experience frequent flooding. Further downstream, in Rio Linda, flooding is a recurring problem. Streams also back up at culverts and bridges, blocking roads or making them unsafe. Continued development will only make the problems worse, unless adequate steps are taken to implement comprehensive watershed-wide solutions to the drainage problem.
>
> Local or on-site detention basins, while effective in reducing local flooding problems due to development, cannot completely mitigate the future regional impact of development within the watershed. Larger regional detention basins combined with local detention can substantially reduce existing problems and mitigate future problems. Any significant clearing of the vegetation in floodplains and channels within the watershed will cause an overall increase in the magnitude of flood flows.

The 1995 Annexation EIR further stated that the Dry Creek Watershed Flood Control Plan (Plan) addressed the cumulative drainage impacts, and that the Plan called for detention in Clover Valley Creek to maintain the pre-development levels of storm flows. With or without detention in Clover Valley Creek, the proposed project affected the flood control plan. The 1995 Annexation EIR concluded that "the project site has the potential to create localized flooding problems and to contribute to cumulative flooding impacts downstream of Clover Valley Creek."

The Clover Valley LSLTM is located in the same watershed as discussed in the 1995 Annexation EIR. The proposed drainage facilities include two detention ponds created by the bridges at creek crossings for Valley Clover Way and Nature Trail Way. The construction of these detention basins would mitigate the increased flows in Clover Valley Creek to less than existing levels downstream of the proposed project (see Table 3). The basins would reduce the overall peak flows; however, they would extend the period of higher-than-normal peak flows. The CLOMR, approved by FEMA, reviewed the impacts of the two detention basins as well as the impacts of the modified flows downstream. This analysis concluded that an impact downstream would not occur. With the mitigation measures identified above, the cumulative impact would be considered less-than-significant.

Mitigation Measure(s): *None required.*

REFERENCES AND DOCUMENTS

This evaluation is based on the following references/documents:

1. Personal communications with Michael O'Hagan, Managing Principal, Stantec Consulting, Inc., October and November 2005.
2. Clover Valley Plan Set (58 sheets), August 2005, prepared by Stantec Consulting, Inc.
3. Clover Valley Preliminary Drainage Study, August 2005, prepared by Stantec Consulting, Inc.
4. Conditional Letter of Map Revision for Clover Valley Creek, City of Rocklin, CA, January 24, 2001, Volumes 1 and 2, prepared by the Spink Corporation.
5. Technical Memorandum, Clover Valley Lakes Drainage Study Revisions, February 20, 2001, prepared by he Spink Corporation
6. Clover Valley Lakes Annexation EIR *(Applied Science & Engineering, 1995)*
7. Geotechnical Engineering Report, Clover Valley Lakes Roads *(Wallace·Kuhl & Associates, Inc., May 9 2001)*
8. Stormwater Management Manual, Placer County Flood Control and Water Conservation District, September 1, 1990
9. Rocklin General Plan EIR (1991)
10. Dry Creek Watershed Flood Control Plan, Placer County Flood Control and Water Conservation District and Sacramento County Water Agency (*James M. Montgomery, April 1992*)

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11. Max H. Yuan, P.E., letter to Donald Lunsford, Chairman, Placer County Board of Supervisors, August 6, 2001.

12. Letter from the Placer County Flood Control and Water Conservation District (Dec. 30, 1993), as cited in the 1995 Clover Valley Annexation EIR (p. Y-7)

Please call if you have any questions or comments.

Sincerely,

WEST YOST & ASSOCIATES

Douglas T. Moore
Principal Engineer

DTM:md

APPENDIX P

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December 19, 2005

Ms. Cindy Gnos
Raney Planning and Management
1401 Halyard Drive, Suite 120
West Sacramento CA 95691

Project No.: 279-00-05-04.004

SUBJECT: Clover Valley EIR—Water Quality

Dear Ms. Gnos:

West Yost & Associates (WYA) is pleased to present the findings of our evaluation of water quality impacts from the "Clover Valley Large and Small Lot Tentative Maps (LSLTM)" Development Project. The objective of this evaluation was to identify the impacts on stormwater quality from the project and its construction.

Presented below are descriptions of existing conditions (as related to the stormwater quality), the proposed project description, and how the project would change the water quality. Also presented is the regulatory context for the proposed project, and lastly, the impacts and recommended mitigation measures are identified.

EXISTING CONDITIONS

Clover Valley is a narrow and relatively undeveloped valley in the low Sierra Nevada foothills close to the urbanized Loomis and Rocklin areas. Ridges of up to 640 feet in elevation, forested hillsides, and grasslands bracket the Clover Valley Creek corridor, which traverses the site north to south. Clover Valley Creek is a relatively undisturbed natural creek.

The Clover Valley watershed (mostly upstream of Midas Avenue) includes about 2,100 acres, of which about 200 acres are developed with residential land uses along Clover Valley Road and Rawhide Road (downstream of the proposed development). The remainder of the watershed is natural or rural. Overall, this watershed is only about 10 percent developed, and watershed wide, the overall impervious coverage is probably about 4 or 5 percent.

The watershed upstream of the project site includes rural development. Although not intensive development, this rural development does introduce pollutants into Clover Valley Creek. The watershed downstream of the project site includes the fully developed City, and residential areas along Rawhide Road, Clover Valley Road, and other streets. Runoff from this urban area drains to Clover Valley Creek and introduces additional pollutant into the Creek water. Continuing downstream, Clover Valley Creek flows into Antelope Creek, which in turn flows into Dry Creek. These creeks receive runoff with urban pollutants from the cities of Rocklin and Roseville.

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The 622 acre proposed project site is located just upstream of Clover Valley Road and Rawhide Road. This site is essentially a natural area; however, there may have been a single family house and barn within the project area at one time.

Rainfall on the site either infiltrates into the ground or runs down the valley sides to Clover Valley Creek. Rainfall that infiltrates into the ground likely flows through the soil and bedrock to the valley floor and enters the valley watertable or Clover Valley Creek. Rainfall that runs down the valley sides likely flows as sheet flow over the ground surface and then is concentrated into small swales or rivulets before reaching Clover Valley Creek. However, this runoff remains relatively unconcentrated and is spread relatively evenly over the valley sides.

Regional drainage, including the City of Rocklin (City), is dominated by a variety of watersheds flowing westward from the Sierra Nevada foothills east of the City. The urban drainage system consists of gutters, drain inlets, underground pipes, and open channels which in turn discharge into a several creeks, including Clover Valley Creek, Antelope Creek, Secret Ravine, Miners Ravine, and Strap Ravine and Cirby Creek. These creeks discharge into Dry Creek, which ultimately discharges into the Sacramento River.

The Placer County Water Agency's (PCWA) Antelope Canal runs along the east ridge of Clover Valley. The PCWA's Clover Valley Reservoir is located near the upstream end of Clover Valley. The Caperton Canal runs along the west ridge to the Caperton Reservoir. PCWA has the right to discharge up to 10 cfs from the Caperton Reservoir to Clover Valley Creek. Clover Valley Creek is used to convey PCWA water to the Sunset Whitney Country Club [1].

Clover Valley Creek water naturally collects and carries along varying amounts of dirt and soil particles (sediment) as it travels along the creek bed. Soils on the valley ridgelines and slopes naturally migrate down slope during storm events and enter the creek water.

Sediment loads along Clover Valley Creek have long been an issue, especially within the Sunset Whitney Country Club (SWCC). Since 1965, SWCC has detained water in Clover Valley Creek in a pond for their irrigation system headworks. Due to access constraints and permit requirements, sediment build-up in this area has created operational and maintenance (O&M) problems for SWCC. Other localized areas of sediment impacts include the area adjacent to the culverts under Rawhide Road and Creekwood Drive and also within the Sunset Whitney golf course. According to the project information submitted to the City by the applicant's engineer, each location is in an environment that allows the creek velocity to slow down significantly. This reduced velocity allows sediment being carried in the stream to settle out of the flowing water and be deposited in the Creek channel.

Erosion and transport of soil down the slopes or hillsides of Clover Valley is a natural process. Much of the eroded soil/sediment enters Clover Valley Creek and is transported downstream, which is also a natural process. At locations where the Creek water velocity decreases, the sediment often settles out of the water and accumulates in the channel bottom. The Soil Survey of Placer County, California, Western Part indicates that the soils in Clover Valley have soil erodibility factors (K factors) of 0.20 to 0.24, which represents a moderate susceptibility to erosion. The K factors range from 0.10 to 0.64, with the highest factors representing the highest

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susceptibility to erosion. Disturbances to vegetation and soils greatly increase the potential for erosion of the soil.

PROJECT DESCRIPTION

This project includes development of 558 single family homes on 199 acres within a total project area of 622 acres. The project includes the land uses shown in Table 1.

Table 1. Proposed Land Uses

Use	Number of Units	Acres
Single Family Residential Lots (including minor roads)	558	199
Open Space (including roadway landscape lots)	-	366
Core Roadways	-	46
Neighborhood Park	-	5
Neighborhood Commercial	-	5
Fire Station	-	1
Total	558	622

Development of these land uses would likely result in the creation of about 130 acres of impervious coverage (roads, parking lots, rooftops, etc.) within the project area for an impervious coverage of about 21 percent. The project also includes construction of 17 storm drain systems that will collect runoff from the developed areas within the project site and convey it to Clover Valley Creek. Water quality treatment structures are proposed at the end of each storm drain system. Some of the runoff from the undeveloped hillsides would be collected and conveyed to the Creek through a system of ditches and culverts. These ditches would also collect and convey flow from five of the storm drain systems that discharge near the top of the hillsides. Also included in the project are two detention basins located at the Valley Clover Way and Nature Trail Way bridge crossings of Clover Valley Creek.

EFFECTS OF THE PROPOSED PROJECT

The development of the proposed project would result in a decrease in the amount of runoff that infiltrates into the ground and would increase the quantity and rate of stormwater runoff due to the construction of the impervious surfaces. The proposed detention basins would reduce the peak flows in Clover Valley Creek back to nearly the same rates as under existing conditions by detaining water upstream of the roadways for a time period of about 24 hours during the 100-year storm.

The proposed project would also result in urban pollutants being introduced into the stormwater. Some of these pollutants would enter the groundwater with the rainfall that infiltrates into the ground. Some of the pollutants would be conveyed in the stormwater runoff to the storm drain systems, and of these pollutants, some would be removed by the water quality treatment structures. Nevertheless, some pollutants would enter Clover Valley Creek.

The proposed project would also result in water being applied to the project area from yard and landscape irrigation that does not occur under existing conditions. Some of this water would infiltrate into the ground and some of it would run off into the storm drain system. This applied water would likely contain urban pollutants like herbicides, pesticides, fertilizers, and others pollutants.

REGULATORY CONTEXT

Existing policies, laws and regulations that would apply to the proposed project are summarized below.

Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region, the Sacramento River Basin and the San Joaquin River Basin. [2]

This Basin Plan establishes water quality objectives for the rivers and creeks within the Sacramento River Watershed. However, Clover Valley Creek and the Dry Creek System are not specifically identified in the Basin Plan, but are tributary to the Sacramento River.

National Pollutant Discharge Elimination System (NPDES)

As authorized by the Clean Water Act, the NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

The City has opted to comply with the Phase 2 NPDES regulations through coverage under the State's General Permit. To do this, the City prepared the *City of Rocklin Storm Water Management Program* (SWMP) in compliance with the Phase 2 Regulations of the National Pollution Discharge Elimination System [3]. This SWMP is designed to reduce the discharge of pollutant to the Maximum Extent Practical (MEP). The MEP is a technology based standard and is acceptable in lieu of numeric effluent limitations. It is an evolving, flexible, and advancing concept, which considers technical and economic feasibility. This document states that stormwater pollution will be controlled through Best Management Practices (BMPs) that address six Minimum Control Measures (MCM), including:

1. Public education and outreach
2. Public participation
3. Illicit discharge detection and elimination
4. Construction site stormwater runoff control
5. Post construction stormwater management
6. Pollution prevention/good housekeeping for municipal operations

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Each of these MCM's is relevant to the water quality analysis of this project, as described below:

Public Education and Outreach

To address this MCM, the following BMPs are used:

1. The Basic Message - Develop and distribute written materials that explain that storm drains lead to the creeks and not to the wastewater treatment plant. These materials would be distributed to the future residents of the proposed project.
2. Pet Waste Management – Develop and distribute pet waste management brochures that will be handed out at the City's dog license counter, and install pet waste management signs in parks and neighborhoods. Residents of the proposed development would receive the brochures if they register their dogs, and the signs would be installed in the open spaces of the proposed project.
3. Volunteers – Identify, recruit, and train volunteers to help implement the education outreach efforts. Residents of the proposed development would be eligible to be volunteers.
4. Storm Drain Inlet Marking – Mark all storm drain inlets with appropriate text, like "No Dumping – flows to Creek." All storm drains in the proposed development would be marked with appropriate text.
5. Creek Identification Program – Develop and implement a creek identification sign program. The proposed project would include signs identifying Clover Valley Creek.

Public Participation

To address this MCM, the following BMPs are used:

1. Public Meetings – This BMP includes an annual meeting with the City Council to report on the implementation of the SWMP, meetings with regulatory agencies and stakeholders. Additionally, residential neighborhood meetings will be conducted that focus on illicit discharge detection and elimination. The proposed development would be involved in this BMP, including the residential neighborhood meetings.
2. Water Quality Maintenance and Monitoring – This program will include sponsoring an annual Creek Week, which will include creek clean up activities, tree planting, and an "adopt a stream or inlet program" to monitor the amount of trash and debris removed from the inlets and creeks. Residents of the proposed development would be able to participate in these programs.
3. Volunteers – Identify, recruit and train citizen volunteers to monitor water quality and participate in Creek Week and Adopt a Stream/Inlet programs. The residents of the proposed development would be eligible to be volunteers for this program.

Illicit Discharge Detection and Elimination

Illicit discharges to the stormwater system include items such as infiltration of wastewater through cracked/separated sewer pipes and into cracked/separated storm drain pipes, direct

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connection of non-stormwater pipes to the storm drain system, accidental or intentional dumping of pollutants into the storm drain system, etc.

To address this MCM, the following BMPs are used:

1. Storm Sewer Location Map – The City has developed a map of the storm drain system as a tool for identifying illicit discharges. The proposed development would participate in this BMP by providing mapping of the proposed storm drain system within the development.
2. Public Involvement: Storm Water Hotline – The City will establish a Storm Water Hotline that citizens can call to receive information about recycling, garden and pesticide waste disposal, swimming pool draining, car washing tips, and to report illegal discharges or dumping. The residents of the proposed development would be able to use this hotline.
3. Inspection and Detection – This BMP includes training staff on how to detect and address non stormwater discharges. Each stormwater outfall will be inspected at least once per year for illicit connections and non-stormwater discharges. The stormwater outfalls for the proposed development would be inspected at least once per year by trained city staff.
4. Illicit Discharge Ordinance – The City will develop, adopt, and implement an illicit discharge ordinance that will identify the types of non-stormwater discharges that can and cannot enter the storm drain system. Residents of the proposed development would be required to comply with this ordinance.

Construction Site Stormwater Runoff Control

In the absence of proper management, construction sites can release significant amounts of sediment into the stormwater, storm drain systems, and creeks. Additionally, construction equipment can release oil, grease, and other pollutants into the stormwater.

To address this MCM, the following BMPs are used:

1. Staff Training – Provide annual staff training regarding the development, implementation, and contents of the stormwater pollution prevention plans and the implementation and maintenance of BMPs during and after construction. The trained City staff would review the development plans for the proposed development and inspect the project site during construction.
2. Construction Industry Training – Establish bi-annual training for private industry contractors and engineers. The contractors working on the proposed project would be eligible for this training.
3. Grading and Sediment Control Ordinance and Guidelines – This BMP includes developing, adopting and implementing a grading and sediment control ordinance and erosion/sediment control guidelines that:

   - address use of good site planning

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- minimize soil movement
- capture sediment to the greatest extent practical
- implement good housekeeping practices
- minimize post construction stormwater discharges

The proposed development would be subject to the terms of this ordinance.

Post Construction Stormwater Management

This MCM is intended to minimize the long-term generation of pollutants such as oil and grease, pesticides, heavy metals, nutrients, and sediment. This MCM recognizes that the post construction BMPs will require long term operations and maintenance to function properly. To address this MCM, the following BMPs are used:

1. Maintain General Plan Policies that Support Objectives of the Stormwater Management Program. The proposed development would be subject to all City General Plan Policies.
2. Private Development Design – This BMP includes using zoning ordinances and design review to incorporate controls that address runoff quality and quantity, such as grass swales and filter strips between impervious surfaces and storm drain inlets. This also includes development of a stormwater guidance or design manual to control runoff impacts. The proposed development will be subject to this type of review during the planning and design phase of the project, including this EIR.
3. Maintenance of Structural Controls – This BMP includes maintaining an inventory of all structural runoff controls within the City and scheduling regular inspections and maintenance of these controls to insure continued efficient operations. This development has proposed development to use Vortechs water quality units to provide water quality treatment of the runoff from the development areas. These units must be properly maintained to ensure effective long term operations.

Pollution Prevention/Good Housekeeping for Municipal Operations

This MCM describes the activities the City can undertake to reduce pollution of the stormwater, and includes the following BMPs:

1. City Facility Inspection and Maintenance – This BMP includes inspections and maintenance of the City Corporation Yard, storm drain inlets, and water quality structures at least once before the onset of the rainy season. This BMP also includes identifying areas of illegal dumping and clean up of the illegally dumped debris. The stormwater facilities of the proposed development would be inspected and maintained at least annually.
2. Hazardous Materials – This BMP includes identifying where hazardous materials are stored and providing appropriate training for City personnel to ensure the hazardous materials do no reach the environment.
3. Street Sweeping – This BMP includes street sweeping and garbage collection. The proposed development would receive these services.

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4. Public Outreach – This BMP includes education of the public about storage and disposal of hazardous materials and appropriate options for discharging swimming pool water. Residents of the proposed development would receive these outreach materials.

5. Integrated Pest Management – The City will develop an integrated pest management program and provide training for City employees.

Placer County Flood Control and Water Conservation District (PCFCWCD)

The design of the drainage system for the Clover Valley Lakes area is based on the PCFCWCD Stormwater Management Manual [4]. The Placer County Flood Control standards provide guidance to the development of flood control measures throughout the county, particularly for stormwater drainage and sedimentation issues regarding new development.

City of Rocklin 1991 General Plan

Relevant existing policies, laws, and regulations established in the 1991 City of Rocklin General Plan are summarized below:

Open Space, Conservation, and Recreation

Policy #19	To minimize the degradation of water quality through requiring implementation of techniques such as, but not limited to, the prohibition of grading, placement of fill or trash or alteration to vegetation within designated stream setback buffer areas, and requiring the installation of measures which minimize runoff waters containing pollutants and sediments entering surface water. Measures for minimizing pollutants and sediments entering watercourses may include oil/grit separators, detention basins and flow reduction devices.

City of Rocklin 2005 Draft General Plan

The City is currently in the process of updating its General Plan, and has prepared a draft of the updated General Plan. The City's draft General Plan will establish several goals and policies relevant to the water quality evaluation of the proposed development, as summarized below:

Goal for the Preservation of Open Space Land for Natural Resources: To designate, protect, and conserve open space land in a manner that protects natural resources and balances needs for the economic, physical, and social development of the City.	
OCR-4	To utilize the California Environmental Quality Act (CEQA) as the primary regulatory tool for identifying and mitigating, where feasible, impacts to open space and natural resources when reviewing proposed development projects.

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Goal for the Conservation, Development and Utilization of Natural Resources: Conserve and protect natural resources while permitting their managed use, consistent with City, State and Federal requirements.	
OCR-38	To encourage the protection of wetlands, vernal pools, and rare, threatened, and endangered species of both plants and animals, through either avoidance of these resources or implementation of appropriate mitigation measures where avoidance is not feasible, as determined by the City.
OCR-39	To require compliance with the State and Federal Endangered Species Acts and the Clean Water Act as conditions of development project approval.
OCR-40	To recognize that on-site protection of natural resources may not always be feasible and that off-site methods, such as use of mitigation banks, may be used.
OCR-47	To minimize the degradation of water quality through the use of erosion control plans and Best Management Practices.
OCR-48	To maintain a grading ordinance that minimizes erosion and siltation of creeks and other watercourses.
OCR-49	To prohibit development along stream channels that would significantly reduce stream capacity, increase erosion, or cause deterioration of the channel.
OCR-50	To coordinate with other agencies to develop public education programs that will encourage residents to minimize pollutants and sediments reaching receiving waters.
OCR-51	To encourage measures promoting proper disposal of pollutants to the sanitary sewer or hazardous waste facilities rather than to the storm drainage system.
OCR-52	To establish and coordinate operations and maintenance procedures for all City departments to assure that water quality objectives are not threatened by City operations and to serve as an example for the community.

Other Permitting Requirements

Prior to construction of this project, a NPDES construction permit would be required from the State Water Resources Control Board. To secure the permit, the developer would need to submit a Notice of Intent (NOI) to the board and prepare a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must be approved by the City.

Because this project would involve filling areas within Clover Valley Creek for road crossings, a Clean Water Act (CWA) Section 404 permit must also be obtained from the US Army Corps. of Engineers and a CWA Section 401 Water Quality Certification must be obtained from the Regional Water Quality Control Board.

A stream bed alteration agreement would also be required from the California Department of Fish and Game (CDFG).

RUNOFF WATER QUALITY

The water quality of the runoff (or the concentration of the pollutant in the runoff) is impossible to predict with accuracy. Nevertheless, it is reasonable to anticipate that the runoff from the developed areas would be similar to runoff from other nearby developed areas. To help characterize the likely runoff quality, water quality data for three local watersheds are summarized in Table 2, including:

- The Sacramento Sump 104 watershed includes 2,220 acres mixed use portion of Sacramento. This represents a fully developed watershed.
- The watershed upstream of the Clover Valley Creek near Midas Avenue monitoring site includes the entire Clover Valley watershed of about 2,100 acres, of which about 200 acres are developed (downstream of the proposed development). The remainder of the watershed is natural or rural. This represents a watershed that is only about 10 percent developed.
- The Antelope Creek watershed upstream of Atlantic Street includes large urbanized areas within Rocklin, Loomis, and Roseville. This represents a partially developed watershed.

In addition to the pollutants listed in Table 2, it should be anticipated that the runoff from the proposed development would include petroleum based pollutants, herbicides, pesticides, fertilizers, and other chemicals used in residential/mixed land use areas. Also, the runoff quality from one site to another can vary significantly (even with similar land uses) and the runoff from a single site can vary significantly over time. Consequently, for this EIR, without the use of BMPs, the runoff from the proposed developed areas could be anticipated to be similar to that of the Sacramento Sump 104 watershed. The water quality of the Clover Valley Creek is anticipated to be between that of Clover Valley Creek at Midas Avenue and that of Antelope Creek at Atlantic Street. The runoff from the non-developed areas of the proposed project would likely be somewhat better quality than the runoff from Clover Valley Creek at Midas Avenue.

IMPACTS AND MITIGATIONS MEASURES

The impacts to water quality from the proposed project are analyzed and assessed in this section.

Standards of Significance

A water quality impact would be considered significant if implementation of the proposed project would:

- violate any water quality standards or waste discharge requirements or substantially degrade water quality
- not protect the stormwater quality to the Maximum Extent Practicable (MEP)
- substantially alter the existing drainage pattern in a manner that would either result in substantial erosion or siltation on- or off-site

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Table 2. Summary of Water Quality Data

[redacted]

[redacted]

[redacted]

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Project Specific Impacts and Mitigation Measures

Impact 1: Degradation of Stormwater Quality and Clover Valley Creek Water Quality

Changes in the runoff water quality from the proposed project site are planned to be addressed through the use of water quality treatment structures at the downstream end of each storm drain system. The treatment systems would be sized for the peak flow from a 2-year storm [5]. The storm drains/treatment structures would collect, convey, and treat only the runoff from the areas that are developed. Runoff from the hillsides and other areas that are not disturbed would be directed around the storm drain/treatment systems using ditches and culverts.

Runoff from Developed Areas

The runoff from the developed areas would be treated with stormwater quality treatment structures before it flows to the Clover Valley Creek. These structures are flow based treatment systems, and they would be sized to treat up to a specific flow rate. The California Stormwater Quality Association's (CSQA) Stormwater Best Management Practices Handbook, New Development and Redevelopment [6] states that flow based BMPs should typically be sized for a runoff rate from a storm with an intensity of twice the 85th percent cumulative frequency hourly rainfall intensity. For the Sacramento Area, this is equal to 2 times 0.1 inch per hour, or 0.2-inch per hour. The 2-year peak flows that are to serve as the basins for sizing the water quality treatment structures are based on rainfall intensities of 0.65 to 1.27 inches per hour. Thus, the proposed water quality treatment structures would be sized for flow rates that significantly exceed the recommended rate from CSQA handbook.

Michael O'Hagan [1] has stated that the specific treatment structures to be used have not yet been determined, but it is likely that they would be the Stormwater360's Vortechs System (Note that the manufacturer previously called "Vortechnics" was recently renamed "Stormwater360"). These structures come in a range of sizes ranging from about 9 feet by 3 feet to as large as 18 feet by 12 feet. They treat peak flow rates ranging from 1.6 cfs to 25 cfs. The 2-year peak flow rates for the proposed storm drain systems range from 2 cfs to almost 20 cfs. Thus, the Vortechs systems can cover the range of 2-year design flows. If another treatment system is ultimately selected, it would need to be sized appropriately.

The Vortechs Systems use hydrodynamic separation to remove sediment, but do not remove dissolved pollutants or very fine sediment (smaller than 50 microns) from the storm water. The CSQA handbook states that pathogens, nutrients, pesticides, sediments, trash and debris, oxygen demanding substances and oil/grease are potential pollutants generated by residential developments. Of these pollutants, the Vortechs Systems would not remove the pathogens, nutrients, pesticides, or many oxygen demanding substances, except to the extent that these pollutants are attached to the sediment. Thus, even with the proposed treatment systems, there would be an increase in the pollutants reaching Clover Valley Creek. Stormwater360 also manufactures a filtration system called the StormFilter that can remove finer sediment (10 microns) and with the appropriate filter media (Zeolite, Perolite and Granular Activated Carbon) can also remove some dissolved pollutants. The StormFilter units are more expensive than the Vortechs units, but they are a practicable technology for this development. The sizing and design of the StormFilter units would be performed in cooperation with the stormwater 360's engineering support staff.

Both the Vortechs Systems and StormFilter systems require that the sediment and other pollutants removed from the stormwater be cleaned out of the treatment structures and filters for these facilities to continue to perform as designed/intended. The frequency of cleaning is dependent upon the amount of sediment and other pollutants in the stormwater. The City has required that Vortechs Systems be installed at other locations within the City. The City's Operations Manager (Michael Rock) said that they typically clean/maintain these units once per year. The Stormwater360 representative said that that the Vortechs units typically need to have sediment and trash cleaned out once per year, and that the StormFilter cartridges can last 2 to 3 years. However, there are observations of high erosion/sedimentation rates from the project site, so quarterly inspection of the treatment structures should be performed for a few years to ensure that the structures are not filling with sediment between annual maintenance activities. Stormwater360 can provide inspection and maintenance services for their units or the units could be serviced by City staff or other contractors.

The stormwater flow leaving the stormwater treatment systems would flow across the valley floor and enter Clover Valley Creek. At the point of discharge from the structure, the flow would be concentrated and would have a relatively high velocity. The area around the outfall pipe should be lined with rock and planted with deep rooted riparian vegetation to slow the water down before it flows across the valley floor. The location where the flow crosses the valley floor would likely not be a natural creek channel, and this flow pathway must be designed to prevent erosion. Additionally, the flow pathway should be designed to function as a water quality vegetated swale. The flow path should be designed using native vegetation and visually appear as a natural feature of the valley floor.

There are many BMPs that can reduce the level of pollutants that enter the stormwater runoff. Some of the BMPs that could be appropriate for the proposed development are listed below (see the CSQA Manual [6]). Many of these BMPs also help reduce the peak runoff rates from the developed areas.

1. For landscaping within public areas, use vegetation native to the local area to minimize the need for pesticides, herbicides, and fertilizers. Use of native vegetation also minimizes the need for landscape irrigation, which can transport the pesticides, herbicides, and fertilizers into the storm drain systems. Use of efficient landscape irrigation systems also minimize dry weather runoff which can include pesticides, herbicides, fertilizers, and other pollutants.
2. Provide information to the residents of the proposed project about managing use of pesticides, herbicides, fertilizers, and other pollutants. Also provide information about controlling landscape irrigation.
3. Driveways could be paved with pervious pavement or un-grouted brick or stone pavers.
4. Driveways could be sloped to drain onto landscape areas rather than directly onto streets.
5. In some locations of this development, street gutters could be replaced with grassy swales.

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6. In the commercial areas, the parking lots could be designed to drain to grassy swales before entering the storm drain system.
7. Roof runoff could be directed into cisterns or rain barrels and later used for yard irrigation. This BMP helps capture the first flush of highly polluted runoff from rooftops.
8. Roof runoff could be directed into dry wells or infiltration trenches which allows the runoff to infiltrate into the ground. This BMP helps capture the first flush of highly polluted runoff from rooftops.
9. Roof runoff could be directed to flow over lawns or landscape areas rather than being piped out to the street gutter. This BMP helps remove sediment and associated pollutants before they enter the storm drain systems and helps reduce peak runoff rates.
10. Alternative building materials could be used to replace pressure treated wood (which contain arsenic, copper, and chromium) for decks and other outdoor wood structures.
11. Fueling areas and loading docks should be properly designed to control runoff and run-on of stormwater.
12. Trash storage areas could be covered to reduce runoff and should be graded slightly above the adjacent ground to eliminate run-on.
13. Storm drain signage could be installed at each drain outlet to educate people that the storm drains flow to Clover Valley Creek.
14. Vegetated buffer strips could be used along some of the roadways in this development.

Other BMPS that could be appropriate for this development are identified in the Bay Area Stormwater Management Agencies Association's *Start at the Source – Design Guide Manual.*

Runoff from the Undeveloped Areas

Runoff from the undeveloped areas (hillsides) within the project is to be diverted around the storm drain collection and treatment systems, and is to flow to Clover Valley Creek through a series of ditches and culverts. The ditches will run along the backs of lots at the base of the hillsides. It is likely that some of the sediment eroded from the hillsides will settle out of the water in the ditches and some of the sediment will continue to reach Clover Valley Creek. Consequently, these ditches will need to be maintained and cleaned of deposited sediment periodically. The ditches must also be designed to be stable and prevent erosion of the ditch bottom and banks. The ditches should be designed using native vegetation, and to the extent feasible, visually appear as a natural feature of Clover Valley, while still allowing for maintenance of the ditches.

Water Quality Monitoring

Even with the use of BMPs, the water quality of Clover Valley Creek may be impacted by the proposed project. To determine if this is occurring, water quality monitoring should be implemented. Monitoring should occur in Clover Valley Creek at the upstream and downstream edges of the development. The list of constituents monitored should be consistent with the

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monitoring performed by the City at other locations and with monitoring performed by the Dry Creek Council. Prior to construction, two rounds of monitoring should be implemented during wet weather events and one round of monitoring should occur during dry weather. During and after construction, this water quality monitoring should be continued annually with at least two rounds of monitoring during wet weather events and one round of monitoring during dry weather. Monitoring results should be made available to the public.

There are 17 separate storm drain systems included in the proposed project. Different sets of BMPs could be used within the tributary areas of several of these storm drain systems. Water quality monitoring of the runoff from the systems could be performed, which would allow the determination of which sets of BMPs produce the best quality runoff. The best sets of BMPs could then be used in the remainder of this development or in other future development projects.

Another type of water quality related monitoring is biological monitoring which includes monitoring of the species and their abundance within the Creek and monitoring the overall toxicity of the Creek water and sediment to living organisms. These types of monitoring should also be performed in association with the water quality monitoring of Clover Valley Creek at the upstream and downstream development boundaries.

Water Quality Summary

Development of the proposed project would result in additional pollutants entering the stormwater runoff and entering Clover Valley Creek. This is a significant impact.

Mitigation Measures 1: The following mitigation measures would reduce this impact to a less than significant level.

1A. For each storm drain outfall, the applicant shall plan, design, and construct a Stormwater360 StormFilter stormwater treatment system. Another manufacturer's treatment system may be used if it can be documented that it would provide the same level of treatment as the StormFilter system and would require an equivalent level of O&M.

1B. The applicant shall design and construct the storm drain outfalls using rock and deep rooted native riparian vegetation to slow the water velocity without causing erosion of the valley floor. The flow pathway from the outfall to Clover Valley Creek shall be designed to prevent erosion of the valley floor and to function as a water quality vegetated swale. The flow path should be designed using native vegetation and visually appear as a natural feature of the valley floor.

1C. The applicant shall work cooperatively with the City and other interested agencies/organizations (e.g. the Dry Creek Conservancy) to identify which stormwater quality BMPs (from the list identified above or other BMPs) shall be implemented and where they shall be implemented in the development project. The primary goal of this mitigation measure is to reduce the discharge of pollutant to the MEP.

1D The applicant shall design and construct the ditches located behind many of the yards that will convey runoff from the hillsides to Clover Valley Creek to allow

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for maintenance, prevent erosion of the ditch bottom and banks, and shall include use of native vegetation that visually appears as a natural feature of Clover Valley to the extent feasible.

1E. Water quality monitoring (including biological monitoring) should occur in Clover Valley Creek at the upstream and downstream edges of the development. The list of constituents monitored should be consistent with the monitoring performed by the City and by the Dry Creek Council. Prior to construction, the City shall perform two rounds of water quality monitoring during wet weather events and one round of monitoring should occur during dry weather. During and after construction, the water quality monitoring shall be continued annually with at least two rounds of monitoring during wet weather events and one round of monitoring during dry weather. This ongoing monitoring shall be performed by the City. Monitoring shall also be implemented to documentation of the benefit of the agreed upon BMPs at up to four storm drains systems.

1F. The project applicant shall determine the annual costs of the maintenance activities and water quality monitoring described in Mitigations Measures 1A through E. The project applicant shall form a Clover Valley Stormwater Assessment District that collects funds from the private property owners (not from the City owned parks or open space lands) to fund the above maintenance and monitoring activities in perpetuity. The stormwater assessment district and the collected funds shall be dedicated to these activities and not used for other activities. The City shall have the ability to increase or decrease the value of the assessment as needed to continue to fund these activities in perpetuity. The assessment district shall be managed by the City. A Home Owners Association (HOA) is not an adequate mechanism for collecting these funds since the home owners can change the activities or assessments of the HOA.

Impact 2: Storm Drain Systems D, G, H, J and P discharge near the top of the hillsides and would cause significant erosion of the hillsides.

Storm Drain Systems D, G, H, J and P would discharge near the top of the hillsides and then the stormwater would flow down the hillsides to ditches or culverts and then to Clover Valley Creek [5]. The hillside slopes are quite steep at about 40 percent. The flow rates from these storm drains systems are summarized in Table 3. Flows of 2 cfs to 35 cfs down hillsides with slopes of 40 percent would cause significant erosion and scouring of the hillside, and the sediment would accumulate in the proposed ditches, storm drains systems, and in Clover Valley Creek. This is a significant impact.

Table 3. Summary of Flows from Strom Drains Discharging Near the Tops of Hillsides [5]

Storm Drain System	2-Year Flow, cfs	10-Year Flow, cfs	100-Year Flow, cfs
D	7.9	15.7	25.1
G	10.2	19.6	35.1
H	6.6	12.9	21.7

J	6.1	11.9	20.9
P	2.2	4.0	7.1

Mitigation Measure: The following mitigation measure would reduce this impact to a less-than-significant level.

2A. Redesign the storm drain systems to include piped systems down the hillsides (with energy dissipaters at the ends of the pipes) or extend the storm drains systems to the Creek along the proposed roads.

Impact 3: Erosion or deposition of sediment in Clover Valley Creek at roadway crossings.

The *Clover Valley Plan Set* [7] includes two bridge design concepts. The first is for the road crossings that do not function as detention basins (Deercrest Road and Valley View Parkway). This bridge concept includes two bridge spans. One over the main creek channel which maintains a natural creek channel (in contrast to concrete or steel culverts) and one over a section of the creek floodplain. Because there are two spans, there is also a bridge footing in the center of the floodplain. The creek water velocity must increase as it passes through the spans, which causes the potential for erosion of the creek channel and floodplain. Use of a single span bridge that crosses the entire flood plain would eliminate the potential increase in water velocity and associated potential erosion. This would also allow the creek channel to meander through the flood plain.

The second bridge design concept is for the roads to create detention basins (Valley Clover Way and Nature Trail Way). This bridge concept includes three bridge spans, including one span over the main creek channel which includes a flow restriction, but maintains a natural creek channel (in contrast to concrete or steel culverts). The other two spans would be over the floodplain, and also include flow restrictions. The flow restrictions are what allow the bridge to create a detention basin. Because these road crossings restrict the flow, during large storms, the water velocity upstream of the bridges will decrease and sediment will be deposited in the creek channel and floodplain. However, having natural creek channels under the bridges (versus culverts) helps the creek to naturally convey sediment and prevent accumulation of sediment in the creek channel.

This is a significant impact.

Mitigation Measure: The following mitigation measure will reduce this impact to a less than significant level.

3A. In the final design of all of the bridge crossings, maintain the use of bridges and do not use culverts.

3B. For the Deercrest Road and Valley View Parkway creek crossings use a bridge with a single span rather than two spans.

3C. For the Valley Clover Way and Nature Trail Way creek crossings provide access for maintenance of the detention basins, including removal of sediment.

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3D. The Clover Valley Stormwater Assessment District shall include funding for maintenance of the detention basins.

Impact 4: Erosion or deposition of sediment in Clover Valley Creek from underground utility creek crossings.

The proposed development project includes water pipes, sanitary sewers, storm drains, and other underground utilities. All of these underground utilities are planned to cross Clover Valley Creek at the road crossing. Sometimes, underground utilities are buried under the creek bottom and may be encased in concrete. When the utilities are buried under a creek, there is an increased potential for creek erosion or deposition of sediment. An alternate approach is to attach the utility pipes to the sides of the bridges or construct them within the bridge structures. It is not clear from the available documents which approach is intended for this project. Consequently, this is a potentially significant impact.

Mitigation Measure: The following mitigation measure will reduce this impact to a less than significant level.

4A. In the final design of all of the road crossings and underground utilities, design and construct the utilities to be attached to the bridges or within the bridge structures rather than buried under Clover Valley Creek.

Impact 5: The proposed detention basins or landscaped areas could provide a location where mosquitoes can breed.

Mosquitoes breed in areas of standing water. The proposed detention basins and landscaped areas that are over-irrigated could provide a location for mosquito breeding. However, if the standing water remains for less than 72 hours, then mosquito breeding should not be a concern.

In the 100-year storm event, the proposed detention basins would empty and routine flow rates contained within the primary creek channel would return within about a 24 hour period; thus the detention basins should not create a location for mosquito breeding. However, pools may form in the floodplain, and those pools may retain water for longer than 72 hours, creating a location where mosquitoes could breed. Also, landscaped areas could be over-watered, causing areas of standing water in which mosquitoes could breed. Consequently, this impact is potentially significant.

Mitigation Measures: The following mitigation measures would reduce this impact to a less than significant level.

5A. Ensure the detention basins drain within a 72 hour period (as currently planned).

5B. For landscaping within public areas, minimize nuisance water runoff by using drip irrigation systems, adjust sprinklers to prevent runoff, and landscape with drought tolerant, native vegetation. Provide information to home owners about controlling landscape irrigation on their private property.

5C. Provide a long-term management plan with adequate funding (see the discussions about the final master drainage plan and the Clover Valley Stormwater Assessment

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District) for maintenance of ditches, detention basins, and other waterways. The maintenance activities shall include removal of cattails and other emergent vegetation, sediment, and trash/debris.

5D. Clearly designate the agencies responsible for these maintenance activities.

5E. Provide Placer Mosquito Abatement District staff access to inspect and, when necessary, treat the ditches, detention basins and other waterways.

Impact 6: Construction of the Project would result in fill and excavation within Clover Valley Creek.

Construction of the bridges over Clover Valley Creek may impact waters or wetlands of the United States (Clover Valley Creek) by excavation and placement of fill for the bridge footings. Excavation or placement of fill within the creek or associated wetlands would require acquisition of a Clean Water Act (CWA) Section 404 permit from the US Army Corps of Engineers and a CWA Section 401 Water Quality Certification from the RWQCB. The CWA act requires (listed in preferential order):

- Avoidance – The project must be designed to avoid water and wetlands of the US and be the least environmental damaging, practicable alternative.
- Minimization – The project must be designed to minimize any adverse effects
- Mitigation – The project must mitigate any impacts that can not be avoided or minimized.

Additionally, a Stream Bed Alteration Agreement would be required from the CDFG. Each of these permits will establish requirements and constraints to protect Clover Valley Creek. This impact is potentially significant.

Mitigation Measures: The following mitigation measures will reduce this impact to a less than significant level.

6A. Design the project to 1) avoid, 2) minimize, and 3) mitigate for impacts to the waters or wetlands of the United States.

6B. Obtain the required permits, certifications, and agreements from the US Army Corps of Engineers, the RWQCB, and the CDFG, and comply with the requirements and constraints of the permits.

Impact 7: Construction of the proposed project would increase the sediment and other pollutants in the stormwater runoff from the project site.

Construction of the proposed project would involve incremental grading of the project site, which would substantially increase the amount of soil that could be carried into nearby waterways via surface runoff. Approximately 256 acres, which equates to 41 percent of the project site, would be graded to prepare roadways and future residential/commercial areas. In addition, construction activities such as excavation and trenching for utilities would result in substantial disturbance of soils, which could increase sedimentation in stormwater runoff. Dust from project construction

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could also be transported to other nearby locations where it could enter surface water runoff and water bodies. Contaminated soil impacted by spills and leaks from heavy equipment and machinery at staging areas or building sites can also be a component of runoff that could degrade water quality. Typical pollutants contained in surface runoff include petroleum products and heavy metals (from equipment), and products such as paints, solvents, and cleaning agents. However, these impacts would be short-term, limited to the duration of construction, and would be heavily regulated by State and local construction regulations. The 1995 Clover Valley Annexation EIR determined that the impact related to construction-phase erosion and sedimentation was less-than-significant with mitigation. The 1999 Clover Valley Lakes Drainage Study stated that soils within the project area were readily erodible, especially those located on the steep slopes.

The erosion and sedimentation impacts due to construction of the major infrastructure associated with the proposed Clover Valley LSLTM and anticipated development are potentially significant.

Mitigation Measures: Implementation of the following mitigation measures would reduce this impact to a *less-than-significant* level:

7A. Comply with, at minimum, the provisions of the State General Construction Activity Permit, which requires that a Notice of Intent (NOI) be filled with the SWRCB and that the preparation of a Stormwater Pollution Prevention Plan (SWPPP) and the implementation of BMPs and Best Available Technologies (BATs) to control construction-site runoff. Typical BMPs that could be used during construction of the proposed project include, but are not limited to, the following:

Temporary facilities such as waddles and sandbags may be used during construction. Temporary facilities are designed to capture a majority of the siltation resulting from construction activities prior to discharging into existing natural channels. In addition, they will trap possible fuel and oil spills from construction equipment to prohibit contamination of surface flows or groundwater. The construction contractor would be required to monitor and maintain all BMPs during construction to ensure they function properly.

7B. For each phase or unit of the project, construct the stormwater collection and treatment system during the summer so that these facilities are in place during the wet season.

Cumulative Impacts and Mitigation Measures

Impact 8: The proposed project could contribute to cumulative degradation of stormwater water quality.

Construction in the Clover Valley Creek watershed would contribute to the cumulative increase of urban pollutant loading, which could adversely affect water quality. Cumulative development along Clover Valley Creek (and within the Dry Creek Watershed), including the proposed project, would also result in increased impervious surfaces that could increase the rate and amount of runoff, thereby potentially adversely affecting existing surface water quality through increased erosion and sedimentation. The primary sources of water pollution include: runoff from roadways

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and parking lots; runoff from landscaping areas; commercial and industrial activities; non-stormwater connections to the drainage system; accidental spills; and illegal dumping. Runoff from roadway and parking lots could contain oil, grease, and heavy metals; additionally, runoff from landscaped areas could contain elevated concentrations of nutrients, fertilizers, and pesticides.

The mitigation measures identified above for the project specific impacts should reduce the pollutants in the stormwater from this project to a level lower than in the runoff from most of developed areas within the Dry Creek Watershed, because most of these areas were constructed before stormwater quality BMPs were required. Additionally, future development projects should be required to implement BMPs comparable to the BMPs identified for this project. However, even with BMPs, this project and other future projects would result in continued decrease of the water quality of Clover Valley Creek and other creeks in the Dry Creek System. Therefore, the cumulative impact from the proposed project on water quality is potentially significant.

Mitigation Measures: Implementation of the following mitigation measures would reduce this impact to a less-than-significant level:

8A. Implement all of the mitigation measures identified for the project specific impacts.

8B. If the results of the water quality monitoring (mitigation measure 1E) indicate stormwater discharges from the project site are contributing to water quality degradation in Clover Valley Creek, the City (as the manager of the Clover valley Stormwater Assessment District) shall contract with a qualified professional to develop and implement a remediation plan to ensure no net change in water quality due to water entering Clover Valley Creek from the project site. The remediation plan shall be funded through the Clover Valley Stormwater Assessment District. Plan actions could include, but would not be limited to: procedures for managing known or potential changes in water quality (e.g., additional physical or administrative source controls); structural improvements (additional treatment structures), and/or remediation.

REFERENCES AND DOCUMENTS

This evaluation is based on the following references/documents:

1. Personal communications with Michael O'Hagan, Managing Principal, Stantec Consulting Inc., October and November 2005.
2. Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region, the Sacramento River Basins and the San Joaquin River Basin, Fourth Edition, Revised September 4, 2004 (with Approved Amendments).
3. City of Rocklin Storm Water Management Program in Compliance With the Phase 2 Regulations of the National Pollution Discharge Elimination System, City of Rocklin public Works Department, Revised September 2003

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4. Stormwater Management Manual, Placer County Flood Control and Water Conservation District, September 1, 1990
5. Clover Valley Preliminary Drainage Study, August 2005, prepared by Stantec Consulting Inc.
6. California Stormwater Quality Association's (CSQA) Stormwater Best Management Practices Handbook, New Development and Redevelopment, January 2003
7. Clover Valley Plan Set (58 sheets), August 2005, prepared by Stantec Consulting Inc.

Please call if you have any questions or comments.

Sincerely,

WEST YOST & ASSOCIATES

Douglas T. Moore
Principal Engineer

DTM:md

Table 2. Summary of Water Quality Data

Constituent	Unit	Sacramento Sump 104[a] (average value)	Clover Valley Creek near Midas Avenue[b] (average value)	Antelope Creek at Atlantic Street[c] (average value)
Bacteriological				
E. Coli	MPN/100 mL	8,360	2,195	1,475
Total Coliform	MPN/100 mL	216,000	30,970	35,300
Conventional				
Dissolved Oxygen (field)	mg/L	8.2	8.5	9.4
Dissolved Oxygen % Saturation (field)	%	NA	87.7	95.7
BOD (5)	mg/L	6.4	NA	NA
COD	mg/L	54	28.5	24
Total Dissolved Solids	mg/L	156	77	116
Total Suspended Solids	mg/L	71	9	52
Turbidity (field)	NTU	49.5	4.9	13.1
pH (lab)	Standard units	7.2	7.3	7.6
Oil and Grease	mg/L	NA	ND	ND
Nutrients				
Nitrate plus Nitrite as N	mg/L	0.88	NA	NA
Total Kjeldahl nitrogen	mg/L	1.41	NA	NA
Nitrate as N	mg/L	NA	0.14	0.27
Phosphorus, Total	mg/L	0.42	NA	NA
Orthophosphate	mg/L	NA	0.34	0.4
Metals				
Total Arsenic	ug/L	3.24	1.1	3.3
Dissolved Arsenic	ug/L	2.34	NA	NA
Total Copper	ug/L	9.74	5	6.5
Dissolved Copper	ug/L	2.68	NA	NA
Total Lead	ug/L	9.41	ND	0.88
Dissolved Lead	ug/L	0.33	NA	NA
Total Mercury	ug/L	12.29	ND	ND
Dissolved Mercury	ug/L	1.90	NA	NA
Total Zinc	ug/L	67.82	11	15.7
Dissolved Zinc	ug/L	15.46	NA	NA

Abreviations
NA: Not Available, no data was provided in the original database
ND: None Detected, if this pollutant existed in the water sample, it was below the testing method's minimum detection limit
(a) Discharge Monitoring Report 2003/2004, Sacramento Stormwater Management Program, September 2004
(b) Dry Creek Conservancy web site (http://www.drycreekconservancy.org), site DCC4
(c) Dry Creek Conservancy web site (http://www.drycreekconservancy.org), site DCC8

APPENDIX Q

Placer County Water Agency

Business Center: 144 Ferguson Rd. • Mail: P.O. Box 6570 • Auburn, California 95604-6570
(530) 823-4850 800-464-0030 www.pcwa.net

December 16, 2005
File No. Clover Valley

Mr. David Mohlenbrok, Senior Planner
City of Rocklin
3970 Rocklin Road
Rocklin, CA 95677

SUBJECT: SB 221 and SB 610 Analysis for Clover Valley Subdivision

Dear Mr. Mohlenbrok:

This letter is in response to your request of September 13, 2005 for a water supply analysis pursuant to SB 221 and SB 610 for the proposed Clover Valley Subdivision within the City of Rocklin.

The project is located in the northeast corner of the City of Rocklin. The project site consists of 13 parcels, totaling 622 ± vacant acres along the west side of Sierra College Boulevard and Union Pacific Railroad tracks, two miles north of Interstate 80, and three miles south of State Route 193.

The project applicants are seeking approval of a large lot tentative subdivision map to subdivide 622 ± acres into 33 large lots. The large lots could establish individual units being further subdivided by small lot tentative subdivision maps. The project will result in 558 single family residential lots (198.6 acres), 366 acres of open space, 46.4 acres of core roadways, 5.3 acres of neighborhood parks, 5.0 acres of neighborhood commercial, and 1.0 acres for a fire station.

The buildout water demand is estimated to be 631 acre feet per year. This assessment is based on unit water demand values as contained in PCWA's most current Integrated Water Resources Plan.

The Placer County Water Agency Board of Directors discussed and approved this response to your request at the meeting of December 15, 2005.

The proposed project is located within the Agency's Zone 1 service area, therefore, no annexation will be required.

Additional comments, information and conditions relevant to water service for the project follow.

SURFACE WATER

The Agency has several sources of surface water supply entitlements available for use in Western Placer County.

1. The first is a surface water supply contract with PG&E for 100,400 acre feet annually (afa) of Yuba/Bear River water that is delivered through PG&E's Drum Spaulding hydro system. This has been the Agency's primary source of supply for Zone 1 since the Agency began retailing water in 1968. Prior to that PG&E was the retail water purveyor in Zone 1. The term of this contract is to 2013, but the Agency expects the contract to be renewed after the expiration of the present term.

   This source of water has a high reliability during normal, single-dry and multiple-dry years. For example, between 1987 and 1992 the state experienced 5 years of drought, during which many areas in the state had reduced supplies. During that period, the Agency had a full Yuba/Bear river supply each year. 1977 was the only year in which the Agency has had to impose drought restrictions on its customers due to reduced PG&E supply. The Agency's 2005 Urban Water Management Plan is anticipated to be adopted on December 15, 2005 and will contain a water shortage contingency analysis that includes a five stage rationing plan that will be invoked during a declared water shortage.

2. The Agency's second source of surface water for consumptive use is its Middle Fork Project (MFP) water rights. The MFP reservoirs have 340,000 acre-feet of storage capacity; however, pursuant to agreements with the United States, the Agency is limited to a maximum consumptive use of 120,000 afa from this source. The Agency's MFP water right permits provide that this water supply may be diverted from the American River at either Auburn or at Folsom Reservoir. The Agency has done extensive modeling of the MFP system to determine its reliability during drought events using California's hydrologic record, which dates back to 1921. The conclusion of that analysis is that the MFP can provide 120,000 afa, even in dry years as severe as the 1976-1977 hydrologic event.

3. The Agency's third source of surface water is its federal Central Valley Project (CVP) Municipal and Industrial water supply contract with the United States Bureau of Reclamation. This contract is for 35,000 afa. This supply is subject to 25% deficiencies during single-dry and multiple-dry years. This water was originally to be provided to the Agency at Auburn Reservoir but the contract as amended now provides for its diversion at Folsom Dam or other locations mutually agreed to by the parties. As noted below in the discussion of infrastructure capacity, Reclamation and the Agency are now studying the feasibility of diverting this supply off of the Sacramento River instead of at Folsom. Under the Agency's Integrated Water Resources Plan, discussed in more detail below, the Agency plans to supplement its CVP contract supply with groundwater in dry years to improve the reliability to the point where the full contract amount can be relied upon to serve urban development needs.

4. The Agency also has a surface water contract to purchase up to 5,000 afa from South Sutter Water District (SSWD). This supply is only available when it is surplus to SSWD's needs. Delivery is only available into the Auburn Ravine. The Agency's Board has directed that this

water is to be made available as a supplemental supply to agricultural customers in Zone 5. No water is expected to be available from this source during dry years. Most of the Agency's Zone 5 customers also have groundwater available, and revert to that source when surface water is not available. This SSWD source is considered temporary because it is expected that the available supply will eventually be fully utilized by SSWD.

Under the Board's policy for the use of SSWD water, it is not anticipated that the loss of the SSWD supply, either due to drought or prior use by SSWD, would affect the water supply to Zone 1.

The total surface water supply available to the western Placer County area that includes Zones 1 & 5 is 255,400 afa of permanent supply in normal years, plus 5,000 afa of temporary surplus water. Out of that permanent supply, the Agency has contracted to deliver up to 25,000 afa to San Juan Water District for use within the Placer County portion of its service area and up to 30,000 afa to the City of Roseville.

The Agency has also contracted to deliver up to 29,000 afa to Sacramento Suburban Water District for groundwater stabilization in that district's service area, but only when the supply is surplus to the needs of Placer County. Because of the surplus nature of this contract, it is not a factor in determining water availability for the Agency's service area.

Through December 5, 2005, the Agency has committed 118,552 af to meet the needs of its Zone 1 & 5 customers. In 2004, the Agency delivered 13,562 af to San Juan and 465 af to Roseville. Subtracting these amounts from the Agency's entitlements leaves 122,821 afa of surface water available in normal years for use in Western Placer County to meet future demands.

GROUNDWATER

Although groundwater use in Placer County by individual homes, farms and businesses is estimated to be about 90,000 acre-feet per year, the Agency does not currently use significant amounts of groundwater to meet its customers' demands. The Agency has a single well located in the Sunset Industrial area that meets all drinking water standards but has not been utilized for several years due to customer concerns regarding water quality (hardness and silica) related to industrial use.

The following findings with regards to the use of groundwater can be concluded from the Agency's draft Integrated Water Resources Plan:

- The historic average annual rate of groundwater use within the Placer County portion of the North American River Groundwater Basin is estimated to be about 90,000 acre feet per year. (The estimated use will be refined in the development of the plan.)
- According to semi-annual well data collected by the State Department of Water Resources since the 1940s, the subsurface groundwater level in western Placer County in the area west of Roseville has been relatively stable since the early 1980s following decades of steady decline.

- Based upon this information we believe that the current groundwater use and natural recharge rate are in balance and that current average annual groundwater pumping rates within the basin can be sustained indefinitely without a further decline in the subsurface groundwater level.
- Therefore, as urban development replaces historic groundwater irrigated agriculture, there is an opportunity to develop groundwater for use in meeting urban domestic and irrigation demands without adversely affecting groundwater levels or long term groundwater reliability.

PCWA's surface water supplies, particularly its 35,000 afa CVP contract entitlement and its Yuba Bear 100,400 afa contract with PG&E, will be subject to shortages in future dry years. To make up for such dry year shortfalls and for backup in the event of emergency or planned outages, PCWA is planning on developing groundwater resources as its service area expands west over the groundwater basin and into the area most likely to be served long term from the Sacramento River using the Agency's CVP contract supply. But to insure that there is no adverse long term impact of such dry year groundwater use there must be groundwater banking in normal and wet years to offset the planned dry year use. That banking can most efficiently occur through "in-lieu recharge" which is the reduction of historic groundwater use in normal and wet years allowing the natural recharge flow to accumulate in the aquifer.

RECYCLED WATER USE

Recycled water use by projects within a reasonable service perimeter of reclaimed water supplies is assumed in the Agency's draft Integrated Water Resources Plan and in it's 2005 Urban Water Management Plan. This project, because of its location and lacking infrastructure, does not have the ability to be served with recycled water.

WATER SUPPLY ASSESSMENT

On March 13, 2001, the Agency Board of Directors released a discussion paper titled "Surface Water Supply Update for Western Placer County." The paper concluded, with several significant assumptions, that the Agency's surface water supply entitlements matched the build out demand of the then current General Plans of the Cities, Town and County in Western Placer County.

The discussion paper made simplifying, and we believe conservative, assumptions to create a baseline from which to gage the capability of the Agency to meet future demands. The assumptions for the General Plan build out condition were: there would be no increase in the use of groundwater; there would be no changes in raw or treated water use efficiency; there would be no significant increase in the use of reclaimed water; there would be no significant increase in the delivery of surface water for agriculture; and, the San Juan Water District and the City of Roseville would make full use of their MFP contract supplies within their Placer County service areas.

In the fall of 2004 the Agency and its consultant, Brown & Caldwell, began work on an Integrated Water Resources Plan (IWRP) for western Placer County that is intended to build on the 2001 Discussion Paper and incorporate: changes to General Plans within the Agency's west Placer service area since 2001; proposed changes to general plans currently under consideration by west Placer land use authorities, and quantification of the previous assumptions on future water use efficiency, recycled water use, groundwater use and build out demand requirements in the San Juan and Roseville service areas. The Agency expects this plan to be completed in the fourth quarter of 2005.

In addition, the Agency has recently completed its draft 2005 Urban Water Management Plan update. This plan projects water supply and water demands for normal, single dry and multiple dry years for 20 years into the future. The proposed Clover Valley Subdivision area was included in this plan.

Through the integrated use of existing surface water entitlements, reclaimed water and demand reduction resources and groundwater as proposed herein, the Agency has an adequate water supply to meet the anticipated build out demands of the Clover Valley Subdivision in addition to the rest of the build out demands currently anticipated within the Agency's projected service area in western Placer County in normal, single dry and multiple dry years, subject to the qualifications set forth below.

INFRASTRUCTURE CAPACITY

To provide water service to a project the Agency must have both the water supply resources (discussed above) and adequate treatment and delivery infrastructure capacity. This section provides an assessment of the infrastructure capability and needs of the Agency to serve the Clover Valley Subdivision.

Raw Water Delivery from the Yuba/Bear River
There are no infrastructure limitations to the delivery of 100% of the Agency surface water supply entitlements under its PG&E (100,400 afa) and SSWD (5,000 afa) contracts.

Raw Water Delivery from the American River
The only facility that the Agency currently has to deliver water to its service area from its American River supplies is the temporary American River Pump Station at Auburn. Under an agreement between the Agency and the United States, the U.S. is required to install temporary pumps in the American River so that the Agency can access up to 25,000 afa of its MFP water at a rate of 50 cubic feet per second (cfs). Because of flooding concerns which necessitates the seasonal removal of the temporary pumps, and other technical limitations, the Agency estimates that it can only reliably divert up to 13,000 afa with the current configuration installed by the U.S.

As limited by the temporary American River Pump Station, the total current raw water delivery capacity available to Zones 1 & 5 is 113,400 afa on a permanent basis and 118,400 afa on temporary basis in normal/wet years.

Progress by the Agency and the U.S. Bureau of Reclamation is being made in completing a new, permanent American River Pump Station. On June 13, 2003, Reclamation entered into a contract to construct Phase I of the American River Pump Station. It is anticipated that Phase I will be completed in May of 2006. Phase 2, which includes construction of the diversion facility and rewatering of the river, has been designed and has been bid. As a result of the bid price the Bureau canceled the solicitation. It is anticipated that the project will be re-bid and a construction contract for Phase II may be awarded in March 2006 and completion may be in the fall of 2007.

Completion of this project will increase the Agency's raw water delivery capacity to Zone 1 and Western Placer County to 135,900 afa on a permanent basis in normal/wet years. Subtracting 118,542 afa of current and committed demands will leave 17,358 afa of uncommitted raw water delivery capacity available for new development once the permanent American River pump station is complete in 2007.

Raw Water Delivery with Proposed Sacramento River Diversion Facilities
Because of environmental concerns, the Agency has agreed in the Water Forum Agreement, dated January 2000, to limit the Agency's diversions from the American River to 35,500 afa, provided the Agency is able to obtain a diversion off the Sacramento River for the remainder of its MFP and/or CVP water not delivered off the American River.

The Agency is studying the feasibility of a project in which a new treatment plant would serve proposed developments in southwest Placer County with water diverted from the Sacramento River north of the Sacramento Airport. The project would provide an additional 35,000 afa of raw water supply, and 65 mgd of treatment capacity into the Agency service area. In 2001, Congress authorized Reclamation to complete a feasibility study and EIS/EIR on the project. If the project is approved, the Agency anticipates construction of the project could be completed by about 2015.

Completion of both the permanent American River Pump Station and the Sacramento River Diversion facilities would increase the amount of surface water available to the Agency's west Placer service area to 175,900 af and should enable the Agency to meet the projected increase in the raw water delivery needs of its service area in western Placer County until 2030.

Treatment, Transmission and Storage
The Agency completed the most recent expansion of its Foothill WTP in Newcastle in 2005. The treatment plant capacity of this facility is 55 million gallons per day (mgd). Combined with the Sunset WTP, which has a capacity of 8 mgd, the Foothill/Sunset system has a treatment capacity of 63 mgd. In 2005, the maximum day treatment plant demand for the Foothill/Sunset system was 50 mgd, which leaves 13 mgd of unused capacity that is available to serve new demands. The Agency reserves capacity for new customers upon payment of the Agency's Water Connection Charge (WCC). There is typically an average time lag of approximately 18 months between the payment of WCC and the full development of demand from the occupied units. At this time, the Agency estimates that this reserved capacity for development that has already paid the WCC but the demands are not reflected in the 2005 maximum day demand of 49.3 mgd. This leaves 13.7 mgd of unallocated capacity that can serve approximately 11,913 equivalent dwelling units (EDUs) and which is available on a first-come, first-served basis. The annual growth in demand in the Agency's Foothill/Sunset system over the past three years has been about 3.0 mgd per year.

The Agency has completed the design of the Auburn Tunnel Pump Station 2. This pump station is located on Ophir Road in the Ophir area. This pump station will pump American River water from the Auburn Tunnel and then pump to the existing Foothill WTP, proposed Ophir WTP as well as the Agency's canal system. This project is currently out to bid. It is anticipated it will be completed in 2007.

In addition, the Agency is in the design phase for a new water treatment plant that will be located on Ophir Road in the Newcastle/Ophir area. This plant is scheduled for completion in 2008. This plant is being designed with a capacity of 30 mgd. When compete, this facility will be able to serve an additional 26,000 EDUs.

The Agency completed construction of a 42-inch diameter treated water transmission line between Penryn and Lincoln in the fall of 2002. The Agency's transmission capacity is now equal to its treatment capacity in the Foothill/Sunset system serving Loomis, Rocklin, Lincoln and surrounding County jurisdiction areas. A new treated water transmission pipeline is being designed to convey water from the Ophir area plant to the existing Foothill/Sunset system at Penryn and to areas near the City of Lincoln.

The Agency completed a new 10 million gallon (mg) tank near the Sunset WTP in 2001. This increased the storage capacity of the Foothill Sunset system to 30.0 million gallon (mg).

PCWA'S DEMAND MANAGEMENT MEASURES

The Agency was created by the Placer County Water Agency Act, a special act of the California Legislature. The California Urban Water Management Planning Act requires water purveyors that serve more than 3,000 customers prepare a long-term water supply plan every five years. The Agency's most recent Urban Water Management Plan (UWMP) was published in December 2000. On June 4, 2002, the Agency was informed by the California Department of Water Resources that the Agency's December 2000 UWMP, including the discussion of the Agency's water demand management effort, was deemed complete. The Agency will be completing an update of its UWMP by the end of 2005. The new 2005 Plan is anticipated to be adopted by the PCWA Board of Directors on December 15, 2005.

The Agency is providing a comprehensive suite of demand management measures to its customers. All customers are metered. The Agency has implemented inclining rates based upon water usage. System wide water audits are being conducted and customer usage is tracked on a monthly basis. Leak detections are conducted whenever unaccounted water exceeds 10%. Agency rules and regulations require discontinuance of service upon excessive wasting of water. Residential water surveys are provided upon request. The Agency has a full time water conservation coordinator on staff.

The long term effects of the Agency's demand management measures on per capita water use will be quantitatively evaluated in the Agency's Integrated Water Resources Plan and included in the 2005 UWMP.

ADDITIONAL CONDITIONS FOR DELIVERY OF WATER SUPPLY

The Agency reserves water supply only when a project is located within an Agency service zone, a project proponent submits an application for water service and the Water Connection Charges are paid.

Based on the Agency's limited bonding capacity with existing Zone 1 projects, the project proponents will be required to participate with the Agency in developing and implementing a financing plan which is currently contemplating either advancing the funds to build or building the major water supply infrastructure (treatment plants, etc.).

CONCLUSIONS

Through the integrated use of existing surface water entitlements, recycled water and demand reduction resources and groundwater as proposed herein, the Agency has an adequate water supply to meet the anticipated build out demands of the Clover Valley Subdivision in addition to the rest of the build out demands currently anticipated for 20 years within the Agency's projected service area in western Placer County in normal, single dry and multiple dry years.

However, depending upon the timing of water needs from this project and because the Agency has a first-come, first-served policy for serving new customers, the completion of any or all of numerous Agency planned infrastructure projects may be required before the Agency can provide water service for the build out of the Clover Valley Subdivision. Those projects include completion of the permanent American River Pump Station, which is currently under construction and completion of additional treatment capacity and transmission facilities associated with the Agency's planned Ophir area water treatment plant project, which are currently under design.

In addition, the Clover Valley Subdivision will need to extend the Agency's existing transmission infrastructure to the project site and construct the needed onsite infrastructure, including the potable water distribution system.

If you have any questions on this subject, please call Brian Martin or Einar Maisch at (530) 823-4886.

Sincerely,

PLACER COUNTY WATER AGENCY

Alex Ferreira

Alex Ferreira
Chair, PCWA Board of Directors

PR/EM/BCM/ns

c: PCWA Board of Directors
City of Rocklin Council Members

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