AMENDMENT 1 TO THE WIEDEMANN RANCH GEOLOGIC HAZARD ABATEMENT DISTRICT (GHAD) PLAN OF CONTROL

SUBMITTED

TO

WIEDEMANN RANCH GHAD

PREPARED

BY

ENGEO INCORPORATED

PROJECT NO. 4412-W3

FEBRUARY 1, 2000
REVISED JULY 12, 2002

Project No.
4412-W3

July 12, 2002

Mr. William R. Gray, President
William R. Gray and Company, Inc., General Manager
Wiedemann Ranch Geologic Hazard Abatement District
1820 Bonanza Street, Suite 204
Walnut Creek, CA 94596

Subject: Proposed Update to the Plan of Control
Wiedemann Ranch Geologic Hazard Abatement District (GHAD)
Contra Costa County, California

AMENDMENT 1 TO THE WIEDEMANN RANCH PLAN OF CONTROL

Dear Mr. Gray:

Attached is proposed Amendment 1 to the Wiedemann Ranch GHAD Plan of Control. The proposed amendments are intended to reflect the following:

1. The April 11, 2000, annexation of the Presley Henry Ranch Project into the Wiedemann Ranch GHAD.

2. Comments received from the United States Army Corps of Engineers (USCOE) with respect to the maintenance and protection of an endangered species habitat that lies within the boundaries of the GHAD.

3. Revisions suggested by your office, intended to make the Plan of Control more readable, easier to administer and bring it in line with current industry practice.

If you have any questions or would like any additional information, please do not hesitate to contact us.

Very truly yours,

ENGEO INCORPORATED

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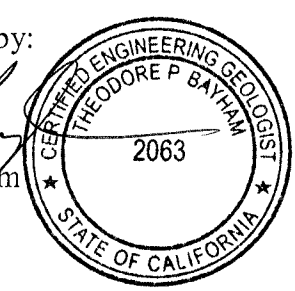
ue/jd:ghad

Reviewed by:



Ted Bayham
CEG 2063

cc: 1 – Mr. Dan Curtin

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I. Authority and Scope

The Contra Costa County Board of Supervisors formed the Wiedemann Ranch Geologic Hazard Abatement District ("GHAD" or "District") on September 1, 1998, (Resolution 98/438) under authority of the California Public Resources Code (Division 17, commencing with Section 26500). Formation of the Wiedemann Ranch GHAD satisfied a project condition of approval on the Wiedemann Ranch Project.

The City of San Ramon required either formation of a new GHAD or annexation to an existing GHAD in conjunction with its approval of Subdivision 8118 (the Presley Henry Ranch Project). Given the similar geologic conditions at the two projects, the developer of the Presley Henry Ranch Project chose to petition the Board of Directors of the Wiedemann Ranch GHAD to annex the Presley Henry Ranch Project into the GHAD. On April 11, 2000, the Board of Directors of the Wiedemann Ranch GHAD and the Contra Costa Board of Supervisors, by Resolutions Nos. 2000/166 and 2000/167, conditionally approved the annexation of the City of San Ramon Subdivision 8118 (the Presley Henry Ranch Project) into the Wiedemann Ranch GHAD. The annexation became effective on June 13, 2000.

Section 26509 of the Public Resources Code requires a Plan of Control, prepared by a State Certified Engineering Geologist, as a prerequisite to formation of a GHAD. An Engineering Geologist, certified pursuant to Section 7822 of the Business and Professions Code, prepared the original Plan of Control for the Wiedemann Ranch GHAD. The Business and Professions Code requires a Plan of Control to describe in detail, geologic hazards, their location, who is affected by them, and most significantly, a plan for the prevention, mitigation, abatement, or control thereof. In accordance with the requirements of the Public Resources Code, a proposed revision to the original Wiedemann Ranch Plan of Control was submitted with the petition to annex the Presley Henry Ranch Project into the Wiedemann Ranch GHAD. On March 11, 2000, by

Resolution No. 2000/119, the Board of Directors found the proposed revision to the Plan of Control adequate for the proposed annexation.

Subsequent to the annexation of the Presley Henry Ranch Project into the Wiedemann Ranch GHAD, William R. Gray and Company, Inc., General Manager of the Wiedemann Ranch GHAD, initiated a review of both the existing Wiedemann Ranch GHAD Plan of Control as well as the proposed revision to the Plan of Control that was submitted with the annexation petition. In late spring 2000, the United States Army Corps of Engineers requested additional modifications to the Plan of Control related to the maintenance and protection of certain endangered species habitats that lie within the boundaries of the Wiedemann Ranch GHAD.

On February 26, 2002, the General Manager of the Wiedemann Ranch GHAD presented a proposed amendment to the Board of Directors for their consideration. The proposed amendment was intended to reflect: (1) the annexation of the City of San Ramon Subdivision 8118 (Presley Henry Ranch) to the GHAD, (2) input from the United States Army Corps of Engineers (USACE) with respect to the maintenance and protection of the endangered species habitat, and (3) revisions suggested by the General Manager to make the document more readable, easier to administer and bring it in line with current industry practice. By Resolution 2002/110, the Board circulated the proposed amendment for 42 days and, on April 9, 2002, after a noticed public hearing, continued the hearing to May 7, 2002. On May 7, 2002, the Board approved this amendment to the Plan of Control by Resolution No. 2002/207.

As used in this Plan of Control, and as provided in Section 26507, "geologic hazard" means an actual or threatened landslide, land subsidence, soil erosion, earthquake, fault movement, or any other natural or unnatural movement of land or earth.

Property Identification

The boundaries of the Wiedemann Ranch GHAD, the Wiedemann Ranch Project and the Presley Henry Ranch Project are shown on Figures 1 and 2, respectively. Legal descriptions are included in Exhibits A and B.

II. Background

The Wiedemann Ranch Project is a 1,137-acre area approved for development of 371 residential units along the southern side of Norris Canyon Road, west of the intersection of Norris Canyon and Bollinger Canyon Roads, located in an area known as "Westside" of San Ramon, but the Wiedemann Ranch is currently within unincorporated Contra Costa County. The Contra Costa County Board of Supervisors formed the Wiedemann Ranch Geologic Hazard Abatement District (GHAD) on September 1, 1998, by Resolution No. 98/438.

The Presley Henry Ranch Project (City of San Ramon Subdivision 8188) is a 91.49-acre area approved for development of 100 residential units in the City of San Ramon. The Presley Henry Ranch Project has a common boundary with the Wiedemann Ranch Project and the Wiedemann Ranch GHAD as shown on Figure 2. The Contra Costa County Board of Supervisors and the Board of Directors of the Wiedemann Ranch GHAD conditionally approved annexation of the Presley Ranch Project into the Wiedemann Ranch GHAD on April 11, 2000, by Resolution Nos. 2000/166 and 2000/167. Both the Contra Costa County Board of Supervisors and the Board of Directors of the Wiedemann Ranch GHAD imposed a condition on the annexation requiring that property owner assessments be levied on properties within the area to be annexed before the annexation could be considered final. The Board of Directors levied the property owner assessments, after a noticed Public Hearing, on June 13, 2000, with the adoption of Resolution No. 2000/357. The effective date of the annexation was therefore June 13, 2000.

Title to the open space within the Wiedemann Ranch Project and the Presley Henry Ranch Project has been conveyed to the Homeowners' Associations (HOA's) formed within the two projects and a trail easement within the Presley Henry Ranch Project open space has been dedicated to the City of San Ramon. As the open space within and immediately adjacent to subdivision tracts is an amenity that benefits all of the property owners within those subdivisions,

funding for general maintenance activities in the open space areas is shared by property owners within the project boundaries.

III. Areas of GHAD Responsibility

When the Board of Directors formed the original Wiedemann Ranch GHAD in the fall of 1998, and when it approved the annexation of the Presley Henry Ranch project into the GHAD in the spring of 2000, it established budgets and set assessment levels for properties within the District. Although assessments are levied and collected separately for the properties within the boundaries of the Wiedemann Ranch and Presley Henry Ranch projects, it was the intent of the Board that all properties within the boundaries of the Wiedemann Ranch GHAD be provided equal treatment insofar as the provision of GHAD services is concerned. This Plan of Control is intended to define the GHAD's responsibilities.

The Prevention, Mitigation, Abatement and/or Control of Geologic Hazards

Subject to the following exceptions, the primary mission of the GHAD shall be the prevention, mitigation, abatement, and/or control of geologic hazards within its boundaries that have damaged, or that pose a significant threat of damage to site improvements within the developed areas of the projects. As used herein, the term "site improvements" means buildings and outbuildings, roads, sidewalks, paths, utilities, improved trails, swimming pools, tennis courts, gazebos, cabanas, geologic stabilization features, or similar improvements.

Exceptions

The GHAD may decline to prevent, mitigate, abate or control geologic hazards under the following circumstances:

Hazard(s) Limited to A Single Property. The GHAD may decline to prevent, mitigate, abate or control a geologic hazard(s) which is limited in area to a single parcel of

property, unless said geologic hazard has damaged (or poses a significant threat of damage to) other properties and/or other site improvements within the GHAD boundaries. This single lot exclusion does not apply to geologic hazards existing on open-space property owned by any homeowner's associations within the GHAD.

Hazard(s) or Failure(s) Resulting From Negligence. The GHAD may decline to prevent, mitigate, abate or control geologic hazards or failures that occur as the result of negligence of a property owner and/or a property owner's contractors, agents or employees in developing, investigating, grading, constructing, maintaining or performing or not performing any work on the subject property.

Property not Located within GHAD Boundaries. Except as herein provided, the GHAD shall not prevent, mitigate, abate or control geologic hazards located on property that is not located within the GHAD boundaries. In the event, however, that all or any portion of a geologic hazard existing on property located outside the GHAD boundaries has damaged or poses a significant risk of damage to site or other physical improvements located on property within the GHAD boundaries, the GHAD may prevent, mitigate, abate, or control the geologic hazard. The GHAD shall maintain the Wildlife Habitat Mitigation Ponds that are located to the west of the Presley Henry Ranch portion of the District, even though the ponds are physically located outside of the boundaries of the District.

Any work conducted on property located outside of the GHAD boundaries, with the exception of work necessary to maintain the Wildlife Habitat Mitigation Ponds, shall be strictly limited to that which is absolutely necessary to prevent, mitigate or control the damage, or threat of damage, to property located within the boundaries of the GHAD. Should the GHAD be required to respond to a geologic hazard outside the boundaries of

the GHAD, the GHAD may take such actions as may be appropriate to recover costs incurred as a result of preventing, mitigating, abating or controlling such geologic hazard from the responsible party, if any.

Geologic Hazards in Open Space and Maintenance of Open-Space Areas

The GHAD may prevent, mitigate, abate, or control the geologic hazards in open space areas and other unimproved areas within the boundaries of the GHAD if said geologic hazards have damaged or have the potential to damage site improvements located on properties within the boundaries of the GHAD. In conjunction with this responsibility, the GHAD is authorized to maintain geologic stabilization features (e.g. ditches, benches, walls, drains, subdrains, etc.) that are located in open space areas or other unimproved areas including hillside slopes extending uphill from debris benches outside of the private lot boundaries.

The GHAD is also authorized to monitor erosion and sedimentation in open space areas that affect developed lots and/or improvements (see Section IX for definitions of erosion and sedimentation). The GHAD is further authorized to maintain surface and sub-surface drainage facilities and improvements located in open space areas, including, but not necessarily limited to concrete V-ditches, storm drain inlets and outlets in open space and creek corridors and subdrain outlets.

The GHAD is not responsible for general maintenance of open-space areas (weed abatement, trail maintenance, fire control, etc.). It was the intent of the Board of Supervisors and the City of San Ramon, when they approved the Wiedemann Ranch and the Presley Henry Ranch projects, that general maintenance of open-space areas be the duty and responsibility of Homeowners Associations (HOA) to be formed within the boundaries of the two projects. The role of the GHAD is limited to overseeing and supervising the HOA's general physical maintenance of the

open-space areas as may be required to prevent, mitigate, control or abate erosion, sedimentation and potential landslide hazards.

Routine clearing of firebreaks and general maintenance of the open space (other than hazard abatement) is the responsibility of the HOA (as described in the Governing Documents of said associations) subject to the review and approval of the GHAD should said activities, in the opinion of the GHAD, have the potential to damage or interfere with the operation of any GHAD maintained improvements; to cause an increase in erosion and/or sedimentation; or to in any manner, aggravate or increase the potential of a landslide.

Consistent with the Governing Documents of the HOA for the Wiedemann Ranch and Presley Henry Ranch projects, the GHAD may review and has the right to approve or disapprove physical construction, maintenance or repair activities proposed within the open space areas that, in the discretion of the GHAD, could increase erosion or sedimentation or otherwise impact or affect the geologic stability of the area.

Should the GHAD be required to perform open-space maintenance activities that are otherwise the responsibility of others (such as weed abatement, mowing, trail maintenance or other general maintenance activities) prevent, mitigate, abate, or control a specific landslide or erosion hazard, the GHAD shall take such actions as may be required to recover costs incurred as a result of such activities from the responsible party.

Creek Corridor and Detention Basin Maintenance Responsibilities

The GHAD is responsible for maintenance activities in selected creek corridors within the Wiedemann Ranch project as well as the maintenance of two (2) flood control detention basins within the boundaries of the Wiedemann Ranch and the Presley Henry Ranch projects. The creek

corridors that are the responsibility of the GHAD are shown on Figure 3. The detention basins that are maintained by the GHAD are shown on Figures 3 and 4.

The GHAD's creek maintenance responsibilities are limited to the repair of substantial bank failures that directly damage or threaten actual site improvements (including buildings, utilities, trails and roads). Creek bank improvement projects, including armoring of channels with rock or other materials, may be undertaken by the GHAD as required.

The GHAD's detention basin maintenance responsibilities include periodic inspections as necessary to check for accumulated sediment, the condition of inlets and outfalls and vegetation. The GHAD's responsibilities are limited to the removal of excess sediment, vegetation, or debris that interfere with or otherwise inhibit the intended function of the detention basins and/or their outfall structures. Attention is to be given to plantings or other obstructions that may interfere with access to the detention basins by power equipment.

Wildlife Habitat Mitigation Pond Maintenance

The Wiedemann Ranch GHAD is responsible for maintenance of two (2) Wildlife Habitat Mitigation Ponds, shown in Figure 4, located to the west of the Presley Henry Ranch project, outside of the boundaries of the GHAD. As part of the environmental approval process for the Presley Henry Ranch Project, these Wildlife Habitat Mitigation Ponds were established. Maintenance of these ponds is the responsibility of the GHAD, since improper functioning of the ponds could result in slope failures and consequent siltation within the improved portions of the Presley Henry Ranch Project. Maintenance of these areas shall be in accordance with the mitigation-monitoring plan approved for the Presley Henry Ranch Project (Sycamore Associates, November 1998) (Appendix B).

The specific responsibilities of the GHAD include the following tasks:

1. Regular monitoring (by a qualified Biologist) for CRLF predators and annual drying of two mitigation wetland frog ponds in high rain years (these were designed to dry down naturally in most years).

2. Repair and replacement of cattle exclusion fences around created wetlands and enhancement areas as necessary.

3. The implementation of remedial actions related to the resources.

IV. Funding and Acceptance of Responsibility by GHAD

Initial Developer Contributions

The Conditions of Approval imposed by the County of Contra Costa on the developer of the Weidemann Ranch required the project to contribute $200,000 to finance the initial operation of the GHAD and to help establish an appropriate reserve fund for the GHAD until the revenues from the property assessments become available. The deposit has been received and deposited in an interest bearing account for the benefit of the District.

As with the Weidemann Ranch project, the City of San Ramon required the developer of the Presley Henry Ranch project to contribute $50,000.00 to finance the initial operation of the GHAD and to augment the reserve funds until the revenues from property assessments within the area being annexed became available. The deposit has been received and deposited in an interest bearing account for the benefit of the District.

Property Owner Assessments

The activities of the Wiedemann Ranch GHAD are funded through property owner assessments levied against properties within its boundaries. Annual assessments were authorized and levied by the Board of Directors of the GHAD for properties within the boundaries of the original Wiedemann Ranch Project on October 20, 1998, by Resolution No. 98/537. The Board authorized and levied annual assessments on properties within the boundaries of the annexed Presley Henry Ranch Project on June 13, 2000, by Resolution No. 2000/357.

All activities of the GHAD, as defined in this Plan of Control, assume and are subject to a continuation of the property owner assessments.

Responsibility for GHAD Activities

1. Initial Financial Responsibility of Developer. The party that, on the date a Final Map within the boundaries of the GHAD is recorded in the office of the Contra Costa County Recorder, owns the developable parcels that are shown on said Final Map shall be financially responsible for all GHAD and GHAD related activities (as defined in this amended plan of control) on all property within the boundaries of said Final Map, including any open space shown on said Map. Financial responsibility for all GHAD and GHAD related activities, including the maintenance of facilities and the repair of landslides that may occur within the property, will continue until the automatic transfer described in paragraph 2 below takes place.

   During the period between approval of a Final Map (or Maps) for property within the original Wiedemann Ranch Project to the date of automatic transfer of responsibility to the GHAD, HCV (or its successors or assigns) will be financially responsible for all GHAD and GHAD related activities (as defined herein) for the property within the boundaries of the original Wiedemann Ranch portion of the District.

   During the period between final approval of a Final Map (or Maps) for property within the Presley Henry Ranch Project to the date of the automatic transfer of responsibility to the GHAD, Presley (or its successors or assigns) will be financially responsible for all GHAD and GHAD related activities (as defined herein) for the property within the boundaries of the Presley Henry Ranch portion of the District.

   The petitioners for formation of the original Wiedemann Ranch GHAD and the petitioners for the annexation of the Presley Henry Ranch Project into the District intended that the

approximately three-year period between the levying of the first GHAD assessments and the formal transfer of financial responsibility to the District (see Paragraph 2 below) would allow the District sufficient time to accumulate funds to operate and to build up an adequate reserve account.

2. Transfer of Responsibility to the District. Financial responsibility for GHAD activities (other than for those elements of the Biological Monitoring Program noted in Paragraph 3 below), as defined in this Plan of Control, shall transfer automatically to the District (by area, defined by the boundaries of the Final Map(s)) at 9:00 a.m. on the day exactly three years after a Final Map is approved, or two years after the completion of rough grading (as defined by final acceptance of the grading by the responsible agency), whichever is later. As multiple Final Maps are to be recorded for the Wiedemann Ranch and the Presley Henry Ranch projects, it is anticipated that the automatic transfer of financial responsibility to the GHAD will take place at different times for different geographical areas (Final Maps).

   Prior to the transfer of financial responsibility to the District, GHAD may inspect the property subject to the transfer. GHAD will advise, in writing, the responsible party (as defined in Paragraph 1 above) of any deficiencies with facilities to be maintained by the District and/or of any landslides or potential landslides that should be repaired. If the responsible party does not correct said deficiencies and/or repair said landslide(s) and the GHAD takes subsequent action to correct the deficiencies and/or repair the landslide(s), the GHAD may take such actions as may be required to recover any costs incurred from the responsible party.

3. Biological Monitoring and Maintenance of Wildlife Habitat Mitigation Ponds. Financial responsibility for biological monitoring and maintenance of the Wildlife Habitat Mitigation Ponds, as detailed in the Final Wetland and Red-legged Frog Biological Mitigation Plan

(Appendix B), shall transfer automatically to the District at 9:00 a.m. on the day exactly five years after the Final Map for the Presley Henry Ranch project is recorded. Prior to that time, financial responsibility for monitoring and maintenance of the Wildlife Habitat Mitigation Ponds shall be the sole responsibility of the developer of the Presley Henry Ranch project (or his successors and assigns).

Notwithstanding the above, however, responsibility for the annual drying of the Wildlife Habitat Mitigation Ponds shall transfer to the GHAD when financial responsibility for other GHAD activities in the Presley Henry Ranch portion of the District transfers in accordance with Paragraph 2 above.

Prior to the transfer of financial responsibility for biological monitoring and maintenance of the Wildlife Habitat Mitigation Ponds to the District, GHAD may inspect the ponds. GHAD will advise, in writing, the responsible party of any deficiencies that might exist with respect to facilities that are to be maintained by the District. If the responsible party does not correct said deficiencies to the satisfaction of the District and the GHAD takes subsequent action to correct the deficiencies and/or repair the landslide(s), the GHAD may take such actions as may be required to recover any costs incurred from the responsible party.

V. Priority for GHAD Funded Repairs

Emergency response and scheduled repair expenditures are to be prioritized by the General Manager, utilizing his discretion, based upon available funds and the approved operating budget. Should available funds not be sufficient to undertake all of the identified remedial and preventive stabilization measures; the expenditures shall be prioritized as follows in descending order of priority:

A. The prevention, mitigation, abatement or control of geologic hazards that have either damaged or pose a significant threat of damage to residences, critical underground utilities or paved streets.

B. The prevention, mitigation, abatement or control of geologic hazards that have either damaged or pose a significant threat of damage to ancillary structures, including but not limited to pool cabanas or restroom buildings.

C. The prevention, mitigation, abatement or control of geologic hazards existing entirely on open-space property and which have neither damaged nor pose a significant threat of damage to any site improvements.

D. The prevention, mitigation, abatement or control of geologic hazards that have either damaged or pose a significant threat of damage limited to loss of landscaping or other similar non-essential amenities.

Notwithstanding the above, the GHAD shall prioritize funding for maintenance of the biological habitat.

VI. Site Geology

Geologic Units

The geologic units mapped on the Wiedemann Ranch and Presley Henry Ranch Project include bedrock and surficial deposits consisting of colluvium, alluvium, landslides, and existing fill which are described below. These units are consistent with the geologic conditions within the existing GHAD boundaries.

Bedrock at the site has been mapped by Dibblee (1980) as belonging to two general units, non-marine sedimentary rocks of Pliocene age (Tps) and marine sedimentary rocks of Miocene age. The Miocene-age rocks have been subdivided by Dibblee (1980) into two units, a sandstone and minor siltstone (Tmss), and siltstone and minor sandy shale (Tmsl). Crane and Lyon (1995) grouped bedrock units somewhat differently than Dibblee, at a regional scale. Dibblee's units are used in this report. Mudstone, an inclusive term for both siltstone and claystone, was used as a classification term by Dibblee (1980).

Pliocene Sedimentary Rocks. The Pliocene nonmarine sedimentary rocks consist of sandstone, siltstone, conglomerate, and claystone, with a few thin marl beds. These rocks are relatively erodible and are subject to landsliding; natural outcrops are rare. The rocks are typically red-brown to greenish-gray in color, weakly to moderately undulated or cemented, and moderately fractured. The Pliocene rocks are limited to the northeastern portion of the site.

Miocene Sedimentary Rocks. These marine sedimentary rocks include the Tmss and Tmsl units of Dibblee (1980) and consist predominantly of light brown sandstone, gravelly sandstone, fossiliferous sandstone and siltstone. The sandstone is generally little to moderately weathered, of low to moderate hardness, and closely to widely fractured.

Bedrock of this unit typically crops out or is within a few feet (less than 3 feet) of the surface on ridge tops, in the bottom of drainages, and locally on hillslopes. In particular, sandstone of this unit locally crops out as resistant layers traversing slopes and capping ridges in the southeastern portion of the site. The siltstone is typically softer than the sandstone, more weathered, closely fractured, and more prone to erosion and landsliding.

Colluvium. Colluvial material consists of unconsolidated slopewash deposits composed of silt, clay and lesser amounts of sand, gravel, and cobbles in a heterogeneous mixture. Colluvium generally mantles lower slopes and occupies hillside swales where it is subject to creep (the gradual downslope movement of soil by gravity) and landsliding. Colluvium is typically about 5 to 10 feet thick in swales. It is generally unstratified to weakly stratified, moderately permeable, moderately to highly plastic, and easily erodible. The colluvium grades into and interfingers with alluvial deposits on the lower slopes of the valleys of the unnamed creek and San Catanio Creek.

Alluvium. Alluvial material consists of unconsolidated crudely stratified stream deposits predominantly composed of silt, clay, and sand, with occasional thin lenses of gravel. Alluvium occurs as fans at the mouths of some drainages, and occupies the broad, gently sloping portions of the valleys of the unnamed creek and San Catanio Creek. Alluvium grades into and interfingers with colluvium on the lower slopes. The alluvium is generally moderately permeable and easily eroded. Alluvium up to tens of feet in thickness was encountered in some borings.

Landslides. Landslide deposits consist of masses of unconsolidated material and/or bedrock that have moved downslope by sliding, falling, or flowing. Many landslides, ranging in size from very small to large, occur on the site. The landslides range in age from active (recent) to Pleistocene (10,000 to 2 million years ago) and include soil slips, earth flows, debris

slides, areas of shallow slumps and gullying, several large predominantly rotational slumps, and translational slides.

Shallow (less than 5 feet thick) to moderately deep (5 to 15 feet thick) earth flows, and soil slips are the most prevalent types of landslide at the site. Shallow landslides range from dormant to active, and typically occur on the steeper slopes, along drainages and in swales, and within larger slide masses. No evidence of recent debris flow activity was identified at the site. Surficial deposits at the site are generally clay-rich and relatively fast-moving debris flows with long runout zones that are atypical of such clay-rich materials.

A number of large, deep (greater than 15 feet) landslides were identified at the site. Several of these landslides are earth flows or earthflow complexes, both active and dormant. However, most of the large landslides are dormant rotational slumps and translational slides involving large, relatively intact masses of bedrock, and are characterized by a rounded, subdued topography.

Residual Soils. Residual soils consist primarily of silty to sandy clay or sandy silt developed in place on underlying parent materials. Residual soils vary in thickness from less than 1 foot on ridge tops to several feet thick in valley areas. Residual soils generally contain organic material and range from low to high plasticity and have a low to high expansion potential.

Weathered Bedrock. Weathered bedrock consists primarily of silty to sandy clay or clayey to sandy silt derived from the partial to thorough alteration of bedrock materials. Weathered bedrock often retains the original rock fabric.

Geologic Structure

The geologic structure of the site consists of a series of northwest-trending synclines and anticlines. The dip of bedding ranges from about 40 degrees northeast to 60 degrees southwest, with some overturned beds in the southern portion of the site. Bedrock units on the site have variable resistance to weathering and erosion. More resistant sandstone and fossiliferous sandstone units locally form laterally continuous outcrops.

VII. Geologic Hazards

Slope Instability

Earth stability is the GHAD's prime geotechnical concern for which mitigation is required at this site. This is not unique to these projects, but is of importance for hillside projects throughout the San Francisco Bay Area. This section describes several types of slope instability that are within the GHAD's area of responsibility, subject to Section III of this Plan of Control.

Landslides are a common geologic phenomenon and are part of the process of mass wasting. Weathered or fractured bedrock and soil are transported downslope over geologic time as a result of gravitational and hydrostatic forces. Landslides and earth movement in this bedrock formation are typically rotational slumps and earthflows. Depth of movement is typically about 10 to 30 feet below the ground surface. Earthflows are confined to the upper 3- to 5-foot-thick clayey soil mantle. In the winter rainy season, these earthflows can move at a rate of several feet per day.

A landslide is a deposit of soil and/or bedrock moving downward from its original position under the influence of gravity. Landslides include a variety of morphologies and are further defined by type of materials, wetness, and mode of movement. They can consist of mass movements of earth materials that are primarily intact, and occur along discrete shear surfaces. These surfaces (shear or slip planes) can be rotational (conchoidal or concave), such as for earth slumps, or planar, as for translational earth slide or bedrock block glides. Most landslides are truly "complex landslides", sliding, falling and flowing with more than one type of movement and/or material.

Falls are an abrupt free-fall of earth materials off cliffs, steep cuts, or steep stream banks while earthflows are mass movements of earth materials in which the type of movement is one of

flowing. When composed of soil finer than gravel size, the flowing material is commonly called a mudflow. A debris flow/debris avalanche is composed of natural earth materials, artificial fill, and/or organic debris that flow downslope with speed. Most of the material is transported away from the area of initial ground failure.

Soil creep is the slow, often imperceptible, deformation of slope materials under low stress levels, which normally affects the shallow portion of the slopes, but can be deep seated where a weak zone of soil or bedrock exists. It results from gravitational and seepage forces, and may be indicative of conditions favorable for landsliding. Creep can be caused by wetting and drying of clays, by solution and crystallization of salts, by the growth of roots, by burrowing animals and by downslope movement of saturated ground. Colluvium refers to the mantle of loose soil and weathered bedrock debris that progresses down hillsides by creep.

As noted in Section III, the GHAD may be concerned with erosion and sedimentation in open space areas that affect developed lots or improvements. Erosion is defined as the process by which earth materials are loosened and removed by running water on the ground surface or in the subsurface. Sedimentation is the depositing or settling of soil or rock particles from a state of suspension in a liquid.

Hilly terrain open space, either in a natural condition or particularly on excavated slopes, can be subject to erosion. Landslide deposits, which are sometimes in a loosened condition, are particularly prone to erosion. Earth flow-, debris flow- and mud flow-type landslides typically have an area of deposition or accumulation (sedimentation area) at their base. Graded slopes in the GHAD, particularly those in excess of 20 feet in vertical height or those not sufficiently vegetated, are subject to erosion and therefore could be a source of transported sediment.

Natural processes such as stream cutting and erosion can cause the banks to slump and oversteepen creek banks. The slumped material can then be transported downstream. This can lead to destabilization of areas above the creek banks. In flood stage, streams such as San Catanio Creek can erode even vegetated stream banks.

Slope Stability Considerations

Before grading of the properties, the area within the boundaries of the District generally consisted of open, rolling, grass-covered hills with scattered trees. Portions of the properties have been used continuously for 150 years for cattle grazing. The majority of the natural hillslopes were in a marginally stable to unstable condition. Some of the mapped landslides were located in areas of proposed development. In general, mitigating measures for land stability problems included avoiding large landslide areas when placing structures, or stabilizing the landslides by removing the unstable soil to bedrock, constructing engineered keyways, and recompacting the soil as drained engineered fill. Another technique used was to provide drained toe-of-slope buttress fills with debris benches of sufficient width to intercept the potential landslide debris.

Debris benches were constructed as a preventive measure on many of the perimeter cut slopes surrounding the development area. Consistent with the provisions of Section III, the GHAD may maintain the debris benches and the hillslopes extending uphill from the benches.

Generally, development of this site is concentrated in the low-lying valley areas. Some of these areas were filled to establish finish grades that are substantially higher than original elevations. Fill materials for grading were generated from cuts on the surrounding hill slopes. This grading concept provides pad elevations above flood levels while, at the same time, improves the

stability of the surrounding natural slopes through the use of buttress fills and flatter slope gradients.

Known active landslides within the area, which could have been adversely affected by the grading or which may constitute a threat to the existing or proposed development, were either completely removed and replaced as subdrained engineered fills, buttressed with drained engineered fills, or isolated from the existing and proposed site improvements by structural means.

A project Geologist supervised the development of cuts during grading and, when necessary, suggested mitigation strategies for unsuspected slope conditions uncovered during grading operations that could decrease the slope stability. Such conditions included unfavorable bedrock attitudes and seepage conditions. The project Geologist retained by the developer prepared a geology map for use by the GHAD.

To repair or buttress landslide areas, the landslide debris was overexcavated to firm undisturbed materials below the landslide plane as determined by the project Geotechnical Engineer or Engineering Geologist at the time of grading. In the case of the complete removal of a landslide, systems of surface and subsurface drains were to be installed to collect the subsurface waters that could have initially caused the landslide. The configuration of each subdrainage system was tailored to the individual landslide at the time of grading. The Geotechnical Engineer and/or the Engineering Geologist determined the location and depths of subdrains at that time. A Licensed Land Surveyor was retained to record the location and elevation of subdrains and subdrain outlets. Each landslide subexcavation was reconstructed to final grade by keying and benching below the landslide plan with a compacted drained engineered fill.

Landslides not completely removed were either stabilized in place, or were situated outside of proposed development areas. Buttress fills were constructed at the toes of major cut slopes near the base of known landslide areas, or will be addressed during foundation review and lot development. These fills consisted of drained-engineered keyways, excavated to firm bedrock, with an overlying engineered fill. Debris benches were constructed with concrete-lined ditches discharging into approved outlets.

It is important to note that to preserve the natural topography, wildlife habitat, and vegetation of the site, only those landslide masses that directly threatened the planned improvements were stabilized. In some cases additional landslide masses may be required to be stabilized during foundation review and development on individual lots. Slope instability in open-space areas and on agricultural parcels, which did not have the potential to directly affect home sites, roadways, or other improvements, were not repaired.

Efforts were made during the mass grading operations to maintain the creek corridors crossing the property in their natural condition. Creek bank erosion that did not directly threaten site improvements, as defined in Section III, Areas of GHAD Responsibility, were, in general, not repaired. The intent was to allow the creeks to mature naturally.

VIII. Geotechnical Techniques for Mitigation of Landslide and Erosion Hazards

The techniques the GHAD may employ to prevent, mitigate or abate landsliding or adverse erosion damage might include, but are not necessarily limited to:

A. Removal of the unstable earth mass.

B. Stabilization (either partial or total) of the landslide by removal and replacement with compacted drained fill.

C. Construction of structures to retain or divert landslide material or sediment.

D. Construction of erosion control devices such as gabions, rip rap, geotextiles, or lined ditches.

E. Placement of drained engineered buttress fill.

F. Placement of subsurface drainage devices; e.g. underdrains, or horizontal drilled drains.

G. Slope correction (e.g. gradient change, biotechnical stabilization, and slope trimming or contouring).

H. Construction of additional surface ditches and/or detention basins, silt fences, sediment traps, or backfill or erosion channels.

Potential landslide and erosion hazards can best be mitigated by controlling soil saturation and water runoff and by maintaining the surface and subsurface drainage system. Maintenance shall be provided for lined-surface drainage ditches and drainage terraces including debris benches or drop inlets.

As noted in Sections II and III of this Plan of Control, maintenance of open-space areas by others (the HOA), including the clearing of fire trails, is subject to review, approval and oversight of the GHAD. Any proposed physical construction, maintenance or repair activities (except for general maintenance such as weed abatement, trail maintenance and fire control) in HOA maintained

open space areas may be subject to the review and approval of the GHAD, consistent with the governing documents of those associations.

IX. Biotechnical Recommendations for Prevention and Mitigation of Existing or Potential Erosion Hazards

Fill slopes within the boundaries of the District are expected to be erodible as will cut slopes in bedrock; therefore, the maintenance of vegetative cover is especially important. Vegetation provides a protective role on soil and exposed rock. It absorbs the impact of raindrops, reduces the velocity of runoff, and retards erosion.

In many instances, adequate erosion protection for slopes can be accomplished with carefully selected and placed biological elements (plants) without the use of structures (e.g. brush layering and willow waddling).

In other areas, biotechnical slope protection may involve the use of mechanical elements or structures in combination with biological elements to provide erosion control and help prevent small-scale slope failures. Locally, crib walls, welded-wire walls, gabion walls, rock walls, rip rap, and reinforced earth walls used in combination with carefully selected and planted vegetation can provide high quality slope protection. The vegetation may be planted on the slope above a low retaining structure or toe wall, or the interstices of the structure can be planted.

X. Maintenance and Monitoring Schedule

Geologic features and GHAD-maintained facilities should be inspected on a regular basis. Budget permitting, inspections should be scheduled to occur a minimum of three times per year in normal years and four or more times per year in years of heavy rainfall. The inspections should be scheduled to take place in October, prior to the first significant rainfall; mid-winter as necessary during heavy rainfall years; and in early April at the end of the rainy season. The frequency of the inspections should be increased in years of higher than average rainfall intensity and/or recurrence. Figures 7 and 8 are the field-verified Geologic Maps for the Wiedemann Ranch and Presley Henry Ranch projects. The grading Testing and Observation Reports for each of the sites shall be kept on file in the records of the GHAD.

Geotechnical Resources

- A GHAD Engineer and/or Geologist should inspect the lined surface of concrete-lined drainage ditches within the GHAD boundaries on a regular schedule. If possible, inspections should be scheduled for twice each year, budget permitting. One inspection should be in the fall prior to the onset of winter rains. The inspector should check for sedimentation, cracking or shifting of the concrete-lined ditches. Repairs and maintenance should be performed on a regular schedule. Excess silt or sediment in ditches should be removed and cracked or broken ditches should be patched or repaired as required before the beginning of the next rainy season.

- Subsurface drain outlets and horizontal drilled drain outlets should be inspected on a regular schedule. Water flowing from these outlets should be measured and recorded during each inspection. If possible, inspections should be scheduled twice each year, preferably in the fall and spring. Any suspicious interruption in flow should signal a need to unplug or clean by flushing the affected drain.

- Piezometers used to measure groundwater levels, or other instruments such as inclinometers and tiltmeters should be monitored on a regular schedule.

- Settlement monitoring devices should be monitored on a regular schedule. In the event of anomalous readings or excessive settlement, the monitoring frequency should be increased.

- Inlets, outfalls or trash racks, if used, must be kept free of debris and spillways maintained. Attention should be given to plantings or other obstructions, which may interfere with access, by power equipment.

- The portions of the creek corridor that are maintained by the GHAD should be inspected on a regular basis – ideally at least twice a year. One inspection should be in the fall prior to the onset of winter rains. A second inspection should be undertaken during the rainy season to monitor potential creek bank failures that could imminently threaten or damage site improvements. The maintenance program should include the monitoring of the subdrain outfalls from the mass grading operations which outlet to the creek in a number of locations along the creek bank.

The GHAD should review its inspection schedule annually and assess the effectiveness of its preventive maintenance program on a regular basis. GHAD staff should prepare an annual report to the Board of Directors with recommendations for maintenance and/or repair projects. Consultants, if necessary, may be retained to undertake the needed studies. The District Engineer and/or Engineering Geologist retained by the GHAD shall prepare an annual inspection report for presentation to the GHAD Board of Directors.

Biological Resources

- At a minimum, the GHAD should retain a qualified Biologist to perform annual inspections of the protected resources. Other professionals, such as Civil Engineers and Geotechnical Engineers, may be involved as necessary.

- In order to control potential California red-legged frog predators (specifically, bullfrogs) the GHAD Biologist will ensure that the mitigation wetland ponds are dried down during the early fall months on an annual basis (as necessary). These ponds are designed to dry down on their own during most rainfall years.

- In order to ensure that resources are adequately protected from encroachment, the GHAD Biologist will ensure that fences surrounding mitigation wetlands and enhancement areas are maintained, repaired and/or replaced as necessary.

- GHAD Biologist will ensure that the wetland mitigation ponds retain their functional and structural integrity. This may require removal of sediment, repair of debris flows/landslides, repair or reinforcement of the earthen berms, and replanting as necessary.

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4412-W3
February 1, 2000
Revised July 12, 2002

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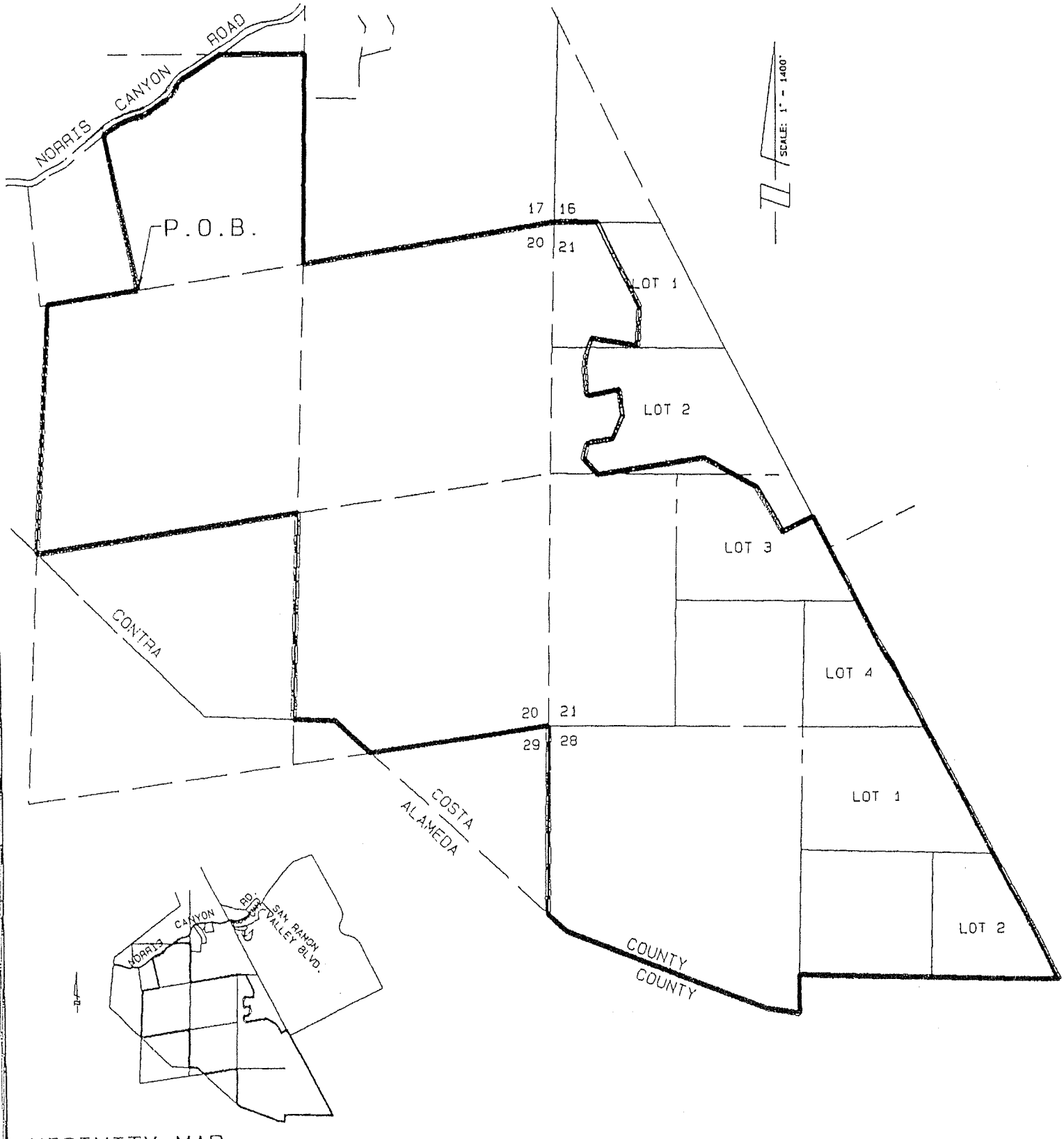
APPENDIX A



VICINITY MAP

ALIQUOT
PLANNERS
CIVIL ENGINEERS
SURVEYORS
120 RYAN IND. CT. STE.100
SAN RAMON, CA. 94583

LIMITS OF WIEDEMANN RANCH PRESLEY HENRY RANCH GHAD ANNEX CONTRA COSTA COUNTY, CALIFORNIA	PROJECT NO.: 4412-W3 DATE: FEBRUARY 2000	FIGURE NO. 1

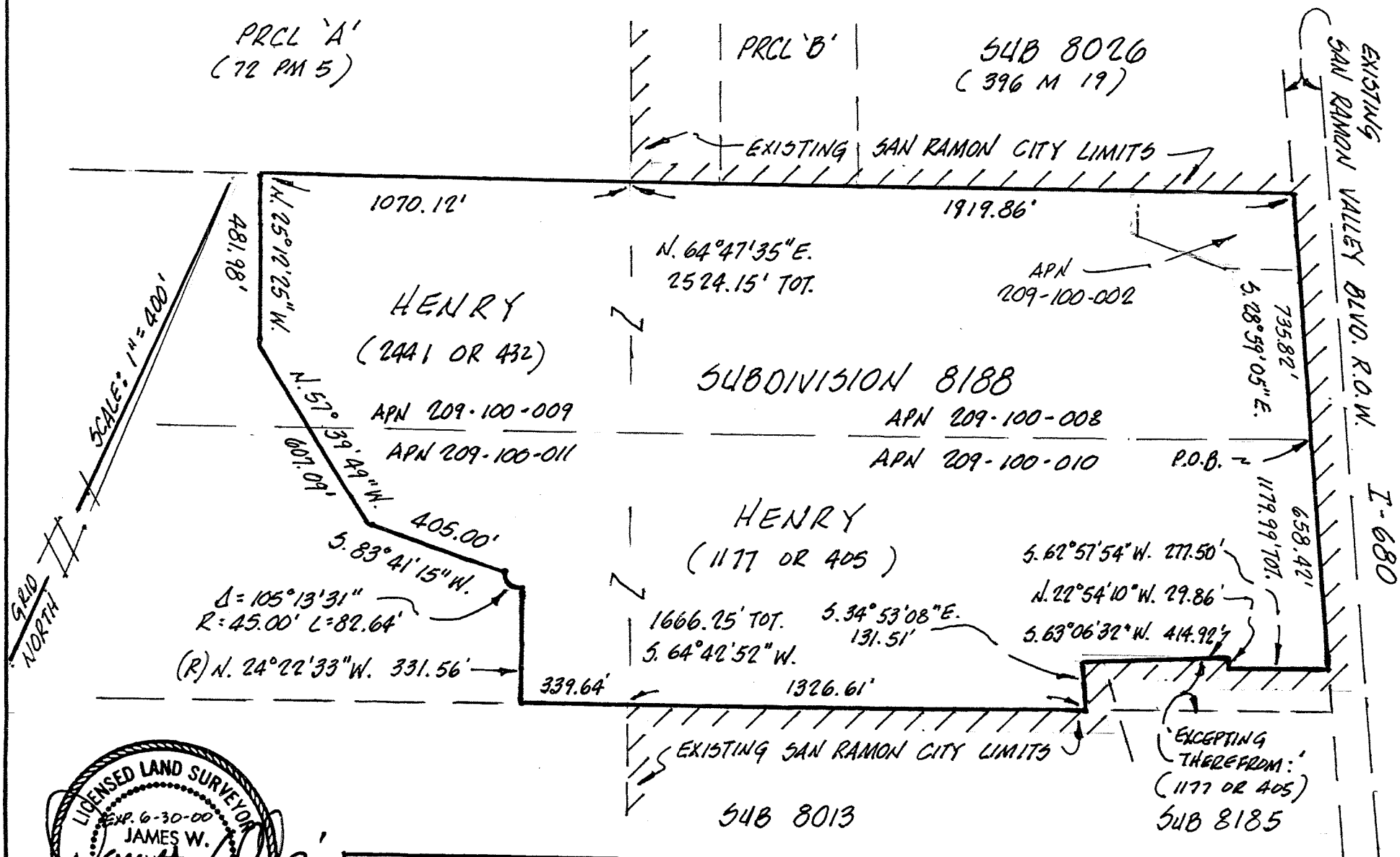
1"=1400'

JULY 1998

RC

BEARINGS AND DISTANCES ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, NAD 27, ZONE 3. TO OBTAIN GROUND DISTANCES, MULTIPLY BY 1.0001044.

LIMITS OF PRESLEY HENRY RANCH PROJECT PRESLEY HENRY RANCH GHAD ANNEX CONTRA COSTA COUNTY, CALIFORNIA	PROJECT NO.: 4412-W3 DATE: FEBRUARY 2000	FIGURE NO. 2



LICENSED LAND SURVEYOR
EXP. 6-30-00
JAMES W. [illegible]
4246
STATE OF CALIFORNIA

P/A Design Resources, Inc.
Planning ■ Engineering ■ Surveying
2700 Ygnacio Valley Road, Suite 100
Walnut Creek, California 94598-3462 TEL (925) 210-9300

SCALE: 1"=200'

TYPICAL ROAD SECTIONS

PROPOSED
EAST BAY REGIONAL PARK DISTRICT
75 ACRES

DEVELOPMENT SITE

DEVELOPMENT SITE
TO BE ABANDONED

AGRICULTURAL LOT

PROPOSED NEW
DEVELOPMENT SITE

AGRICULTURAL LOT

SUBDIVISION 7996

SUBDIVISION 7575

SUBDIVISION 7998

SUBDIVISION 7578

EBMUD SITE

EBMUD SITE

EBMUD SITE

EBMUD SITE

DEVELOPMENT SITE

AGRICULTURAL LOT

AMENDED VESTING
TENTATIVE MAP
SUBDIVISIONS 7575, 7578,
7996, & 7998 AND
FINAL DEVELOPMENT
PLAN
OCT. 1997

WIEDEMANN RANCH RESIDENTIAL COMMUNITY

GENERAL NOTES:

1	OWNERS	WIEDEMANN RANCH, INC 2303 HORSE CANYON RD SAN RAMON, CA 94583 (510) 820-9063
		TOLL BROTHERS, INC 111 DEARBORN RD., SUITE 200 SAN RAMON, CA 94583 (510) 855 1500
2	DEVELOPERS	HCV PACIFIC PARTNERS 3150 DANVILLE BLVD ALAMO, CA 94507 (510) 838-2700
		TOLL BROTHERS, INC 111 DEARBORN RD., SUITE 200 SAN RAMON, CA 94583 (510) 855 1500
3	ENGINEER	ALBERT A. WEBB ASSOCIATES, INC 3788 MCCRAY INDUSTRIAL CT., SUITE 100 LIVERMORE, CA 94550 (510) 838-3366
4	SOILS ENGINEER	ENGEO 2601 CROW CANYON RD., SUITE 200 SAN RAMON, CA 94583 (510) 830 1600
5	EXISTING ZONING	PD (371) RESIDENTIAL LOTS PLUS 3 AGRICULTURAL PARCELS
6	PROPOSED ZONING	PD (371) RESIDENTIAL LOTS PLUS 3 AGRICULTURAL PARCELS
7	ACREAGE	TOTAL 1,143 AC
		STREETS & LOTS 237 AC
		OPEN SPACE 906 AC
8	LOTS SIZES	MINIMUM 12,000 SF
		AVERAGE 27,600± SF
9	WATER	EBMUD
10	SEWER	CCCSD
11	ELECTRICAL & GAS	PG&E
12	TELEPHONE	PACIFIC BELL
13	FIRE PROTECTION	SRVFPD

GENERAL STATEMENTS

1. COMMON FACILITIES, INCLUDING OPEN SPACE, THE NEIGHBORHOOD PARK AND HIKE TRAILS SHALL BE MAINTAINED BY THE HOA.

2. SUBDIVISION 7575 AND 7578 SHALL BE INCLUDED WITHIN THE FIRST PHASE OF CONSTRUCTION. IT IS PROPOSED THAT ALL FUTURE PHASES BE DETERMINED BY MARKET CONDITIONS. SUBDIVISIONS NOW SHOWN MAY BE FURTHER SUBDIVIDED INTO SMALLER SUBDIVISIONS IF MARKET CONDITIONS DICTATE SUCH.

3. A NUMBER OF DWELLINGS WILL BE PROPOSED AS MODELS AND THE DEVELOPER WILL BE SEEKING APPROVALS FOR THAT USE.

4. A CUT/FILL BALANCE OF APPROXIMATELY 4,000,000 CUBIC YARDS IS PROPOSED.

5. TYPICAL SECTIONS SHOWN ABOVE ARE PER THE CURRENT CONDITIONS OF APPROVAL EXCEPT THAT EARTH WITH GRADES LESS THAT 10% SHALL HAVE GRASSY SWALES INSTEAD OF CURB & GUTTER PER CONTRA COSTA COUNTY PUBLIC WORKS, WATER QUALITY DIVISION. THE DIMENSIONS OF TRAVEL WAY AND STRUCTURAL SECTIONS ARE TO BE AS INDICATED AND PER TITLE 9

700 0 700 400

GHAD MAINTAINED:

CREEK CORRIDORS

DETENTION BASIN

COSTA CO. SAN RAMON SAN RAMON SAN RAMON SITE CONTRA COSTA CO. CONTRA CO. ALAMEDA CO.

DETENTION BASINS TO BE MAINTAINED BY GHAD-WIEDEMANN RANCH PRESLEY HENRY RANCH GHAD ANNEX CONTRA COSTA COUNTY, CALIFORNIA	PROJECT NO.: 4412-W3	FIGURE NO. 3
	DATE: FEBRUARY 2000	

-J HENRY RANCH

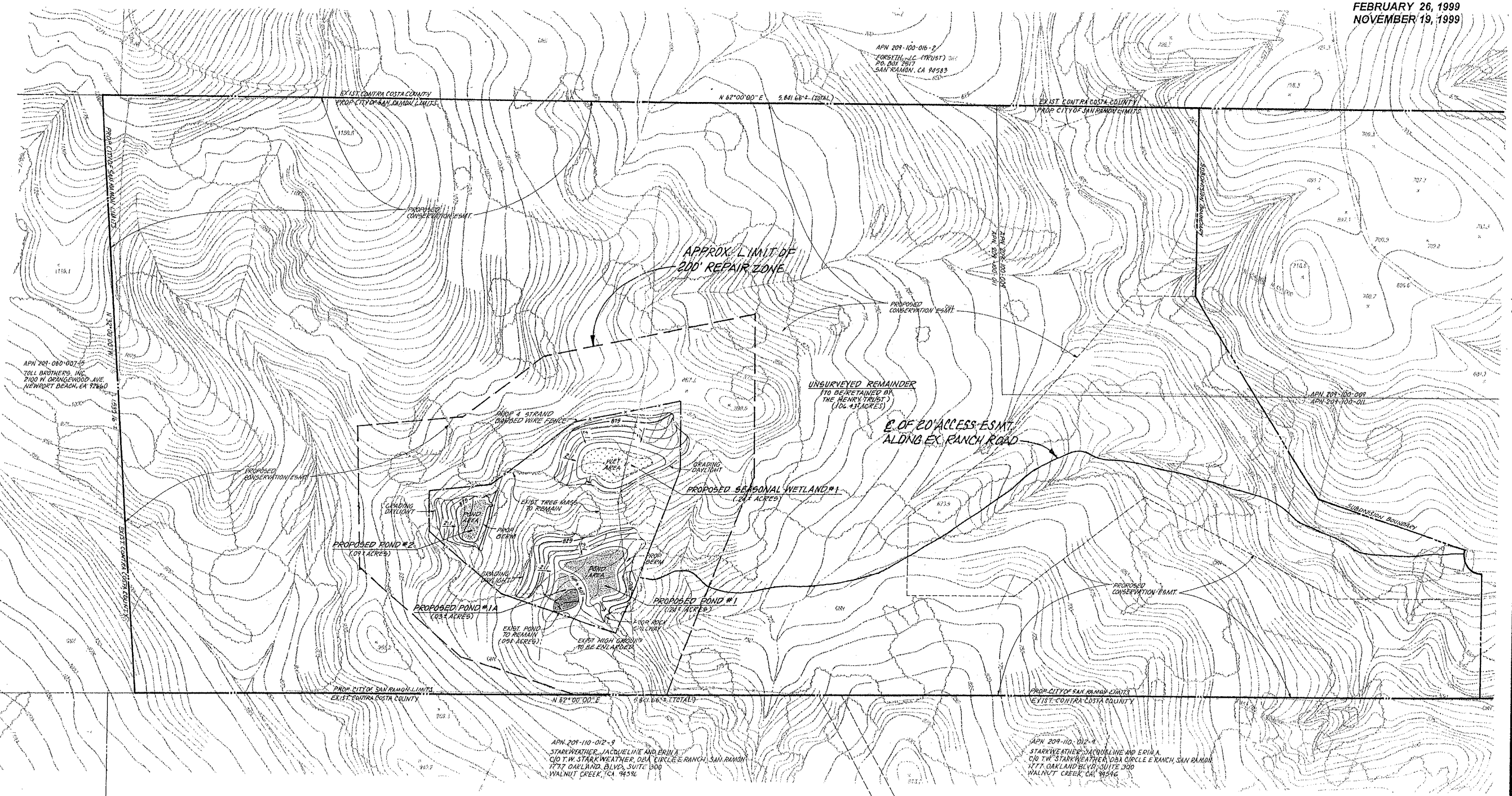
SAN RAMON, CALIFORNIA

MITIGATION PONDS TO BE MAINTAINED BY GHAD- PRESLEY HENRY RANCH PROJECT PRESLEY HENRY RANCH GHAD ANNEX CONTRA COSTA COUNTY, CALIFORNIA	PROJECT NO.: 4412-W3	FIGURE NO.
	DATE: FEBRUARY 2000	4

SUBDIVISION 8188

MARCH 31, 1998

REVISED: DECEMBER 18, 1998
FEBRUARY 26, 1999
NOVEMBER 19, 1999



0 50 100 200
GRAPHIC SCALE: 1" = 100'

DEVELOPED BY
PRESLEY HOMES

Design Resources, Inc.
Planning ■ Engineering ■ Surveying
2700 Ygnacio Valley Road, Suite 100
Walnut Creek, California 94598-3462
TEL (925) 210-9300

200' SCALE COMPOSITE

GRADING PLAN - WIEDEMANN RANCH
PRESLEY HENRY RANCH GHAD ANNEX
CONTRA COSTA COUNTY, CALIFORNIA

PROJECT NO.: 4412-W3

DATE: FEBRUARY 2000

FIGURE NO.
5

-JH HENRY RANCH

SAN RAMON, CALIFORNIA

PRELIMINARY GRADING PLAN FOR THE VESTING TENTATIVE MAP

SUBDIVISION 8188

MARCH 31, 1998

REVISED: DECEMBER 18, 1998
FEBRUARY 26, 1999
NOVEMBER 19, 1999

PRELIMINARY GRADING PLAN - PRESLEY HENRY RANCH PROJECT	PROJECT NO.: 4412-W3	FIGURE NO.
PRESLEY HENRY RANCH GHAD ANNEX CONTRA COSTA COUNTY, CALIFORNIA	DATE: FEBRUARY 2000	6

DEVELOPED BY
PRESLEY HOMES

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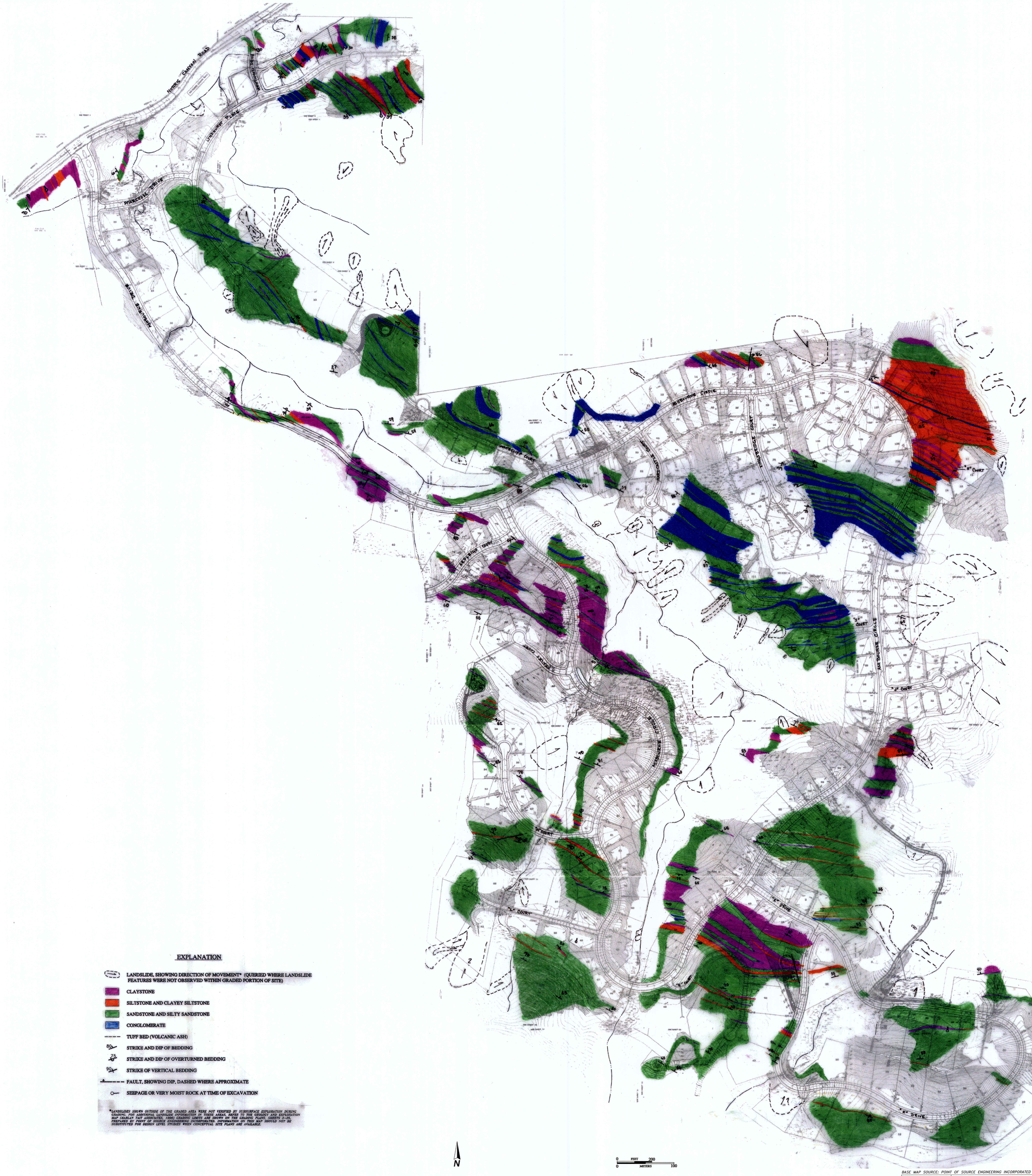
Walnut Creek, California 94598-3462
TEL (925) 210-9300



EXPLANATION

- LANDSLIDE, SHOWING DIRECTION OF MOVEMENT* (QUERIED WHERE LANDSLIDE FEATURES WERE NOT OBSERVED WITHIN GRADED PORTION OF SITE)
- CLAYSTONE
- SILTSTONE AND CLAYEY SILTSTONE
- SANDSTONE AND SILTY SANDSTONE
- CONGLOMERATE
- TUFF BED (VOLCANIC ASH)
- 80 STRIKE AND DIP OF BEDDING
- 75 STRIKE AND DIP OF OVERTURNED BEDDING
- 90 STRIKE OF VERTICAL BEDDING
- FAULT, SHOWING DIP, DASHED WHERE APPROXIMATE
- SEEPAGE OR VERY MOIST ROCK AT TIME OF EXCAVATION

*LANDSLIDES SHOWN OUTSIDE OF THE GRADED AREA WERE NOT VERIFIED BY SUBSURFACE EXPLORATION DURING GRADING. FOR ADDITIONAL LANDSLIDE INFORMATION IN THESE AREAS, REFER TO THE GEOLOGY AND EXPLORATION MAP (HARLAN TAIT ASSOCIATES, 1996) GRADING LIMITS ARE SHOWN ON THE GRADING PLANS, SHEETS 2–20, PREPARED BY POINT OF SOURCE ENGINEERING INCORPORATED. INFORMATION ON THIS MAP SHOULD NOT BE SUBSTITUTED FOR DESIGN LEVEL STUDIES WHEN CONCEPTUAL SITE PLANS ARE AVAILABLE.

N

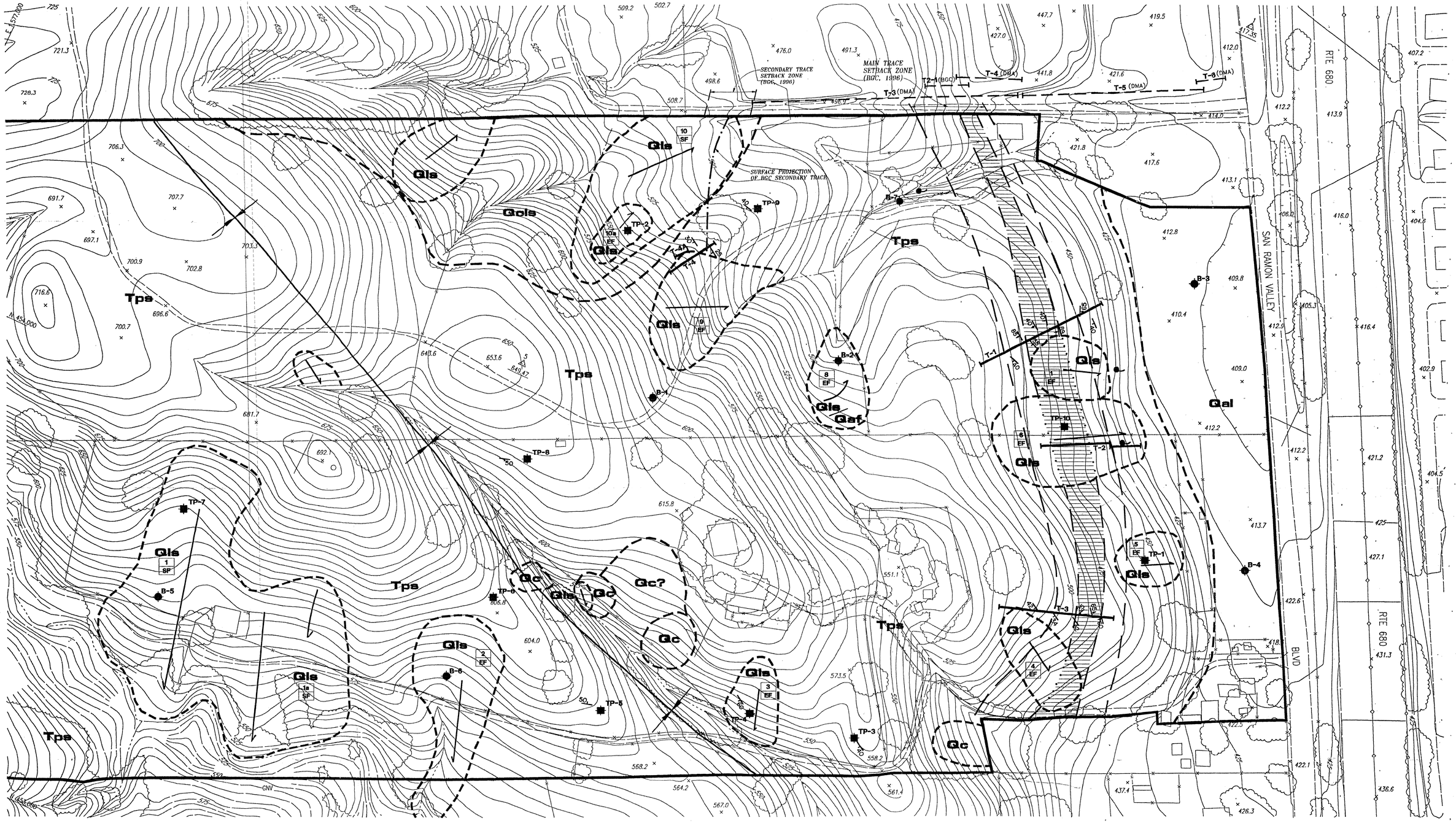
0 FEET 200
0 METERS 100

BASE MAP SOURCE: POINT OF SOURCE ENGINEERING INCORPORATED

G:\Drafting\DRAFTING2_Dwg\4412\GEOLOGY\4412W3-7geology.dwg 6-07-04 09:35:04 AM

ENGEO INCORPORATED 1971–2001 – 30 YEARS OF EXCELLENCE	SITE GEOLOGIC MAP - WIEDEMANN RANCH PRESLEY HENRY RANCH GHAD ANNEX CONTRA COSTA COUNTY, CALIFORNIA	PROJECT NO.: 4412-W3 DATE: JANUARY 2002 DRAWN BY: DLB CHECKED BY: RPS	FIGURE NO. 7

ORIGINAL FIGURE PRINTED IN COLOR



0 100 200 FEET
0 25 50 METERS

EXPLANATION

- LANDSLIDE SHOWING DIRECTION OF MOVEMENT
- 6 LANDSLIDE NUMBER
- EF LANDSLIDE TYPE AND ACTIVITY AS DESCRIBED BELOW:
  - EF ACTIVE EARTH FLOW, AVERAGE DEPTH 10–25'
  - SF SLUMP FLOW COMPLEX AVERAGE DEPTH 25–100'
- GEOLOGIC CONTACT
- **Qaf** ARTIFICIAL FILL
- **Qls** LANDSLIDE DEPOSIT
- **Qal** CLAY, SILT AND SAND
- **Qc** CLAYEY SILT, COLLUVIUM
- **Qols** POSSIBLE ANCIENT LANDSLIDE (HERD, 1978)
- **Tps** PLIOCENE; NON-MARINE SEDIMENTARY ROCKS
- 50 STRIKE AND DIP OF ROCK BEDDING
- T60 TREND AND DIP OF FAULT PLANE
- SPRING OR SEEP
- SYNCLINE AXIS
- FAULT ZONE, DOTTED WHERE CONCEALED
- HABITABLE STRUCTURE EXCLUSUION ZONE
- B-6 APPROXIMATE LOCATION OF TEST BORING
- TP-5 APPROXIMATE LOCATION OF TEST PIT
- T-4 APPROXIMATE LOCATION OF EXPLORATION TRENCH (ENGEO)
- T-4 APPROXIMATE LOCATION OF EXPLORATION TRENCH (BY OTHERS)

SITE GEOLOGIC MAP - PRESLEY HENRY RANCH PROJECT PRESLEY HENRY RANCH OHAD ANNEX CONTRA COSTA COUNTY, CALIFORNIA	PROJECT NO.: 4412-W3 DATE: FEBRUARY 2000	FIGURE NO. 8

-J HENRY RANCH

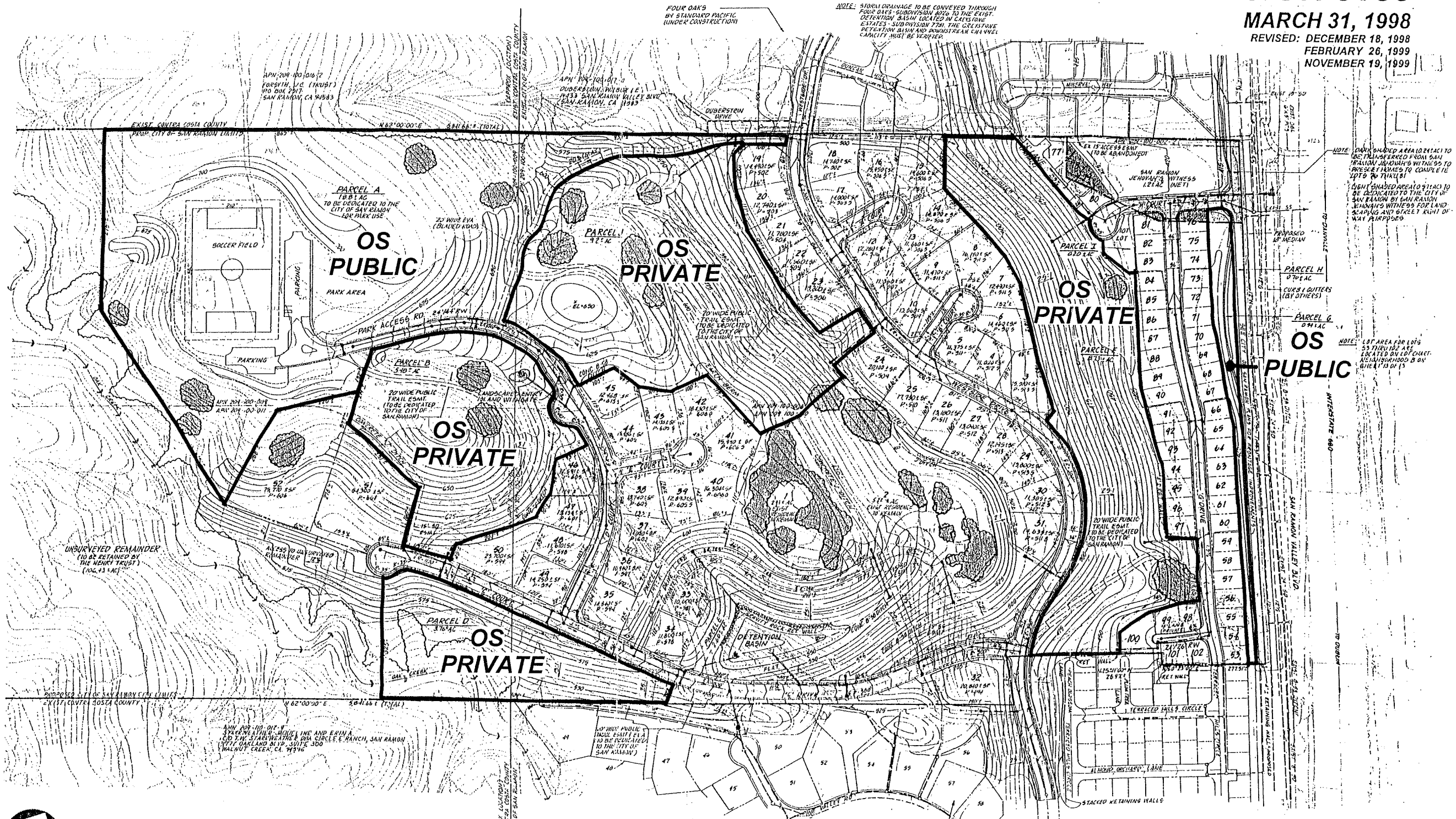
SAN RAMON, CALIFORNIA

OPEN SPACE WITHIN PRESLEY HENRY RANCH PROJECT PRESLEY HENRY RANCH GHAD ANNEX CONTRA COSTA COUNTY, CALIFORNIA	PROJECT NO.: 4412-W3 DATE: FEBRUARY 2000	FIGURE NO. 9

SUBDIVISION 8188

MARCH 31, 1998

REVISED: DECEMBER 18, 1998
FEBRUARY 26, 1999
NOVEMBER 19, 1999



NOTE: STORM DRAINAGE TO BE CONVEYED THROUGH FOUR OAKS SUBDIVISION 8026 TO THE EXIST. DETENTION BASIN LOCATED IN CANYONE ESTATES - SUBDIVISION 7391. THE CUMULATIVE DETENTION BASIN AND DOWNSTREAM CHANNEL CAPACITY MUST BE VERIFIED.

NOTE: DARK SHADED AREA (0.24 AC) TO BE TRANSFERRED FROM SAN RAMON JEHOVAH'S WITNESS TO PRESLEY HOMES TO COMPLETE LOTS 80 THRU 91

LIGHT SHADED AREA (0.91 AC) TO BE DEDICATED TO THE CITY OF SAN RAMON BY SAN RAMON JEHOVAH'S WITNESS FOR LANDSCAPING AND STREET RIGHT OF WAY PURPOSES

NOTE: LOT AREA FOR LOTS 53 THRU 102 ARE LOCATED IN PLANNED NEIGHBORHOOD B ON SHEET 13 OF 13

OS = OPEN SPACE

GRAPHIC SCALE: 1" = 100'

DEVELOPED BY
PRESLEY HOMES

NOTE
THE PROPOSED GRADING SHOWN ALONG THE TOLL/PRESLEY PROPERTY LINE WILL (1) RE-ALIGN WEST SIDE OF TO MAKE A SMOOTH REVERSE CURVE AND WILL (2) ELIMINATE 412' OF RETAINING WALL ALONG LOTS 46, 47, 48, & 49 AND WILL ELIMINATE 149' OF RETAINING WALL IN LOT 50, (3) WILL INCREASE THE FLAT PAD AREA OF LOTS 50 (OR 3,990'± SF) AND 46 (OR 5,780'± SF) AND (4) WILL FACILITATE A TRAVERSABLE PUBLIC HIKING TRAIL AND EVA AT 12.5% AND BLEND THE TWO PROJECTS TOGETHER.

P/A Design Resources, Inc.
Planning ■ Engineering ■ Surveying
2700 Ygnacio Valley Road, Suite 100
Walnut Creek, California 94598-3462
TEL (925) 210-9300

LEGAL DESCRIPTION - WIEDEMANN RANCH PRESLEY HENRY RANCH GHAD ANNEX CONTRA COSTA COUNTY, CALIFORNIA	PROJECT NO.: 4412-W3 DATE: FEBRUARY 2000	EXHIBIT A

ALL OF PARCEL C, SUBDIVISION MS 108-86 (133 PM 8); ALL OF PARCELS "A", "B", "C" AND "D", SUBDIVISION MS 135-74 (41 PM 21) PORTION OF LOTS 1 & 2; ALL OF LOTS 3 AND 4; PORTION OF THE SOUTHWEST ¼ OF THE NORTHWEST ¼; THE WEST ½ OF THE SOUTHWEST ¼; THE SOUTHEAST ¼ OF THE SOUTHWEST ¼; ALL IN SECTION 21 TOWNSHIP 2 SOUTH RANGE 1 WEST, MOUNT DIABLO BASE AND MERIDIAN; LOTS 1 AND 2; PORTION OF THE SOUTHWEST ¼ OF THE NORTHEAST ¼, THE WEST ½ LYING WITHIN CONTRA COSTA COUNTY; ALL IN SECTION 28 IN TOWNSHIP 2 SOUTH, RANGE 1 WEST, MOUNT DIABLO BASE AND MERIDIAN; ALL IN CONTRA COSTA COUNTY, CALIFORNIA DESCRIBED AS FOLLOWS:

BEGINNING AT THE MOST SOUTHWESTERN CORNER OF SAID PARCEL "C" (133 PM 8); THENCE FROM SAID POINT OF BEGINNING ALONG THE WESTERN LINE OF SAID PARCEL "C' (133 PM 8) NORTH 11°53'58" WEST 1668.00 FEET TO THE MOST NORTHWESTERN CORNER OF SAID PARCEL "C" (133 PM 8) SAID POINT BEING AT THE SOUTHERN RIGHT OF WAY LINE OF NORRIS CANYON ROAD (133 PM 8); THENCE ALONG THE NORTHWESTERN LINES OF SAID PARCEL "C" (133 PM 8) AND ALONG THE SOUTHERN RIGHT OF WAY LINE OF SAID NORRIS CANYON ROAD THE FOLLOWING NINE (9)COURSES: 1) NORTH 50°23'07" EAST 17.34 FEET; 2) ALONG THE ARC OF A 867.00 FOOT RADIUS CURVE TO THE RIGHT THROUGH A CENTRAL ANGLE OF 24°23'43" AN ARC DISTANCE OF 369.15 FEET; 3) NORTH 74°46'50" EAST 54.46 FEET; 4) ALONG THE ARC OF A 233.00 FOOT RADIUS CURVE TO THE LEFT THROUGH A CENTRAL ANGLE 18°40'19" AN ARC DISTANCE OF 75.93 FEET; 5) NORTH 56°06'31" EAST 198.33 FEET; 6) ALONG THE ARC OF A 333.00 FOOT RADIUS CURVE TO THE LEFT THROUGH A CENTRAL ANGLE OF 31°25'53" AN ARC DISTANCE OF 182.68 FEET; 7) NORTH 24°40'38" EAST 27.60 FEET; 8) ALONG THE ARC OF A 167.00 FOOT RADIUS CURVE TO THE RIGHT THROUGH A CENTRAL ANGLE OF 31°46'58" AN ARC DISTANCE OF 92.64 AND 9) NORTH 56°27'36" EAST 457.37 FEET TO THE MOST NORTHERN CORNER OF SAID PARCEL "C" (133 PM 8); THENCE LEAVING SAID SOUTHERN RIGHT OF WAY LINE OF NORRIS CANYON ROAD ALONG THE NORTHERN LINE OF SAID PARCEL "C" (133 PM 8) SOUTH 89°27'34" EAST 860.17 FEET TO THE MOST NORTHEASTERN CORNER OF SAID PARCEL "C" (133 PM 8); THENCE ALONG THE EASTERN LINE OF SAID PARCEL "C" (133 PM 8) SOUTH 00°31'00" WEST 2188.56 FEET TO THE MOST SOUTHEASTERN CORNER OF SAID PARCEL "C" SAID POINT BEING ON THE NORTHERN LINE OF SAID PARCEL "D" (41 PM 21); THENCE ALONG SAID NORTHERN LINE NORTH 80°58'36" EAST 2626.09 FEET TO THE MOST NORTHEASTERN CORNER OF SAID PARCEL "D" (41 PM 21); THENCE ALONG THE NORTHERN LINE OF SAID LOT 1 OF SECTION 21 SOUTH 89°04'30" EAST 450.00 FEET; THENCE LEAVING SAID NORTHERN LINE SOUTH 25°52'49" EAST 1001.89 FEET; THENCE SOUTH 02°49'38" WEST 405.49 FEET; THENCE NORTH 80°29'39" WEST 486.01 FEET; THENCE SOUTH 21°38'18" WEST 87.54 FEET; THENCE SOUTH 15°41'38" WEST

86.27 FEET; THENCE SOUTH 09°45'47" WEST 87.11 FEET THENCE SOUTH 03°49'07" WEST 86.63 FEET; THENCE SOUTH 02°16'04" EAST 86.26 FEET; THENCE SOUTH 05°48'40" EAST 165.75 FEET; THENCE SOUTH 55°19'06" EAST 27.31 FEET; THENCE NORTH 79°10'48" EAST 322.68 FEET; THENCE SOUTH 07°10'27" EAST 279.18 FEET; THENCE SOUTH 24°03'54" WEST 257.83 FEET; THENCE SOUTH 82°15'30" WEST 219.38 FEET; THENCE SOUTH 70°18'45" WEST 56.43 FEET; THENCE SOUTH 13°41'29" WEST 157.23 FEET; THENCE SOUTH 41°05'13" EAST 227. 32 FEET; THENCE NORTH 81°33'03" EAST 1125.71 FEET; THENCE SOUTH 59°57'40" EAST 624.93 FEET; THENCE SOUTH 29°09'25" EAST 543.92 FEET; THENCE NORTH 63°15'52" EAST 349.08 FEET TO A POINT ON THE RANCHO SAN RAMON WESTERN BOUNDARY LINE; THENCE ALONG SAID RANCHO LINE SOUTH 26°42'52" EAST 5515.03 FEET TO THE MOST SOUTHEASTERN CORNER OF SAID LOT 2 OF SECTION 28; THENCE ALONG THE SOUTHERN LINE OF SAID LOT 2 NORTH 87°57'05" WEST 2666.34 FEET TO A POINT ON THE EASTERN LINE OF SAID WEST ½ OF SECTION 28; THENCE ALONG SAID EASTERN LINE SOUTH 00°01'12" WEST 406.18 FEET TO A POINT ON THE EASTERN LINE OF ALAMEDA COUNTY; THENCE ALONG SAID EASTERN LINE THE FOLLOWING FOUR (4) COURSES: 1) NORTH 80°32'34" WEST 289.68 FEET; 2) NORTH 78°50'02" WEST 56.11 FEET; 3) NORTH 68°07'50" WEST 2244.19 AND 4) NORTH 46°17'50" WEST 251.29 FEET TO A POINT ON THE WESTERN LINE OF SAID SECTION 28; THENCE ALONG THE SAID WESTERN LINE NORTH 00°48'53" EAST 2005.99 FEET TO THE MOST NORTHWESTERN CORNER OF SAID SECTION 28 SAID POINT BEING THE MOST SOUTHEASTERN CORNER OF SAID PARCEL D (41 PM 21); THENCE ALONG THE WESTERN AND NORTHERN LINES OF SAID PARCEL "D" (41 PM 21) THE FOLLOWING SEVEN (7) COURSES: 1) SOUTH 82°07'42" WEST 1876.08 FEET; 2) NORTH 46°17'50" WEST 497.78 FEET; 3) NORTH 87°05'45" WEST 419.25 FEET; 4) NORTH 01°34'46" EAST 2158.90 FEET; 5) SOUTH 81°45'00" WEST 2705.98 FEET; 6) NORTH 02°42'27" EAST 2604.71 AND 7) NORTH 81°22'40" EAST 947.56 FEET TO THE POINT OF BEGINNING AND CONTAINING 1,063.00 ACRES OF LAND MORE OR LESS.

88074.8
GHAD BOUNDARY

LEGAL DESCRIPTION - PRESLEY HENRY RANCH PROJECT PRESLEY HENRY RANCH GHAD ANNEX CONTRA COSTA COUNTY, CALIFORNIA	PROJECT NO.: 4412-W3 DATE: FEBRUARY 2000	EXHIBIT B

SUBDIVISION 8188 - D.S.R.S.D.

REAL PROPERTY IN AN UNINCORPORATED AREA, COUNTY OF CONTRA COSTA, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

BEING A PORTION OF THE RANCHO SAN RAMON, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE MOST SOUTHWESTERLY RIGHT OF WAY LINE OF SAN RAMON VALLEY BOULEVARD AS IT NOW EXISTS AT THE INTERSECTION WITH THE MOST EASTERLY PORTION OF THE COMMON LINE AS DESCRIBED IN THE DEEDS TO HENRY, RECORDED MARCH 1, 1948, IN BOOK 1177, AT PAGE 405 AND RECORDED MARCH 13, 1954, IN BOOK 2441, AT PAGE 432, CONTRA COSTA COUNTY RECORDS, SAID POINT ALSO BEING ON THE EXISTING SAN RAMON CITY LIMIT LINE;

THENCE, ALONG SAID RIGHT OF WAY LINE AND CITY LIMIT LINE, SOUTH 28° 59' 05" EAST, 658.42 FEET TO A POINT ON THE MOST NORTHWESTERLY LINE OF THE PARCEL OF LAND DESCRIBED AS 'EXCEPTING THEREFROM:' IN SAID HENRY DEED (1177 OR 405);

THENCE, LEAVING SAID RIGHT OF WAY LINE AND ALONG THE MOST NORTHWESTERLY AND SOUTHWESTERLY LINES OF SAID PARCEL 'EXCEPTING THEREFROM:' (1177 OR 405), THE FOLLOWING COURSES, SOUTH 62° 57' 54" WEST, 277.50 FEET;

THENCE, NORTH 22° 54' 10" WEST, 29.86 FEET;

THENCE, SOUTH 63° 06' 32" WEST, 414.92 FEET;

THENCE, SOUTH 34° 53' 08" EAST, 131.51 FEET TO A POINT ON THE MOST SOUTHEASTERLY LINE OF SAID HENRY DEED (1177 OR 405);

THENCE, ALONG SAID SOUTHEASTERLY LINE (1177 OR 405), SOUTH 64° 42' 52" WEST, 1326.61 FEET TO AN ANGLE POINT ON THE SAID EXISTING SAN RAMON CITY LIMIT LINE;

THENCE, LEAVING SAID EXISTING SAN RAMON CITY LIMIT LINE AND CONTINUING ALONG THE SAID MOST SOUTHEASTERLY LINE (1177 OR 405), SOUTH 64° 42' 52" WEST, 339.64 FEET TO A POINT ON THE MOST SOUTHWESTERLY LINE OF THE PROPOSED SUBDIVISION 8188 AS SHOWN ON THE VESTING TENTATIVE MAP SUBMITTED TO AND ACCEPTED BY THE CITY OF SAN RAMON;

THENCE, LEAVING SAID SOUTHEASTERLY LINE (1177 OR 405), ALONG THE MOST SOUTHWESTERLY LINE OF THE PROPOSED SUBDIVISION 8188, THE FOLLOWING COURSES, NORTH 24° 22' 33" WEST, 331.56 FEET TO A POINT OF NON-TANGENCY;

THENCE, SOUTHWESTERLY, WESTERLY, NORTHWESTERLY AND NORTHERLY, ALONG THE ARC OF A NON-TANGENT CURVE, CONCAVED NORTHEASTERLY, THE RADIUS POINT OF WHICH BEARS NORTH 24° 22' 53" WEST, HAVING A RADIUS OF 45.00 FEET, DELTA OF 105° 13' 31", A LENGTH OF 82.64 FEET TO A POINT OF NON-TANGENCY;

THENCE, SOUTH 83° 41' 15" WEST, 405.00 FEET;

THENCE, NORTH 57° 39' 49" WEST, 607.09 FEET;

THENCE, NORTH 25° 12' 25" WEST, 481.98 FEET TO A POINT ON THE MOST NORTHWESTERLY LINE OF SAID HENRY DEED (2441 OR 432);

THENCE, LEAVING LAST SAID MOST SOUTHWESTERLY LINE OF PROPOSED SUBDIVISION 8188 AND ALONG SAID MOST NORTHWESTERLY LINE (2441 OR 432), NORTH 64° 47' 35" EAST, 1070.12 FEET TO AN ANGLE POINT ON THE EXISTING SAN RAMON CITY LIMIT LINE;

THENCE, ALONG THE SAID EXISTING SAN RAMON CITY LIMIT LINE AND CONTINUING ALONG SAID NORTHWESTERLY LINE (2441 OR 432), NORTH 64° 47' 35" EAST, 1919.86 FEET TO THE SAID EXISTING MOST SOUTHWESTERLY RIGHT OF WAY LINE OF SAN RAMON VALLEY BOULEVARD;

THENCE, ALONG SAID RIGHT OF WAY LINE, SOUTH 28° 59' 05" EAST, 735.82 FEET TO THE POINT OF BEGINNING.

THAT PORTION OF THIS DESCRIPTION WHICH CALLS "ALONG THE MOST SOUTHWESTERLY LINE OF THE PROPOSED SUBDIVISION 8188" WHICH SHALL ULTIMATELY AGREE WITH THE SUBDIVISION BOUNDARY LINE THAT WILL BE ESTABLISHED UPON THE EVENTUAL FILING OF THE FINAL MAP FOR SUBDIVISION 8188.

BEARING AND DISTANCES ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, NAD 27, ZONE 3. TO OBTAIN GROUND DISTANCES, MULTIPLY BY 1.0001044.

APPENDIX B

SYCAMORE ASSOCIATES LLC

Final Wetland and Red-Legged Frog
Biological Mitigation Plan
Henry Ranch, San Ramon,
Contra Costa County, California
November 1998

4412-W3
February 1, 2000
Revised July 12, 2002

FINAL WETLAND AND RED-LEGGED FROG BIOLOGICAL MITIGATION PLAN HENRY RANCH, SAN RAMON, CONTRA COSTA COUNTY, CALIFORNIA

COLOR PLATE XV

Rana draytonii Bd. and Gird. Female, four or five years old. South San Francisco, Cal. Photographed to show the coloring of the upper and under surfaces. The frog at the left is in water.

November 1998

Prepared by:
Sycamore Associates LLC
3400 Mt. Diablo Boulevard, Suite 13
Lafayette, CA 94549
(925) 284-1766

Prepared for:
Presley Homes
1350 Arnold Drive, Suite 201
Martinez, CA 94553-4190
(925) 229-8880

TABLE OF CONTENTS

LIST OF TABLES

1.0 PROJECT DESCRIPTION

The applicant, Presley Homes, is proposing to construct approximately 105-family units on Henry Ranch on approximately 195.85 acres in the City of San Ramon, Contra Costa County. The project will include the construction of homes, roadways and related utilities, a 14.4 acre public park, 34.5 acres of private open space, and approximately 94 acres of open space (to be placed in a conservation easement). Attachment A includes: site photos, a project location map and the Tentative Map.

The Henry Ranch study area is located on the west side of the San Ramon Valley, in southwestern Contra Costa County. The site is situated just west of Highway 680 and San Ramon Valley Boulevard between Pine Valley Road and Montevideo Drive. Henry Ranch was included in the area of the Westside Specific Plan EIR certified in October 1989. The Henry Ranch covers 195.85 acres and is located within the City's Sphere of Influence. The property is situated approximately 8 air miles southwest of Mount Diablo and 1.5 miles north of the Alameda County line. The topography consists of moderately steep, east-facing slopes at the base of Divide Ridge in the East Bay Hills.

Habitats on the property are characteristic of the East Bay foothills, consisting of large expanses of grassland and scattered stands of oak and bay woodland in the ravines. Oak Creek flows across the property, flowing from west to east. Several perennial seeps are also present near the eastern end of the study area. The creek and ravines on site have a moderately steep gradient and support primarily oaks and bay trees.

Historically, the property has been used primarily for grazing; it is actively used for the grazing of cattle. Two single family homes, barns, corrals and related outbuildings are the only permanent structures on site. The study area is surrounded and dissected by barbed wire fences and is contiguous to the west with extensive open space which is part of the East Bay Regional Park's Las Trampas Regional Wilderness. Adjacent developments include two churches and associated buildings and parking areas, and several single family homes. The Greystone and Four Oaks residential developments are located to the north. Highway 680 is located immediately to the east of the property, with extensive suburban development and the City of San Ramon beyond. The Circle E Ranch is located to the south of the site and west of the property is open space. Bishop Ranch Regional Open Space is located approximately one half mile to the north.

Sycamore Associates prepared a wetlands delineation at 100-scale for the project area entitled, Preliminary wetlands delineation and Jurisdictional Determination for Henry Ranch, San Ramon, Contra Costa County, California, dated November 1997. It was revised on February 18, 1998 reflecting a field visit and was verified by Angie Wulfow of the ACOE, April 20, 1998. The wetlands at the proposed mitigation area were also delineated and verified by the ACOE. The wetlands delineation map for the project site and mitigation area was entered into the base map information with CAD and is provided in Attachment C. Attachment E includes copies of relevant agency correspondence.

Surveys for special-status plant and wildlife species were conducted for the project area. No special-status plant or wildlife species have been detected on site and none are expected.

2.0 PROJECT IMPACTS AND MITIGATION

Sycamore Associates has prepared a wetlands delineation at 100-scale and report for the project area entitled, Preliminary Wetlands Delineation and Jurisdictional Determination for Henry Ranch, San Ramon, Contra Costa County, California, November, 1997 (Attachment C). It should be noted that only 95 acres of the 195.85-acre site were surveyed for plants and animals since only that portion is subject to potential disturbance.

A site assessment for California red-legged frog (*Rana aurora draytonii*) was performed at Henry Ranch, which is located near San Ramon in Contra Costa County, California (Attachment F). The site, which encompasses approximately 195.85 acres, contains rolling to steep hills dominated by non-native annual grassland with scattered valley oaks on the east and oak woodland on the west. Approximately 91 acres of the site adjacent to San Ramon Valley Boulevard have been proposed for residential development by Presley Homes.

The project site does not currently support any ponds that provide breeding habitat for California red-legged frog. However, at least two ponds within one mile of the project boundaries provide potential breeding habitat. In addition, two non-breeding, adult red-legged frogs were observed at Circle E Ranch, which is located adjacent to the south border of the site. (Sycamore Associates 1996).

The project site may provide foraging and sheltering habitat for California red-legged frogs, particularly if the subspecies inhabits off-site ponds. Based on the observations from Circle E Ranch, it is assumed that red-legged frogs may pass through Henry Ranch during wet periods. The 94-acre area, to be placed in a conservation easement, provides higher quality habitat for wildlife (including the red-legged frog) than the 91 acres proposed for development.

The project impacts are shown in Table 2 and impacts and mitigation are summarized in Table 3. The average annual flow of the Oak Creek drainages is less than 5 cfs. The project restorationists, Sycamore Associates and the project engineers, P/A Design Resources, Inc. have worked with the owner and the agencies to avoid and minimize wetlands impacts through careful project design. The Alternatives Analysis (Attachment B) documents the site plan iterations and avoidance alternative, which protects Oak Creek and establishes 200 to 600 foot setbacks from the top of the bank. All impacts to wetlands and unvegetated waters of the U.S. will be fully mitigated, as shown in the accompanying documentation.

This mitigation plan is consistent with the ACOE, CDFG and RWQCB policy of "no-net-loss" of wetlands. This plan addresses mitigation for impacts to jurisdictional wetlands and waters of the U.S. Waters of the U.S. on site consist of the average width of the creek channel at the point at which the banks or bottom are scoured. Sycamore Associates prepared a wetlands delineation for the project area which was verified April 21, 1998. Table 1 in the report summarizes the

jurisdictional wetlands and waters of the U.S. A total of 0.75 acre (32,838 square feet) of existing jurisdictional waters of the U.S. were delineated at Henry Ranch. The channel widths and section lengths are shown on the wetlands delineation map (Attachment C).

Table 2, showing all jurisdictional impacts, was prepared by Sycamore Associates. Jurisdictional impacts include 0.28 acre of wetlands. The proposed project includes permanent impacts to two small drainages or unvegetated waters of the U.S. as a result of the construction. The area of impact for each jurisdictional area is presented in Table 2 and accounts for the actual construction features and a realistic construction zone. The tentative map and impacts prepared by P/A Design Resources, Inc. are included in Attachment A and show the area and plan views for the proposed work. A full set of working drawings is available upon request.

Table 3 summarizes impacts and proposed mitigation. As mitigation for the permanent loss of jurisdictional waters of the U.S., the applicant is proposing to create 0.60 acre of seasonal and pond/freshwater marsh at four mitigation sites on the Henry Ranch. The suitability of these mitigation sites was reviewed in the field by restorationists (Sycamore Associates), the geotechnical engineer (Engeo), the engineer (P/A Design Resources) and hydrogeologist (Greg Kamman). The proposed mitigation will result in creation of wetlands adjacent to existing wetland habitats on site. The majority of the created wetlands will consist of 0.36 acre pond/freshwater marsh and 0.24 acre of seasonal wetland habitats.

The existing and created wetland areas will not be grazed, further benefiting the habitat values. The created wetlands will be fenced with a four-strand barbed wire exclusion fence and a conservation easement will be established to manage these wetland resources in perpetuity.

The created wetlands were designed by Sycamore Associates' restorationists Mike Wood and Marylee Guinon, the project's civil engineer and planner Jim Parsons, registered hydrogeologist Greg Kamman, and Engeo's geo-technical engineer Duncan Hickmont. The design and treatment of the four mitigation sites are described in greater detail below and are depicted on attached mitigation plans (Attachment D).

Table 1
Calculation of Area Subject to ACOE Jurisdiction at the Henry Ranch
(Source: Sycamore Associates, Verified April 21, 1998)

Location	Feature*	Length (lf)**	Area (sf)**
N. Central Drainage	Waters	48	48
Northeast Drainage	DFM	0	2480
	VFM	100	570
	CCRS	50	2015
	VFM	50	120
	CCRS	60	2280
	VFM	45	105
	CCRS	25	785
	VFM	90	600
	DFM	80	520
Church Property (NE corner of site)	Waters	45	90
	VFM	0	310
E. Central Drainage	VFM	0	2250
S. Central Drainage Reach A	Waters	60	60
Reach B	Waters	80	80
Reach C	Waters	90	90
Reach D	Waters	70	70
Oak Creek Drainage Reach A	Waters	415	3320
Reach B	Waters	100	200
Reach C	Waters	145	1450
Reach D	Waters	300	300
Reach E	Waters	130	260
Reach F	Waters	150	150
Reach G	Waters	55	110
Reach H	Waters	590	4750
Reach I	Waters	125	125
Reach J	Waters	460	460
Reach K	Waters	375	3000
Reach L	Waters	220	1320

* Waters = Unvegetated Waters of the U.S., DFM = Disturbed Freshwater Marsh, VFM = Valley Freshwater Marsh, CCRS = Central Coast Riparian Scrub
** sf = square feet, lf = linear feet

Reach M	Waters	150	300
Reach N	Waters	205	1640
Reach O	Waters	150	900
Reach P	Waters	100	500
Reach Q	Waters	90	90
Reach R	Waters	100	600
Reach S	Waters	115	920
TOTALS		**4,868**	**32,838 (0.75 ac)**

* Waters = Unvegetated Waters of the U.S., DFM = Disturbed Freshwater Marsh, VFM = Valley Freshwater Marsh, CCRS = Central Coast Riparian Scrub

** sf = square feet, lf = linear feet

Table 2
Calculation of Verified Jurisdictional Area Affected
(Source: Sycamore Associates and P/A Design Resources, Inc.)

Location	Feature	Length (lf)	Area (sf)
Northeast Drainage	DFM		2480
	VFM		480
	Waters		90
	CCRS		2015
	VFM		120
	CCRS		2280
	VFM		105
	CCRS		785
	VFM		600
	DFM		520
Church Property (NE corner of site)	VFM		90
	VFM		310
E. Central Drainage	VFM		2250
S. Central Drainage Reach A	Waters		60
Reach B	Waters		80
Reach C	Waters		90
Reach D	Waters		70
SUBTOTALS	**Waters**	**390**	**390**
	CCRS	**135**	**5,080**
	DFM	**80**	**3,000**
	VFM	**240**	**3,955**
TOTAL		**845**	**12,425 sf (0.28 ac)**

* Waters = Unvegetated Waters of the U.S., DFM = Disturbed Freshwater Marsh, VFM = Valley Freshwater Marsh, CCRS = Central Coast Riparian Scrub
** sf = square feet, lf = linear feet

Table 3
Summary of Permanent Impacts and Mitigation

Habitat Type	Impact Area (sf)	Mitigation Area Mitigation Ratio
Waters of the U.S.	390	
Central Coastal Scrub	5,080	0.11 acre (5,100 sq.ft.)
Valley Freshwater Marsh/Pond and Disturbed Freshwater Marsh	6,955	0.24 acre (10,581 sq. ft.)
Seasonal Wetland		0.24 acre (10,454 sq. ft.)
TOTAL	0.28 acre (12,425 sq. ft.)	0.60 acre 2:1 Mitigation Ratio

3.0 JURISDICTION OF PERMITTING AGENCIES

3.1 Army Corps of Engineers

The applicant is submitting an application to the Army Corps of Engineers, San Francisco District, for an Individual Permit. The wetlands delineation was verified by Angie Wulfow of the ACOE in April 1998. Summaries of existing ACOE-jurisdictional waters of the U.S., ACOE-jurisdictional wetlands and of impacts to wetlands and waters of the U.S. are provided in Tables 1 and 2. A summary of impacts and mitigation acreage is presented in Table 3.

Mitigation involves creation of pond/freshwater marsh and seasonal wetlands at four sites. All mitigation will occur on site and will be done at a 2:1 replacement ratio for wetlands and waters impacted as a result of project implementation. This is consistent with the ACOE's "no-net-loss" policy for wetlands.

3.2 California Department of Fish and Game

The applicant anticipates securing a 1603 Streambed Alteration Agreement for the wetlands creation and project impacts. This mitigation and monitoring plan is in compliance with the California Department of Fish and Game's (CDFG) "no-net-loss" policy for wetlands. The applicant will provide mitigation at a ratio of 2:1, full mitigation for the loss of existing wetlands functions and values, and a conservation easement granted to the ACOE to protect the wetlands *in perpetuity*. CDFG will require proof of CEQA compliance (Attachment E).

3.3 Regional Water Quality Control Board

A waiver is being sought from the Bay Area Regional Water Quality Control Board (RWQCB). The applicant is providing the ACOE and RWQCB with a notification of its intent to fill a total of 0.28 acre. The Alternatives Analysis (Attachment B) documents the site plan iterations and avoidance alternative, which protects Oak Creek and establishes 200 to 600 foot setbacks from the top of the bank. The applicant proposes to mitigate these impacts at a 2:1 replacement ratio through the creation of 0.60 acre of jurisdictional wetlands and waters (Table 3), in compliance with the RWQCB's "no-net-loss" policy for wetlands. The mitigation and monitoring plan provides for full mitigation of existing wetlands functions and values and a conservation easement granted to the ACOE to protect the wetlands in perpetuity. An analysis of the functions and values of existing vs. created wetlands are provided in Table 4, in the permit. The RWQCB will require proof of CEQA compliance, provided in Attachment E.

4.0 MITIGATION GOALS

The mitigation goals for the Henry Ranch Wetland and Red-Legged Frog Biological Mitigation and Monitoring Plan are listed below.

- The proposed project and mitigation will not decrease the likelihood of recovery, jeopardize the continued existence of the red-legged frog, nor result in the destruction or modification of critical habitat.

- The project will comply with environmental permit conditions, including no-net-loss of wetlands, full mitigation of functions and values of wetlands and erosion control.

- The project will fully mitigate impacts to 0.28 acre of jurisdictional wetlands and waters of the U.S. by the creation of a mosaic of pond/freshwater marsh and seasonal wetland areas totaling 0.60 acre, designed to enhance red-legged frog breeding and rearing habitat.

- Ensure success by providing monitoring during construction and post-construction biological monitoring to detect natural colonization of the created wetland/pond areas by wetland vegetation by native amphibians.

- Provide for erosion control throughout the project site during construction.

- Establish a conservation easement in perpetuity around the created mitigation wetlands and adjacent open space.

- Establish a basis for the measurement of mitigation success by providing performance standards and biological monitoring for five years following project construction.

5.0 CREATION OF MITIGATION WETLANDS

The attached mitigation graphics show the location and configuration of existing and proposed mitigation wetlands. A map showing the mitigation sites and conservation easement in a regional context is also attached. The ACOE verified a wetland delineation prepared by Sycamore Associates in the mitigation area to ensure mitigation construction will not impact existing wetlands (Attachment C). A total of 0.60 acre of wetlands will be created at four sites. Plan view and cross-sections are provided for each of the mitigation sites.

5.1 Conceptual Design

After evaluating the feasibility for mitigation at numerous locations, four final mitigation wetland sites have been identified at the western portion of the Henry Ranch property as described in Table 4.

Each of the pond sites will be composed of a single impoundment or series of smaller ponds. Sufficient wet season runoff exists at these sites to fill created ponds during all but the most critically dry years (see Section 5.2, below). A band of freshwater marsh habitat several feet wide will be established around the perimeter of each pond and/or between smaller ponds. The seasonal wetland area will be created to accommodate seasonal ponding and associated vegetation. Exclusionary fencing (barbed wire) will be placed around the pond/freshwater marsh and seasonal wetlands, outside of inundation areas.

The pond/freshwater marsh wetland areas are designed to provide suitable breeding habitat for the red-legged frog. If breeding populations of red-legged frogs exist in the upper watershed, the frogs are expected to eventually naturally colonize the created habitat. The species has been recorded at Circle E Ranch located immediately south of the Henry Ranch site and similar mitigation ponds have been created there. Colonization is not guaranteed but will be evaluated during the five-year monitoring period following pond construction.

Table 4
Summary of Mitigation Areas

Wetland Mitigation Site[1]	Habitat Description	Size (acre)
Pond Site 1A	Aquatic and freshwater marsh, created by expansion of the existing 0.05 acre pond	0.03
Pond Site 1	Freshwater marsh, seasonal wetland, and open water located adjacent to the existing pond	0.24
Pond Site 2	Pond and associated freshwater marsh located approximately 300 feet northwest of the existing pond	0.09
Seasonal Wetland	Seasonal wetland area located approximately 300 feet north of the existing pond	0.24

[1] All mitigation wetlands are located in the Oak Creek drainage basin.

Each of the proposed pond/freshwater marsh wetlands occupy a relatively level area which will require minimal grading and construction activities. The gentle slope of these terrace-like areas encourages the development of an in-line series of small or cascading ponds and surrounding wetland vegetation. Each pond/freshwater marsh wetland will require a single outlet (spillway) to an existing drainage channel. Spillways will be designed at each site to allow for the draining of excess runoff during peak rainfall events. Drainage from Pond Site 2 will be directed into the existing wetland (Pond Site 1A). In turn, drainage from the existing pond will be directed into proposed Pond Site 1. In addition, excess runoff from the seasonal wetland area will be directed to Pond Site 1. Bank protection measures will also be incorporated into the outlet channels below the spillways to prohibit channel erosion and gully formation.

The seasonal wetland area is proposed in an existing depression. This wetland will consist of one large seasonal pond/wetland area. It is anticipated that more grading and slope stabilization techniques will be necessary in this area, possibly including the installation of subdrains or hydro-augers. Such drainage systems can be used to augment seasonal runoff and spring water supplies to created wetlands. Drainage from this mitigation wetland site will consist of a single spillway and stabilized outlet drainage channel.

Pond construction will be directed in the field by the project engineer at P/A Design Resources, geotechnical engineers at Engeo, and project restorationists at Sycamore Associates. The ponds and seasonal wetland depression will be over-excavated and lined with impervious clay soils to

the desired grade. Soils in the pond/freshwater marsh zone will be scarified and seeded with appropriate native wetland species. An overflow spill way will be installed at each pond/freshwater marsh to assist in draining overflow out of the mitigation areas during peak runoff events. Contractor access was confirmed in the field.

If non-native predators of the red-legged frog (e.g. bullfrog) become established and standing water remains in any of the mitigation wetland areas during the late summer, pumps will be used to dewater ponds for a minimum of two weeks after September 30. Standpipes are not considered a viable long-term solution to dewatering. A post-construction monitoring plan will require evaluation of the health and performance of each mitigation pond for a minimum of five years after construction. The hydrology of the ponds will be monitored and evaluated to ensure that the ponds dry down by September in most years.

5.2 Hydrologic Sufficiency

As described above, the mitigation wetland design includes the creation or enhancement of 0.36 acre of pond/freshwater marsh-type wetlands and 0.24 acre of seasonal wetlands. During the wet season, precipitation and runoff are expected to meet the water demands of the seasonal wetland during all years as long as these areas are constructed with impervious bottoms and can capture available runoff. No supplemental supplies or long-term detention of water will be necessary to sustain the seasonal wetland area. Thus, the focus of the hydrologic sufficiency analysis is on summer water availability for a total of 0.36 acre of created pond and associated emergent freshwater marsh wetlands and 0.05 acre of existing pond/freshwater marsh.

The approach used to evaluate the amount of water sufficient to sustain the proposed freshwater marsh and seasonal wetlands consisted of developing detailed water budgets for the site. These water budgets compare anticipated freshwater marsh and seasonal wetland water demands against readily available and maintenance-free water supplies. Future mitigation freshwater marsh and seasonal wetland water demands were estimated from mitigation designs and estimates of associated evapotranspiration rates. Although there appear to be seasonal seeps and springs adjacent to the proposed mitigation wetland areas, the only reliable and quantifiable water supply is direct rainfall and runoff from slopes adjacent to each mitigation wetland sites. Estimates of possible infiltration losses to the low-permeability substrate were also considered during this analysis. Because water availability in California varies considerably from year to year, water budgets were prepared for representative average year and dry year-types. Based on these analyses, it appears that runoff and direct rainfall supplies are sufficient to sustain the proposed mitigation freshwater marsh wetlands during both of these year-types.

5.2.1 Available Water Supply

Estimates of runoff in the upper elevations of the Henry Ranch site during average and dry year-types are 4.35 inches (0.36 foot) and 1.37 inches (0.11 foot) per acre, respectively. Based on these estimates and measurements of contributing drainage area, available runoff to each of the proposed mitigation wetland areas is presented in Table 5.

Table 5
Available Runoff to Proposed Mitigation Wetland Sites

Proposed Wetland Areas	Drainage Area (acres)	Available Average Year-Type Runoff (acre-feet)	Available Dry Year-Type Runoff (acre-feet)
Existing Pond, Pond Site 1A, and Pond Site 1	4.9	1.78	0.56
Pond Site 2	3.0	1.08	0.33
Seasonal Wetland	2.2	0.79	0.24

5.2.2 Estimated Water Demands

Because runoff and direct precipitation will act as the primary water supply, mitigation freshwater marsh wetlands will need to be designed to accommodate ponding to provide for carryover storage from the wet to dry seasons. Designed pond depths will be an important variable in controlling the duration of ponding into the summer season and bracketing the ecological requirements of a broad array of aquatic organisms. Freshwater marsh-type wetlands and ponds in the eastern Bay Area utilize similar amounts of water throughout the summer and late fall seasons (April through October) during average water years (3.97 acre-feet/acre vs. 3.87 acre-feet/acre, respectively). Based on available free water surface evaporation rates and freshwater marsh evapotranspiration rates for the site area, Table 6 presents pond design depths that are necessary to maintain standing water through certain portions of the summer season. For example, if ponding is desired through the end of August during any given year, a mitigation pond at the site should be constructed to a depth of 2.86 feet. For purposes of red-legged frog breeding habitat, it is important that ponds dry up during the late summer (a condition red-legged frogs can tolerate) in order to preclude the establishment of breeding bullfrogs (a known predator). Thus, mitigation pond/freshwater marsh wetlands will be designed to accommodated 3.0 feet of ponding which will maintain saturated conditions through mid-September. The seasonal wetland depression will be constructed to depths of approximately 1.0 foot in order to sustain ponding into early June.

Table 6
Period (from end of wet-season) in Which Site Ponding is Sustained

Period	Required Pond Depth (feet)
End of April	0.31
End of May	0.81
End of June	1.48
End of July	2.22
End of August	2.86
End of September	3.33

The volumes of water necessary to fill proposed mitigation pond/freshwater marsh wetlands to a maximum depth of 3 feet are presented in Table 7. The combined volume of runoff and precipitation that will sustain 1 foot of ponding in the seasonal wetland is also presented in Table 7.

Table 7
Estimated Pond/Freshwater Marsh Wetland Water Demands

Proposed Wetland Area	Proposed Pond/Fresh-water Marsh Area (acre)	Desired Water Depth (feet)	Estimated Water Demand (acre-feet)
Existing Pond (0.05 acre), Pond Site 1A (0.03 acre), and Pond Site 1 (0.24)	0.32	3.00	0.72
Pond Site 2	0.09	3.00	0.20
Seasonal Wetland	0.24	1.00	0.18

It is important to note that calculations of estimated water demands compensate for pond bank slopes and the concave profile of proposed ponds and wetlands.

5.2.3 Water Budget

Comparisons of mitigation pond/freshwater marsh wetland water supply and demand estimates are presented in Table 8.

Table 8
Comparison of Pond/Freshwater Marsh Wetland Water Supplies and Demands

	Supply		Demand
Proposed Wetland Areas	**Available Average Year-Type Supply (acre-feet)**	**Available Dry Year-Type Supply (acre-feet)**	**Estimated Water Demand (acre-feet)**
Existing Pond, Pond Site 1A, and Pond Site 1	1.78	0.56	0.72
Pond Site 2	1.08	0.33	0.20
Seasonal Wetland	0.79	0.24	0.18

These results indicate that there is enough direct runoff to meet mitigation goals for each of the proposed pond/freshwater marsh and seasonal wetland areas during most year-types. However, direct runoff to the combined areas of the existing Site 1A, and Site 1 ponds (0.56 acre-feet) falls slightly below estimated pond demands (0.72 acre-feet) during dry years. As indicated above, excess runoff to Pond Site 2 and the proposed seasonal wetland will be directed to Pond Site 1. This additional supply (minimum of 0.19 acre-feet during dry years) will insure that water demands are met at Site 1 ponds during dry year-types. Given the design objective of drying down the ponds by late September in most years, this hydrologic regime is appropriate.

Success in wetland creation and sustenance will also be enhanced by seasonal spring and seep flow. In addition, the installation of subsurface drains during construction of the mitigation wetlands (to enhance slope stability) may also serve as another supplemental water supply to mitigation wetlands.

As a qualitative check of hydrologic sufficiency calculations, 13 aerial photographs of the project site were reviewed to evaluate the state of area ponds and wetlands throughout selected dry seasons and drought years between 1954 through 1996. Photographs confirm that the existing pond adjacent to mitigation wetland Pond Site 1 is full at the end of the wet season and dries out

by September and/or October of most years. Summer photos for dry years (1959 and 1990) suggest that the existing pond dries up by early July. Although there appears to be some subsurface seepage supplying this area during the spring months, it is not sustained into the summer and may simply reflect drainage of shallow groundwater, experienced during saturated conditions. Thus, aerial photographs confirm that water supply to the freshwater marsh wetlands is winter runoff. The same may be said of the seasonal wetland area, except that groundwater drainage may be sustained a bit longer into the summer as existing depression at this location intersects the groundwater table to a deeper depth.

5.3 Construction and Revegetation

Table 9 shows a schedule of the permitting construction and monitoring milestones.

Table 9 Schedule

Date	Activity
January 1999	Submit applications to ACOE, RWQCB and CDFG. Begin formal consultation with USFWS.
February 1999	CEQA compliance.
March 1999	Obtain agency approvals.
Spring 1999	Procure seed mixes.
Spring 1999	Begin project construction.
Summer 1999	All earthwork activity and installation fencing at four mitigation sites.
Summer 1999	Prepare as-built drawings.
Summer 1999	Install 4 hydrologic monitoring stations at Ponds 1, 1A and 2.
Summer 1999	Establish conservation easement over approximately 94 acres.

Fall 1999	Seeding of four mitigation sites.
December 1999	Plant willow pole cuttings at Ponds 1, 1A and 2 when donor plants are dormant.
Spring and Fall 2000-2004	Conduct 5-year adaptive management and monitoring program. Modify ponds or implement remedial actions to achieve desired mitigation goals and design objectives. Submit annual reports to ACOE, RWQCB, and USFWS.

The following considerations will be addressed during the construction of mitigation wetlands at the Henry Ranch site.

Site Preparation and Grading

Material that is excavated during site preparation will likely be reused in the construction of levees, berms, and/or spillways that will surround mitigation wetlands. It is important that all fine grained, clayey soils be stockpiled and reused to line the bottoms of mitigation wetland areas to inhibit infiltration. If soils of unsuitable quality or quantity are excavated on site, it may be necessary to import suitable clay-rich soil to line pond and wetland areas. In turn, some material may need to be transported and placed off site.

Invasive Plant/ Noxious Weed Removal

If planting immediately follows grading then no provision for the removal of invasive plants or noxious weeds is needed. However, delays in planting may allow naturalized weed populations to get established which will require substantial measures for invasive plant control. A contingency for three invasive plant removal programs will be necessary: 1) eradicate the extremely noxious weeds 2) weed control prior to seeding and planting and 3) weed control during establishment maintenance. Weed eradication work will be inspected by the project restorationist prior to seeding and planting. The project restorationist overseeing the implementation will decide which technique is preferred to achieve optimal eradication of the target plants, based on the time of year and growing phase of the plants.

Weed Control Prior to Seeding and Planting

Because seeding and planting should occur on a weed free site, additional weed control may be necessary. The project restorationist will prescribe appropriate weed control treatments based on the time of year, climatic conditions, schedule of grading, target invasive species, and herbicide restrictions. A preference will be given to manual weed control, however conservative application of herbicides may be necessary to control certain weeds effectively. If seeding and planting can occur shortly after grading, no weed control is anticipated.

Soil Preparation

After grading, the project restorationist will evaluate seeding and planting areas for compacted soils caused by operation of heavy machinery. Compaction and dense layers of fine grained soil are only a problem where they interfere with native seed and plant establishment. The project restorationist will specify remediation treatments as needed, which may include ripping, disking or other techniques for the seeding areas.

Planting and Seeding

Once grading, weed eradication, and soil preparation activities are completed, selected mitigation wetland areas will be seeded and/or planted with natives. Seed mixes were developed based on appropriate site ecology. Seed Mix 1 (Table 10) will be hand seeded onto Pond 1, Pond 1A, and Pond 2. Seed Mix 2 (Table 11) will be hand seeded onto the seasonal wetland. A reasonable effort will be made to procure local plant materials consisting of seeds and planting stock. The source of the seed and planting stock will be provided by the nursery and seed suppliers, and will be included in the first year monitoring report. Irrigation of the mitigation sites will not be conducted due to the remoteness of the ponds from utilities. Seeding will coincide with fall/winter rains.

The margins of Pond 1A, 1 and 2 will be planted with willow pole cuttings. Exact willow planting locations will be determined by the project restorationist in the field following completion of grading. Willow cuttings will be planted when donor plants are dormant, generally in December 1999. Cuttings will be 1 to 1 1/2 inches in diameter, and approximately three to four feet long. All branches and leaves will be stripped off the cutting, and the cut end will be shaped to a wedge for ease of installation.

Table 10
Seed Mix 1 - Freshwater Wetland to be Applied at Ponds 1A, 1 and 2

Common Name	Scientific Name	Rate of Application (lbs./acre) %Purity/%Germination
Iris leaved rush	*Juncus xiphioides*	6.0 5/50
Common rush	*Juncus balticus*	1.5 90/60
Bulrush	*Scirpus robustus*	4.0 80/80
Monkey flower	*Mimulus guttatus*	1.5 10/50
Meadow barley	*Hordeum brachyantherum*	12.0 90/80
Total		25.0

Table 11
Seed Mix 2 - To be Applied at Seasonal Wetland

Common Name	Scientific Name	Rate of Application (lbs./acre) %Purity/%Germination
Wild rye	*Leymus triticoides*	6.0 90/70
Pin point clover	*Trifolium gracilentum*	4.0 95/60
Meadow barley	*Hordeum brachyantherum*	14.0 90/80
Three-weeks fescue	*Vulpia microstachys*	6.0 95/75
Common rush	*Juncus balticus*	1.5 90/60
Bulrush	*Scirpus robustus*	4.0 80/80
Total	-	35.5

5.4 As-Built Conditions

The project restorationist, knowledgeable about the various components of the mitigation plan will be present during staking, grading, seeding, and planting of the mitigation site. Within eight weeks of completion of earthwork preparation and seeding, as-built contours, engineered structures, fencing and other project components will be documented. Photos will be taken at permanent photo stations. Locations of four hydrologic monitoring stations installed and Ponds 1, 1A and 2 will also be indicated on the as-built plans.

5.5 Adaptive Management

Periodic maintenance or remedial actions during establishment is suggested to help achieve mitigation and habitat creation goals of the project. Maintenance measures are selected based upon monitoring designed to detect any need for remedial actions. The monitoring/adaptive management period begins immediately upon completion of installation, and will continue for a minimum of five years. At the end of the five-year period, the Army Corps of Engineers (ACOE) and the Regional Water Quality Control Board (RWQCB) and U.S. Fish and Wildlife Service (USFWS) will review the monitoring reports and evaluate whether the performance standards have been met.

The adaptive management program will ensure the adequate implementation of remedial actions such as: grade modifications, debris removal, erosion control, slope repair, fencing, replanting, reseeding and site protection. Other maintenance measures may be conducted as prescribed by the biological monitor and/or the project engineer.

Grade Modifications

The project hydrologist, biological monitor, and/or engineer may identify the need for grade modifications. In the event of a major sedimentation episode, grade modification beyond the proposed sustainable excavation area may be necessary to maintain wetland characteristics. Remedial actions should be conducted under the direction of the project hydrologist and engineer, following consultation with the property manager.

Reseeding and Replanting

The need for reseeding or replanting will be identified and prescribed by the project biological monitor.

Weed Control

On-going noxious weed control will be necessary, but will be limited to those invasive species that threaten the wetland creation efforts. Noxious weeds should be removed from the actual mitigation sites during the five year maintenance period. Other weeds should be removed as prescribed by the biological monitor. Weed control techniques and restrictions are discussed above.

Plant and Site Protection

It is not anticipated that site protection will be necessary due to the remoteness of the mitigation site to housing and recreational use. Repairs to livestock exclusion fencing will be identified during routine monitoring with the necessary repairs reported to the property manager.

Debris Removal

The need to remove trash and litter will be identified by the biological monitor. If weeding occurs, all noxious weed debris will be disposed of off site to avoid further invasion by undesirable invasive plant seed or propagules. Debris clogging spillways and drainage channels will also be reported to the property manager and its removal may be warranted.

Erosion Control/Sedimentation

The biological monitor will note developing erosion problems, especially at spillways and in channels draining mitigation wetlands. Attention to upstream channel conditions will be necessary to anticipate potentially destabilizing erosion events and to prescribe remedial actions that will address upstream impacts to the mitigation ponds.

Control measures above, below, and within the mitigation sites will be prescribed at the discretion of the project hydrologist, biological monitor and/or engineer, in consultation with the property manager. Problems will be evaluated on a case-by-case basis, and appropriate remedial actions will be recommended. In the case of a sudden spillway failure or sedimentation episode,

the biological monitor and engineer will prescribe remedial actions. Consultation with permitting agencies may be necessary to assess repairs and other adaptive management measures.

6.0 PREDATOR CONTROL

Known predators and competitors (bullfrog, mosquito fish, and other introduced predatory fishes) of the red-legged frog will be identified in the mitigation monitoring phase. The property manger will be instructed to dewater the ponds for two weeks after September 30 only if non-native aquatic predators are found and standing water remains in the mitigation wetland areas. The conservation easement will prohibit stocking ponds with fish, including mosquito fish by the Mosquito Abatement District, or others. Three ponds on the adjacent Circle E Ranch were built with a similar design standard (i.e. to provide red-legged frog habitat), and these ponds dried up by late September in 1997 and 1998 (Guinon, personal observation). If the ponds at the Henry Ranch perform as expected, dewatering should not be necessary. During the adaptive management period pond hydrology will be evaluated and modified to achieve this critical design standard.

7.0 SUMMER REFUGIA FOR RED-LEGGED FROG

One refugia box for each of the created ponds areas will be built and placed near ponds. Boxes will be made from Douglas-fir lumber, 1.5 feet high and 4 feet by 4 feet, with small openings at the bottom for red-legged frog. The boxes will be secured to the ground to protect them from raccoons and other predators.

8.0 EXCLUSION, CONSTRUCTION AND SILT FENCING

The cattle exclusionary fencing will be placed around the mitigation ponds outside the inundation zone shown on the attached mitigation plans. Exclusionary fencing (four-strand barbed wire) will eliminate livestock grazing from the habitat portions of the wetlands. Fencing will be constructed at the time of pond construction. Three-strand barb wire is not structurally sound and five-strand is thought to obstruct wildlife, therefore four-strand was selected.

The project engineers will prepare an erosion control plan for the Henry Ranch that will include use of silt fencing. During summer construction, silt fencing will be placed as needed to control erosion. After construction and shortly before winter rains, silt fencing will likely be removed so as not to interfere with the natural seasonal movements of native amphibians. No development is proposed in the areas where the mitigation wetlands will be constructed; therefore construction fencing is not needed here.

9.0 CONSTRUCTION MONITORING

During construction of the mitigation wetlands, a biological monitor will be on site to provide direction and ensure protection of sensitive biological resources. Construction will be completed during the late summer/early fall months, a period when the existing pond is dry. Prior to grading, a preconstruction survey for red-legged frog will be conducted at the mitigation wetland sites by a qualified biologist.

No red-legged frog capture and release is specified in this plan, however the biological monitor will survey the mitigation wetland areas and should red-legged frogs be observed, the U.S. Fish and Wildlife Service will be contacted for consultation. Table 12 shows the life stages of the species.

Table 12
Life Stages of Red-legged Frog

Life Stage of the Red-legged Frog	Months When Red-legged Frog is in Life Stage
Eggs	January to April. Eggs require 6-14 days before hatching, larvae develop for 3.5 to 7 months, and metamorphosis into juvenile frogs.
Larvae (tadpoles)	December to September
Juveniles	March on
Adults Breeding	late November to March (1-2 week window)

10.0 MITIGATION MONITORING

During the five-year monitoring period, the mitigation sites will be surveyed for biological and hydrological function of the wetlands and animal species, including the red-legged frog.

10.1 Biological Monitors

The biological monitors will have demonstrated experience (minimum of five years) in sensitive species habitat creation and construction monitoring. If the biological monitoring activities could entail handling or harassing red-legged frog, an individual holding a valid 10(a)(1)(A) recovery permit from the USFWS will conduct this monitoring.

10.2 Red-legged Frog Monitoring

For each of the five years following pond habitat creation, the biological monitor will conduct surveys for red-legged frog egg masses, juveniles and adults. Findings, including photo documentation, will be summarized in annual reports submitted to the ACOE, RWQCB, and USFWS. The first annual report will be submitted one year after habitat creation.

The biological monitor will survey for red-legged frog and measure water quality in the created wetland areas to evaluate natural colonization and habitat quality. If frogs are found, measurements taken will include red-legged frog size and class, water temperature, pH and dissolved oxygen. Baseline data will be taken in October or November at the time of pond creation.

Because of the high natural fluctuation of most amphibian populations, such as the red-legged frog, monitoring surveys will focus on identifying the relative abundance and distributions of frogs and identifying potential human impacts. The monitoring program will provide information on the distribution and numbers of breeding frogs and survival of eggs to metamorphosis.

Three daytime egg mass surveys will be conducted on site every 7-10 days during the breeding period. The start of surveys will depend on annual weather patterns. In very wet years, surveys may start as early as mid-December and in drought years as late as March. Experts currently researching red-legged frogs in the Bay Area will be contacted annually as the appropriate time to begin breeding surveys. Surveys will consist of systematic searches of specified ponds suitable for frog breeding. Found egg masses will be revisited to determine if eggs hatched. A failure for eggs to hatch would suggest a problem with water quality. The number of eggs per mass will be estimated from two dimensions taken of the mass and the average egg size. This process does not require handling mass.

Two evening surveys for adult frogs will be conducted during their breeding period when frogs are most active. These surveys will focus on identifying the distribution of frogs and preferred habitat.

Three surveys for juvenile frogs will be used to determine the successful transformation of tadpoles. Juvenile surveys will be done on sunny afternoons in late summer. The estimated number of eggs produced will be compared with juvenile frog counts to determine the survival of eggs to the terrestrial life stage. Survival rates of 1-2% are typical of red-legged frog eggs.

The location of egg mass, adult, and juvenile frog observation sites will be included on maps to

characterize habitat used by the frog. Maximum water depths of pools/ponds will be measured during all red-legged frog surveys to assess their habitat suitability for frogs. This information will then be used as enhancement guidelines, should corrective measures be necessary.

10.3 Wetland Habitat and Hydrologic Monitoring

During years one through four the biological monitor will perform a wetland assessment of the four mitigation sites, evaluating soils, hydrology, and vegetation. The size of the developing wetlands and habitat type will be quantified at each mitigation site. The monitor will look for clear evidence that wetland hydrology is present. Hydric soils may or may not develop during the five year monitoring time period. The monitor will conduct a formal wetland delineation on the mitigation wetland areas at the end of the five-year monitoring period. A formal routine delineation will measure the extent of ACOE jurisdictional wetlands and/or waters of the U.S. using the ACOE's 1987 wetland delineation guidelines. Field data points will be sampled and data on hydrology, vegetation and soils will be recorded. Data points and the extent of potential wetlands and waters of the U.S. will be mapped. The annual report will summarize the methods used and describe existing conditions of the ponds including vegetation, soils and hydrology.

Specific hydrologic monitoring activities will include: 1) installation of four staff plates in the three constructed ponds and routine monitoring of water levels; 2) routine measurements of spring and/or seep flow into and/or out of wetland areas; and 3) routine measurement of general water quality parameters such as temperature, specific conductance and possibly dissolved oxygen; 4) storm monitoring to evaluate the performance of high flow channels and wetland spillways; and 5) annual photographs of the mitigation pond/freshwater marsh, existing pond, and jurisdictional waters/seasonal wetland corridor at designated points. These data should be plotted on an annual basis against cumulative daily rainfall amounts from rainfall gages maintained on Las Trampas Ridge and Pleasanton. Photographs should illustrate pond size, vegetation and water levels.

In addition, the biological monitor will evaluate the water level in the created ponds near September 30 of years one through five, and whether frog predators are present. The property manager will be notified immediately if the ponds must be dewatered after September 30, or if other remedial actions must be taken to ensure the maintenance of desired water levels. Ponds should remain dry for a minimum of two weeks after dewatering. Any modification to the pond hydrology or other remedial actions will be relayed to the owner and summarized in that year's monitoring report. The ponds are designed in most years to dry down by late September.

10.4 Performance Standards

Performance standards are intended to measure the success of the mitigation program. The mitigation goals provide a basis for performance standards and these focus on creation of wetlands and suitable habitat. Detection of red-legged frog is not a standard, since the source population of the frog has not been determined. If the performance standards are not met after five years, then the applicant will consult with the ACOE, RWQCB and USFWS to identify additional measures that may be necessary.

Table 13
Performance Standards

Performance Standard	How Performance Standard Will Be Measured	Contingency Measures
Mitigation wetlands will be surveyed for red-legged frogs each year of the five-year monitoring period.	Annual report submitted to the agencies will confirm that surveys were conducted.	If surveys are not conducted, applicant will consult with USFWS to identify measures that may be necessary.
Ponds and freshwater marsh will dry down by late September in most years.	Annual report submitted to the agencies will confirm that remedial actions were followed.	Pumps will be used to dry down ponds, if necessary, in late September. Routine monitoring will be conducted in late September. Ponds and spillways will be modified as necessary to achieve this design objective.
Successful creation of a hydrological regime capable of supporting self-sustaining wetland habitats. Hydrology monitoring stations will be monitored and recommendations will be conveyed to property manager.	Annual monitoring for 5 years of the three ponds to verify proper function and drying down in late September in most years.	Modify ponds and spillways, or other remedial actions, as necessary.
Ponding and/or soil saturation for 7 - 14 consecutive days up to the water surface elevations shown on the mitigation as-built drawings: 0.24 acre seasonal wetland and 0.36 acre pond/freshwater marsh habitats.	Area of standing water at about the water surface elevations for a minimum of 14 days during the growing season. Soil saturation at the surface during the growing season (February - May).	Modify ponds and spillways, or other remedial actions, as necessary.
Successful creation of 0.60 acre of ACOE jurisdictional wetlands or waters of the U.S. The definition of a successful wetland mitigation effort will be that the area is dominated by wetland indicator species, with a clear indication that wetland hydrology is present. Hydric soils may or may not develop in the five year monitoring time frame.	A formal wetlands delineation will be conducted during Year 5 in accordance with ACOE's 1987 guidelines. Field data points will be sampled and data on hydrology, vegetation and soils will be recorded. A map will be prepared showing the extent of wetlands within the project area.	If sufficient acreage of wetlands or others waters of the U.S. have not been successfully created, the applicant will consult with the ACOE, RWQCB and USFWS to determine remedial actions. Additional grading, planting/seeding and monitoring may be necessary.

Clear evidence of natural recruitment of wetland plant species will be demonstrated by the end of the five-year monitoring period.	The goal of this task is to determine a trend toward the establishment of wetlands that are self sustaining. Changes in aerial extent of wetland vegetation and zones of inundation/saturation will be compared from year to year to determine a trend toward the creation of wetland habitat.	If a trend toward establishment is not evident by Year 3, remedial measures such as supplemental planting/seeding, weed eradication, grading or modification of pond hydrology will be implemented. If standard is not met at end of Year 5, remedial actions will be required and additional monitoring may be warranted, as determined in consultation with ACOE, RWQCB and USFWS.
50 percent canopy cover of willow cluster delineated on as-built planting plans.	Visual estimation of absolute vegetative cover to be estimated during the spring or fall in Years 1-5.	If a trend is not evident during Years 1-4, supplemental planting may be necessary. If standard is not met at end of Year 5, additional planting will be required and additional monitoring may be warranted, as determined through consultation with ACOE, RWQCB and USFWS.
Remedial actions identified during the post-construction monitoring period were followed, including but not limited to repair of cattle exclusion fence, repair of ponds, and erosion control.	Annual report will confirm that remedial actions were followed.	If remedial actions are not conducted, applicant will consult with ACOE, as required, to identify measures that may be necessary.
Sedimentation and erosion into the ponds is minimized.	Annual report will confirm that remedial actions were followed.	If remedial actions are not conducted, applicant will consult with ACOE to identify measures that may be necessary.
A conservation easement granted to the ACOE (or alternative) will be designated around wetlands and larger open space above Oak Creek, ensuring their preservation in perpetuity.	A copy of the conservation easement will be provided to the ACOE, RWQCB and USFWS.	The conservation easement will be provided to the aforementioned agencies in order for the performance standards to be satisfied.

10.5 Reporting and Monitoring Schedule

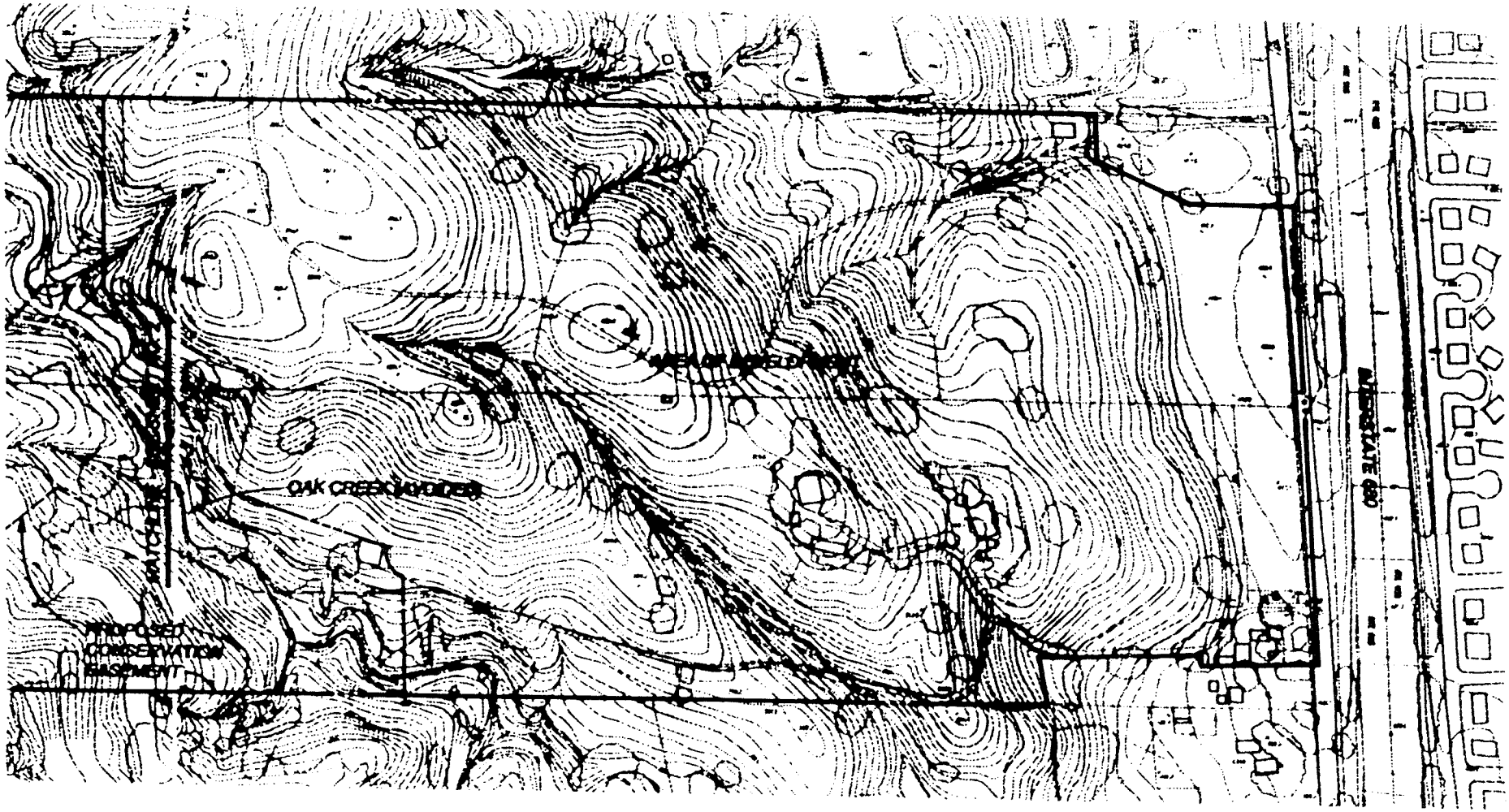
Annual monitoring reports will be submitted to the ACOE, RWQCB and USFWS. Annual reports will describe wetland and red-legged frog monitoring methods, photo documentation, data analysis, discussion, conclusions, comparison to performance standards, and recommended remedial actions. If red-legged frogs are detected during the five-year monitoring program, the agencies will be notified within one month. Table 14 summarizes the monitoring and reporting schedule.

Table 14
Biological Monitoring Schedule

Mitigation Area	Wetland Habitat Monitoring	Red-legged Frog Biological Monitoring	Annual Report	Contingency Measures and Remedial Actions
Pond 1A Pond 1 Pond 2 Seasonal Wetland 1	Baseline data and photo documentation Year 1 Annual data and photo documentation Years 1-5	Three aquatic sampling for egg masses (December to March). Three daytime juvenile surveys in summer (July to August). Two evening surveys for breeding adults (when active). Evaluate near September 15 for water level and whether frog predators are present. Water quality and other measurements if red-legged frog is found.	Years 1-5	As identified by biological monitor, including dewatering ponds, repair of cattle exclusion fencing, planting, seeding, exotics removal, modifications of ponds to create desired hydrology.

11.0 RESPONSIBILITY AND FUNDING

Presley Homes will be responsible for funding and implementing all components of this mitigation plan, including contracting directly for services necessary for earthwork site preparation, revegetation, monitoring, adaptive management, and contingency measures.



MITIGATION MAP

ACOE NO. 23193S

(ATTACHMENT D)

SHEET NO. 1 OF 6

NORTH

0 200 400 800

GRAPHIC SCALE

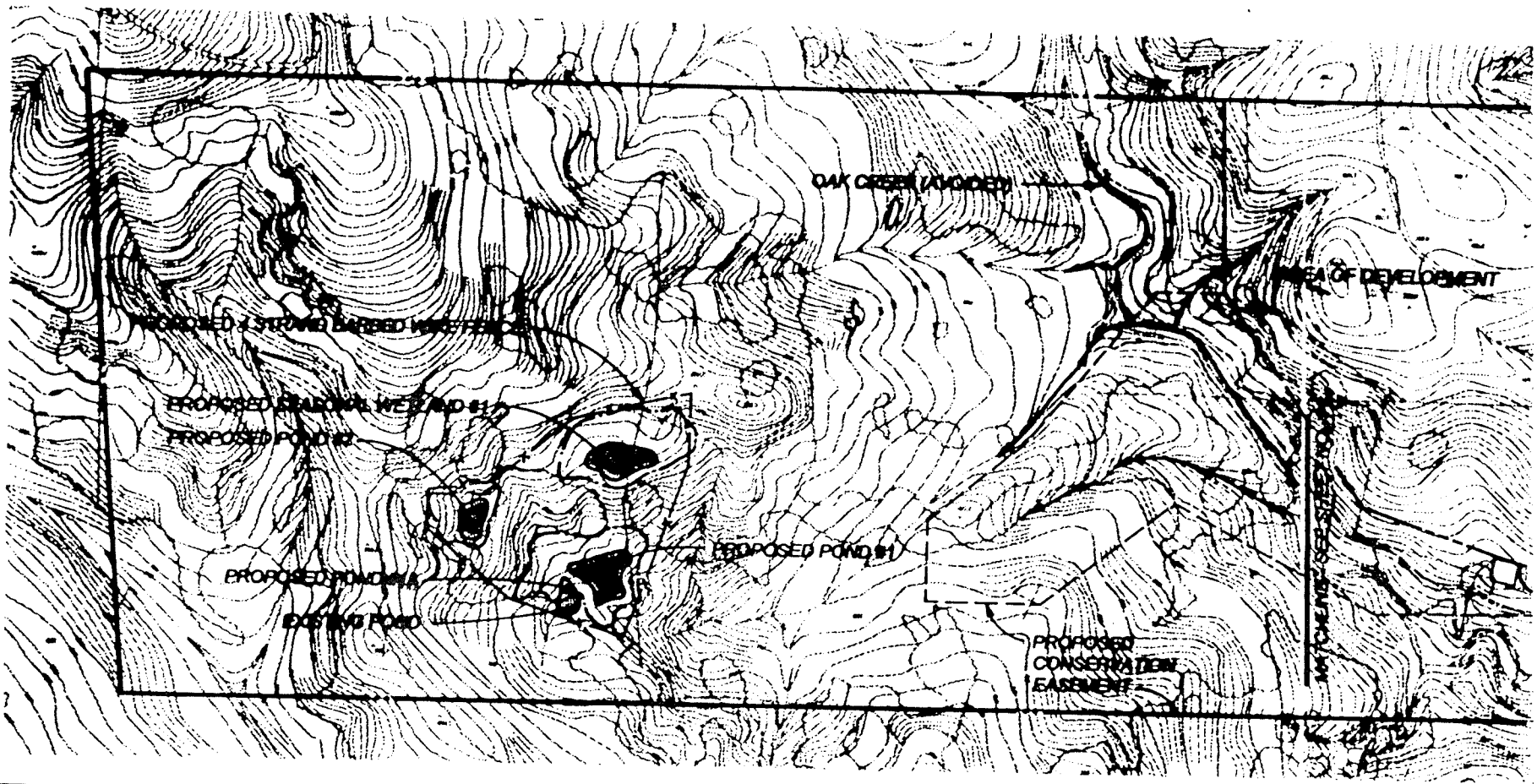
HENRY RANCH

San Ramon, California

Applicant: Presley Homes
Northern California

SUMMARY OF PROPOSED MITIGATION AREAS

POND #1	0.24 AC
POND #1A	0.03 AC
POND #2	0.09 AC
SEASONAL WETLAND AREA #1	0.24 AC
TOTAL	**0.60 AC**



MITIGATION MAP

ACOE NO. 23193S

(ATTACHMENT D) SHEET NO. 2 OF 6

NORTH

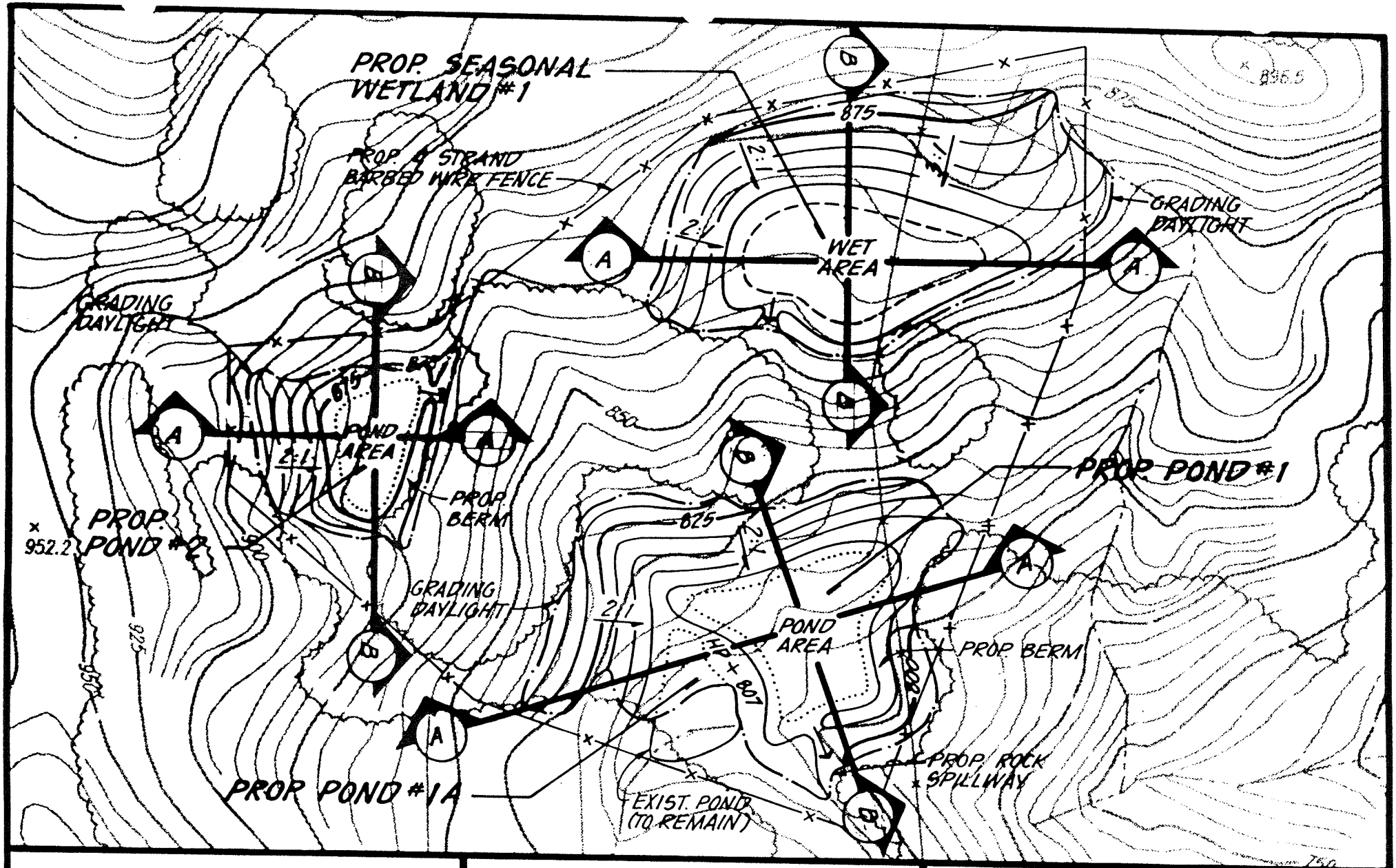
0 200 400 800

GRAPHIC SCALE

HENRY RANCH

San Ramon, California

Applicant: Presley Homes
Northern California



CROSS SECTION KEY

ACOE NO. 23193S

(ATTACHMENT D) SHEET 3 OF 6

NORTH

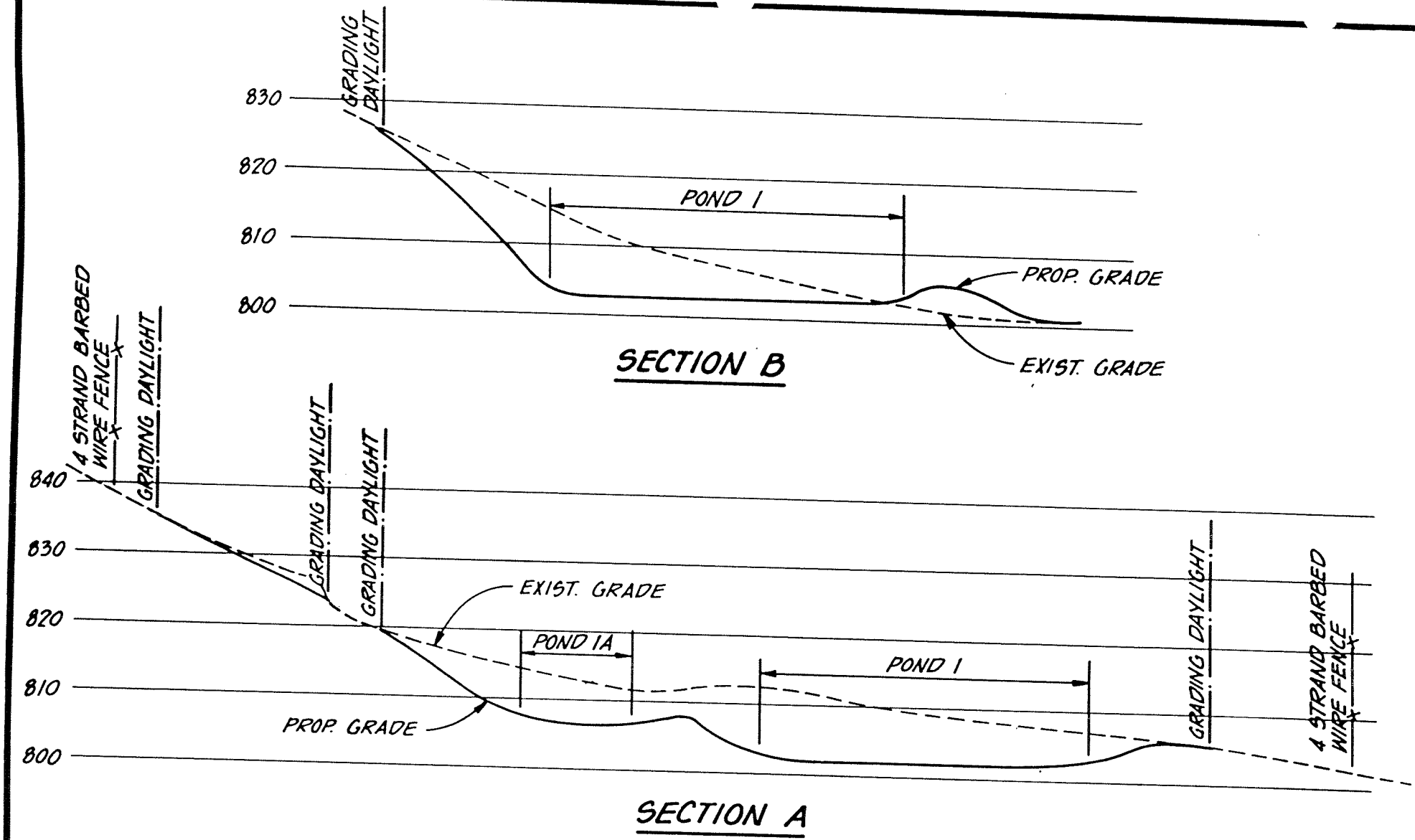
0 50 100 200

GRAPHIC SCALE

HENRY RANCH

San Ramon, California

Applicant: Presley Homes
Northern California



PROPOSED POND #1

ACOE NO. 23193S

(ATTACHMENT D) SHEET 4 OF 6

CROSS SECTIONS

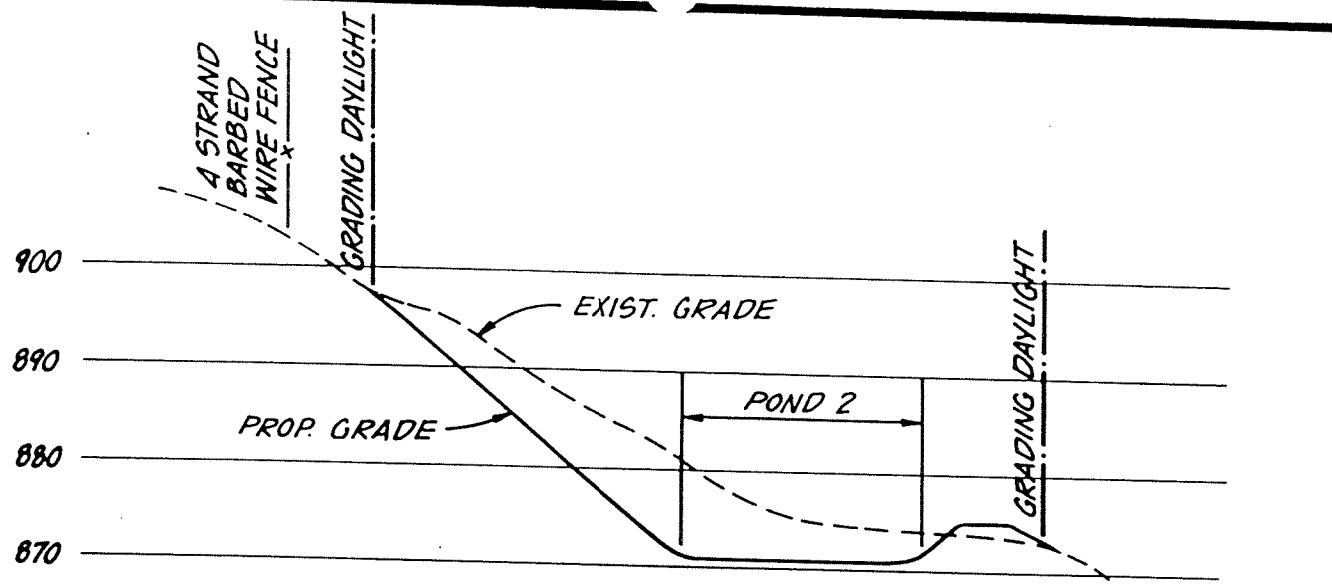
0 20 40 80

H & V GRAPHIC SCALE

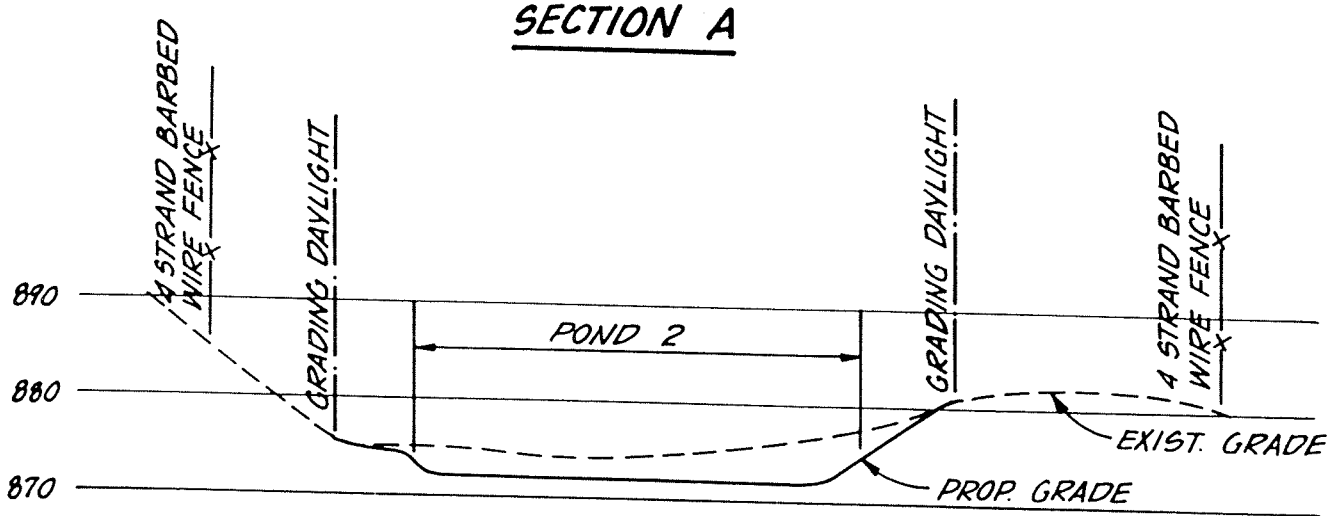
HENRY RANCH

San Ramon, California

Applicant: Presley Homes
Northern California



SECTION A



SECTION B

PROPOSED POND #2

ACOE NO. 23193S

(ATTACHMENT D) SHEET 5 OF 6

CROSS SECTIONS

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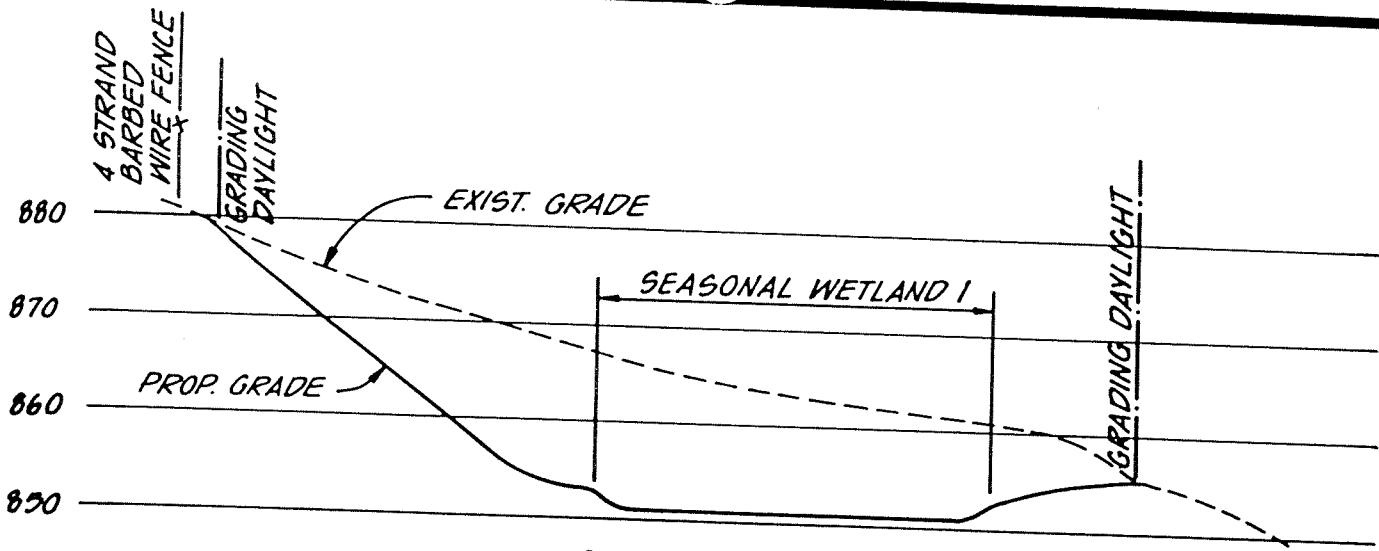
H & V GRAPHIC SCALE

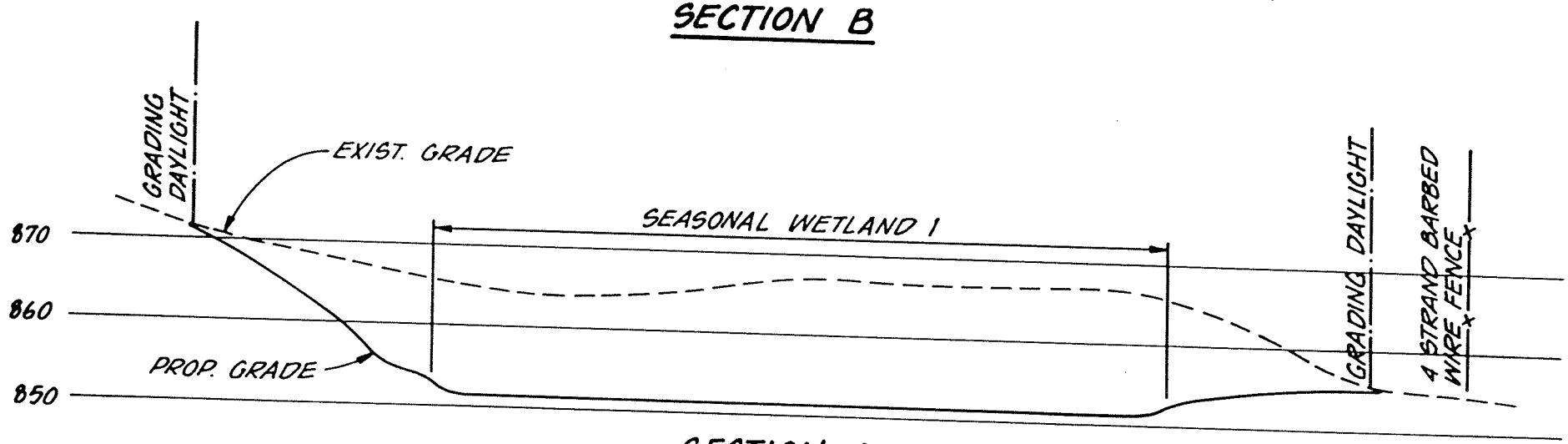
HENRY RANCH

San Ramon, California

Applicant: Presley Homes
Northern California



SECTION B



SECTION A

PROPOSED SEASONAL WETLAND #1

ACOE NO. 23193S

(ATTACHMENT D) SHEET 6 OF 6

CROSS SECTIONS

0 20 40 80

H & V GRAPHIC SCALE

HENRY RANCH

San Ramon, California

Applicant: Presley Homes
Northern California