Staff Report to the Zoning Administrator

Application Number: 02-0421

Applicant: Resource Conservation District
Attn: Dawn Mathes
Owner: Kim L. Tao
APN: 052-191-55

Agenda Date: 11-19-04

Agenda Item: # 6
Time: After 10:00 a.m.

Project Description: Proposal to implement a gully restoration plan with sediment retention basins to control erosion from agricultural fields and roads.

Location: Property located on the west side of San Andreas Road, approximately a half mile from West Beach Road. at 195 San Andreas Road in Watsonville.

Supervisoral District: Second District (District Supervisor: Pine)

Permits Required: Coastal Development Permit, Riparian Exception, Agricultural Grading Permit, Archaeological Site Review

Staff Recommendation:

- Approval of Application 02-0421, based on the attached findings and conditions.
- Certification that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.

Exhibits

A. Project plans
B. Findings
C. Conditions
D. Categorical Exemption (CEQA determination)
E. Assessor's parcel map
F. Zoning map, General Plan map
G. Comments & Correspondence
H. USDA, NRC Design Report July 2004

Parcel Information

Parcel Size:	8.9 acres
Existing Land Use - Parcel:	Commercial Agriculture
Existing Land Use - Surrounding:	Commercial Agriculture
Project Access:	San Andreas Road/Dairy Road

Planning Area:	San Andreas
Land Use Designation:	A (Agriculture)
Zone District:	CA (Commercial Agriculture)
Coastal Zone:	_X_ Inside __ Outside
Appealable to Calif. Coastal Comm.	_X_ Yes __ No

Environmental Information

Geologic Hazards:	Not mapped/no physical evidence on site
Soils:	Baywood loamy sand
Fire Hazard:	Not a mapped constraint
Slopes:	2 – 50 percent slopes
Env. Sen. Habitat:	Not mapped/no physical evidence on site
Grading:	90 cubic yards of agricultural grading proposed
Tree Removal:	No trees proposed to be removed
Scenic:	Mapped resource
Drainage:	Existing drainage adequate
Traffic:	No significant impact
Roads:	Existing roads adequate
Parks:	Existing **park** facilities adequate
Archeology:	Mapped/no physical evidence on site

Services Information

Urban/Rural Services Line:	__ Inside _X_ Outside
Water Supply:	Pajaro Valley Water Management District
Sewage Disposal:	CSA #12
Fire District:	Pajaro Valley Fire Protection District
Drainage District:	Zone 7 Flood Control/Water Conservation District

History

The application was received on August 14,2002 and deemed complete on October 18,2004. The farm owner has applied for technical and financial assistance from **the USDA** Farm Service Agency and Natural Resources Conservation Service offices of Salinas and Capitola. Financial assistance will be provided through the EQIP Program. The NRCS personnel of the Salinas Field Office and Capitola Local partnership Office will provide the technical assistance in addition to **the** staff of the Santa Cruz and Monterey County Resource Conservation Districts.

Project Setting

The 8.9-acre site is located at the intersection of San Andreas Road and Dairy Road north of Watsonville Slough. The proposal is a part of the U.S.D.A. Environmental Quality Incentives Program (EQIP) and lies within the Resource Conservation District Watsonville Sloughs Watershed geographic priority area. The purpose of **the** project is environmental enhancement (Exhibit H). The project site carries storm water runoff from adjacent strawbeny fields through an active gully onto a sill and then into Watsonville Slough. Stabilization of the gully is

important to prevent further sedimentation and to avert potential damage to San Andreas Road and further damage to private property. The NRCS has determined that the existing drainage pattern is not stable and is highly erosive, transferring sediment into the slough. The proposed project is to install an underground outlet pipe to collect storm water and carry that water away from the ditch and gully and down a steep slope into a detention basin. This basin would capture most of the sediment in the storm water, releasing runoff only after the basin is full. Water retained in the basin would recharge groundwater. The net effect on water quality would be reduced sedimentation of Watsonville Slough and adjacent wetlands. Approximately 90 cubic yards of agricultural grading is anticipated for the project. There will be no disturbance of native woody vegetation adjacent to the slough. Disturbance to the adjacent riparian corridor will include the removal of herbaceous vegetation in an area 120 feet long and 20 feet wide (Exhibit H) along the north bank of Watsonville Slough. This entire area is above the 100-year flood plain and is upslope of the areas adjacent to the areas fringing the wetlands.

Zoning & General Plan Consistency

The subject property is an 8.9-acre parcel, located in the CA (Commercial Agriculture) zone district, a designation which allows agriculture uses. The proposed gully restoration project to prevent erosion and support continued commercial agricultural production is a principal permitted use within the zone district and the project is consistent with the site's (A) Agriculture General Plan designation. The proposed project is consistent with the Riparian Corridor and Wetlands Protection Ordinance, Chapter 16.30 of the Santa Cruz County Code and with the General Plan/LCP Chapter 5.2, Riparian Corridors and Wetlands, in that the proposed project will provide protection of the riparian habitat through site-sensitive design, erosion control and re-vegetation (Riparian Exception Findings, Exhibit B). The project is also consistent with Agricultural Land preservation policies of Chapter 5.13 in that successful implementation of the project will enable sustainable commercial agricultural production without further losses of topsoil and acreage to erosion.

Local Coastal Program Consistency

The proposed gully restoration plan is in conformance with the County's certified Local Coastal Program, in that the required grading for erosion control and gully restoration is designed and engineered to be visually compatible, in scale with, and integrated with the character of the surrounding neighborhood. Parcels in the area are similarly under commercial agricultural production. The project site is not located between the shoreline and the first public road and is not identified as a priority acquisition site in the County's Local Coastal Program. Consequently, the proposed project will not interfere with public access to the beach, ocean, or other nearby body of water. Public access to the coastline is available at the two state beaches in the vicinity, Sunset State Beach and Palm Beach.

Environmental Review

The proposed project is eligible for a Categorical Exemption as per the requirements of the California Environmental Quality Act (CEQA) under Section 15307, Actions by Regulatory Agencies for Protection of Natural Resources. An archaeological survey prepared October 1999 was reviewed and approved by Environmental Planning. An Environmental Assessment was

completed for the project by the USDA, Natural Resources Conservation Service on April **8,** 2004 (Exhibit H).

Conclusion

As proposed and conditioned, the project is consistent with all applicable codes and policies of the Zoning Ordinance and General Plan/LCP. Please see Exhibit "B" ("Findings") for **a** complete listing of findings and evidence related to the above discussion.

Staff Recommendation

- APPROVAL of Application Number **02-0421,** based on the attached findings and conditions.

- Certification that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.

Supplementary reports and information referred to in this report are on file and available for viewing at the Santa Cruz County Planning Department, and are hereby made a part of the administrative record for the proposed project.

The County Code and General Plan, as well as hearing agendas and additional information are available online at: www.co.santa-cruz.ca.us

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Coastal Development Permit Findings

1. That the project is a use allowed in one of the basic zone districts, other than the Special Use (SU) district, listed in section 13.10.170(d) as consistent with the General Plan and Local Coastal Program LUP designation.

This finding can be made, in that the property is zoned CA (Commercial Agriculture), a designation which allows agriculture uses. The proposed gully restoration and erosion control project is ancillary to sustainable commercial agriculture, which is a principal permitted use within the zone district, consistent with the site's (A) Agriculture General Plan designation.

2. That the project does not conflict with any existing easement or development restrictions such as public access, utility, or open space easements.

This finding can be made, in that the proposal does not conflict with any existing easement or development restriction such as public access, utility, or open space easements in that no such easements or restrictions are known to encumber the project site.

3. That the project is consistent with the design criteria and special use standards and conditions of this chapter pursuant to section 13.20.130 et ***seq.***

This finding can be made, in that the proposed restorative grading is consistent with the surrounding commercial agricultural land use. Appropriate erosion control measures will be used, and disturbed non-cropped areas will be re-vegetated with native shrubs and grasses such as arroyo willow, wild rye and sedges salvaged from the site. The site is surrounded by commercial agricultural parcels. Site disturbance is limited to agricultural grading for agricultural production purposes. Grading shall be minimized. The development site is not on a prominent ridge, beach, or bluff top.

4. That the project conforms with the public access, recreation, and visitor-serving policies, standards and maps of the General Plan and Local Coastal Program land use plan, specifically Chapter 2: figure 2.5 and Chapter 7, and, as to any development between and nearest public road and the sea or the shoreline of any body of water located within the coastal zone, such development is in conformity with the public access and public recreation policies of Chapter 3 of the Coastal Act commencing with section 30200.

This finding can be made, in that although the project site is located between the shoreline and the first public road, public access is available at Palm Beach and Sunset State Beach. Consequently, the commercial agriculture will not interfere with public access to the beach, ocean, or any nearby body of water. The project site is not identified as a priority acquisition site in the County Local Coastal Program.

5. That the proposed development is in conformity with the certified local coastal program.

This finding can be made, in that the proposed erosion control measures will sustain agriculture on the parcel and will prevent excessive sedimentation of the riparian areas adjacent to the

slough. Limited agricultural grading will be visually compatible, in scale with, and integrated with the character of the surrounding vicinity. Additionally, agriculture uses are allowed uses in the CA (Commercial Agriculture) zone district of the area, as well as the General Plan and Local Coastal Program land use designation. Developed parcels in the area are commercial agricultural operations.

Development Permit Findings

1. That the proposed location of the project and the conditions under which it would be operated or maintained will not be detrimental to the health safety, or welfare of persons residing or working in the neighborhood or the general public, and will not result in inefficient or wasteful use of energy, and will not be materially injurious to properties or improvements in the vicinity.

This finding can be made, in that the project is located in an area designated for agriculture uses and is not encumbered by physical constraints to development. Proposed agricultural grading and gully restoration will comply with all pertinent County ordinances to insure the optimum in safety and the conservation of energy and protection of natural resources. The continued commercial agriculture will be sustained by enhancements to the drainage which will minimize erosion and reduce the amount of unfiltered runoff entering the adjacent riparian areas.

2. That the proposed location of the project and the conditions under which it would be operated or maintained will be consistent with all pertinent County ordinances and the purpose of the zone district in which the site is located.

This finding can be made, in that the proposed location of the gully restoration adjacent to commercial agriculture and the conditions under which it would be maintained will be consistent with all pertinent County ordinances and the purpose of the CA (Commercial Agriculture) zone district in that the primary use of the property remains commercial agriculture that meets all current site standards for the zone district.

3. That the proposed use is consistent with all elements of the County General Plan and with any specific plan which has been adopted for the area.

This finding can be made, in that the proposed environmental enhancements to sustain commercial agriculture is consistent with the use and density requirements specified for the Agriculture (A) land use designation in the County General Plan.

The proposed gully restoration project to prevent erosion and support continued commercial agricultural production is a principal permitted use within the zone district and the project is consistent with the site's (A) Agriculture General Plan designation. The proposed project is consistent with the General Plan/LCP Chapter ***5.2,*** Riparian Comdors and Wetlands, in that the proposed project will provide protection of the riparian habitat through site-sensitive design, erosion control and re-vegetation (Riparian Exception Findings, Exhibit B). The project is also consistent with Agricultural Land preservation policies of Chapter 5.13 in that successful implementation of the project will enable sustainable commercial agricultural production without

further losses of topsoil and acreage to erosion.

A specific plan has not been adopted for this portion of the County.

4. That the proposed use will not overload utilities and will not generate more **than** the acceptable level of traffic on the streets in the vicinity.

This finding can be made in that the proposed gully restoration and agricultural grading are part of a commercial agricultural operation that does not generate excessive levels of traffic. The expected level of traffic generated by the proposed project is anticipated to be seasonal during peak strawberry production periods. The proposed project will not adversely impact existing roads and intersections in the surrounding area of San Andreas Road.

5. That the proposed project will complement and harmonize with the existing and proposed land uses in the vicinity and will be compatible with the physical design aspects, land use intensities, and dwelling unit densities of the neighborhood.

This finding can be made, in that the proposed environmental enhancements are consistent with existing agricultural density, land use intensity and physical appearance of the neighborhood.

6. The proposed development project is consistent with the Design Standards and Guidelines (sections 13.11.070 through 13.11.076), and any other applicable requirements of this chapter.

This finding can be made, in that the proposed gully restoration on the commercial agricultural parcel will reduce erosion and the sustained agriculture will enhance the aesthetic qualities of the surrounding agricultural properties and will not reduce or visually impact available open space in the surrounding area.

Required Special Findings For "CA" Commercial Agriculture Uses - 13.10.314(a)

1. The establishment or maintenance of this use will enhance or support the continued operation of commercial agriculture on the parcel and will not reduce, restrict or adversely affect agricultural resources, or the economic viability of commercial agricultural operations, of the area.

The proposed environmental enhancement involves limited agricultural grading to reduce sedimentation of Watsonville Slough and adjacent wetlands by minimizing rill, sheet and gully erosion from cropland. Proposed stream bank re-vegetation will result in an increase in native species diversity and percent cover. Existing agricultural operations are impacted by poor drainage which has accelerated erosion on the parcel. The project shall route water away from the gully using an underground pipe. **A** water and sediment retention basin shall be constructed to treat storm water runoff. A basin outlet pipe shall be installed to discharge water to a level area adjacent to Watsonville Slough, permitting basin discharges to enter the slough in a dissipated,

non-erosive manner. The project promotes sustainable agriculture in that the loss of topsoil and land to excessive erosion will be dramatically reduced. Estimates of sediment yield from the parcel to Watsonville Slough are approximately 170 tons per year and this will be reduced to approximately 10-20 tons per year with successful implementation of the project. On-going maintenance of the basin is essential to the effective, long-term operation of the site drainage. This field is utilized for strawberry production, which is an essential part of the Watsonville and Pajaro Valley farm output.

2. The use or structure is ancillary, incidental or accessory to the principal agricultural use of the parcel or no other agricultural use of the parcel is feasible for the parcel; or

The environmental enhancement proposed is integral to the principal agricultural use of the parcel in that it promotes sustainability of the commercial agricultural operation.

3. The use consists of an interim public use which does not impair long-term agricultural viability; and

4. Single family residential uses will be sited to minimize conflicts, and that all other uses will not conflict with commercial agricultural activities on site, where applicable, or in the area.

5. The use will be sited to remove no land from production (or potential production) if any non-farmable potential building site is available, or if this is not possible, to remove as little land as possible from production.

With remedial grading in place, there shall be no significant loss of land from production. If the project is not undertaken, there will be a definite loss of land from production due to accelerated erosion from drainage from upslope properties crossing San Andreas and Dairy Roads through the subject parcel into Watsonville Slough.

Owner: Kim Tao
Application #: 02-0421
APN: 052-191-55

RIPARIAN EXCEPTION

REQUIRED FINDINGS

1. THAT THERE *ARE* SPECIAL CIRCUMSTANCES OR CONDITIONS AFFECTING THE PROPERTY.

   There are areas on this parcel **that** are experiencinghigher than normal rates of soil erosion (accelerated erosion). The most obvious example, is a gully located in close proximity to San Andreas Road. The gully is approximately 8 feet in depth by 300 linear feet in length. The integrity of San Andreas Road will be compromised if the gully continues to expand. This project proposes to capture the storm water that has been creating the gully and transport it via a new underground piping system to a new detention basin.

2. THAT THE EXCEPTION IS NECESSARY FOR THE PROPER DESIGN *AND* FUNCTION OF SOME PERMITTED OR EXISTING ACTIVITY ON THE PROPERTY.

   This parcel is zoned commercial agriculture and is actively being farmed. The installation of underground piping systems and detention basins is a common and acceptable way to convey and control storm water flows on agricultural properties.

3. THAT THE GRANTING OF THE EXCEPTION WILL NOT BE DETRIMENTAL TO THE PUBLIC WELFARE OR INJURIOUS TO OTHER PROPERTY DOWNSTREAM OR IN THE AREA IN WHICH THE PROJECT IS LOCATED.

   This project will not be detrimental to the public welfare or injurious to other property downstream or in the area in which the project is located.

4. THAT THE GRANTING OF THE EXCEPTION, IN THE COASTAL ZONE, WILL NOT REDUCE OR ADVERSELY IMPACT THE RIPARIAN CORRIDOR, AND THERE IS NO FEASIBLE LESS ENVIRONMENTALLY DAMAGING ALTERNATIVE.

   The riparian area identified on "Exhibit A" (120 feet long and 20 feet wide along the north bank of Watsonville Slough) will be temporally disturbed in order to install the following items: install 100 feet of 30" Corrugated Metal Pipe (CMP) (drainage for the basin to the dissipater), placement of an energy dissipater (21'x10'x18") and a vegetated outlet swale (80'x 8'). (NOTE: No work is to take place within the low flow area of the slough).
   This project will have a net environmental benefit once completed. Approximately 2400 square feet of non-native herbaceous plant material will be removed during construction. After construction, approximately 2200 square feet of this disturbed area will be covered with erosion control blankets and replanted with California native riparian plants (examples: arroyo willow, creeping wild rye, sedges and creek side dogwood).
   An additional benefit is a reduction in the total sediment yield. The current total sediment yield from this agricultural parcel to Watsonville Slough has been estimated at 170 tons

EXHIBIT B

per year. After installing the new underground piping system and sediment basin, the total sediment yield is estimated to be 20 tons per year.

5. THAT THE GRANTING OF THE EXCEPTION **IS** IN ACCORDANCE WITH THE PURPOSE OF **THIS** CHAPTER, AND WITH THE OBJECTIVES OF THE GENERAL PLAN AND ELEMENTS THEREOF, AND THE LOCAL COASTAL PROGRAM LAND USE PLAN.

The granting of **the** exception is in accordance with the purpose of the Riparian Comdor and Wetlands Protection Ordinance, **the** objectives of the General Plan and **the** LUP in that the proposed project will provide protection of the riparian habitat **through** site-sensitive design, erosion control and revegetation.

EXHIBIT

Conditions of Approval

Exhibit **A:** Project plans by U.S.D.A. Practice Requirements for Pond #378, prepared by D. Robledo, dated 4/4/04, revised 9/04.

I. This permit authorizes the construction of an agricultural pond, an underground outlet, critical planting, and agricultural grading on an existing commercial agricultural property. Prior to exercising any rights granted by this permit including, without limitation, any construction or site disturbance, the applicant/owner shall:

A. Sign, date, and return to the Planning Department one copy of the approval to indicate acceptance and agreement with the conditions thereof.

B. Obtain a Grading Permit from the Santa Cruz County Building Official should one be required.

C. Obtain an Encroachment Permit from the Department of Public Works for all off-site work performed in the County road right-of-way.

II. Prior to issuance of a Grading Permit the applicandowner shall:

A. Submit Final Grading Plans for review and approval by the Planning Department. The final plans shall be in substantial compliance with the plans marked Exhibit "A" on file with the Planning Department. The final plans shall include the following additional information:

1. Grading, drainage, and erosion control plans. The erosion control plan should identify the Best Management Practices (BMP's) proposed, BMP locations and construction details fort each BMP proposed.
2. Submit a detailed re-vegetation plan (species, plant sizes, quantities, location and maintenance schedule).
3. Submit a monitoring program for red-legged frogs. Include contact information for the project biologist (NRCS).

B. Meet all requirements of and pay Zone 7 drainage fees to the County Department of Public Works, Drainage. Drainage fees will be assessed on the net increase in impervious area.

III. All construction shall be performed according to the approved plans for the Building Permit. Prior to final building inspection, the applicandowner must meet the following conditions:

A. All site improvements shown on the final approved Grading Permit plans shall be installed.

B. All inspections required by the grading permit shall be completed to the satisfaction of Environmental Planning.

C. The property owner, applicant, or other responsible party shall contact Environmental Planning (Bob Loveland at 831-454-3163) four working days prior to site disturbance.

D. Erosion control measures must be in place at all times during construction. All disturbed soils shall be stabilized, as identified in the site plans to reduce sedimentation in the watercourse.

E. A site inspection is required prior to final Planning Department approval of the proposed work. Notify Environmental planning at 831-454-3163 upon project completion for final inspection and clearance.

F. Pursuant to Sections 16.40.040 and 16.42.100 of the County Code, if at any time during site preparation, excavation, or other ground disturbance associated with this development, any artifact or other evidence of an historic archaeological resource or a Native American cultural site is discovered, the responsible persons shall immediately cease and desist from all further site excavation and notify the Sheriff-Coroner if the discovery contains human remains, or the Planning Director if the discovery contains no human remains. The procedures established in Sections 16.40.040 and 16.42.100. shall be observed.

IV. Operational Conditions

A. In the event that future County inspections of the subject property disclose noncompliance with any Conditions of this approval or **any** violation of the County Code, the owner shall pay to the County the full cost of such County inspections, including any follow-up inspections and/or necessary enforcement actions, **up** to and including permit revocation.

B. Comply with all operation and practice requirements outlined in the Natural Resources Conservation Service Conservation Practice EQIP Specifications for the pond, the underground outlet, critical area planting erosion control blanket, and critical area planting woody cuttings (Exhibit H).

V. As a condition of this development approval, the holder of this development approval ("Development Approval Holder"), is required to defend, indemnify, and hold harmless the COUNTY, its officers, employees, and agents, from and against any claim (including attorneys' fees), against the COUNTY, it officers, employees, and agents to attack, set aside, void, or annul this development approval of the COUNTY or any subsequent amendment of this development approval which is requested by the Development Approval Holder.

A. COUNTY shall promptly notify the Development Approval Holder of any claim,

action, or proceeding against which the COUNTY seeks to be defended, indemnified, or held harmless. COUNTY shall cooperate fully in such defense. If COUNTY fails to notify the Development Approval Holder within sixty (60) days of any such claim, action, or proceeding, or fails to cooperate fully in the defense thereof, the Development Approval Holder shall not thereafter be responsible to defend, indemnify, or hold harmless the COUNTY if such failure to notify or cooperate was significantly prejudicial to the Development Approval Holder.

B. Nothing contained herein shall prohibit the COUNTY from participating in the defense of any claim, action, or proceeding if both of the following occur:

1. COUNTY bears its own attorney's fees and costs; and
2. COUNTY defends the action in good faith.

C. Settlement. The Development Approval Holder shall not be required to pay or perform any settlement unless such Development Approval Holder has approve the settlement. When representing the County, the Development Approval Holder shall not enter into any stipulation or settlement modifying or affecting the interpretation or validity of any of the terms or conditions of the development approval without the prior written consent of the County.

D. Successors Bound. "Development Approval Holder" shall include the applicant and the successor'(s) in interest, transferee(s), and assign(s) of the applicant.

Minor variations to this permit which do not affect the overall concept or density may be approved by the Planning Director at the request of the applicant **or** staff in accordance with Chapter 18.10 of the County Code.

Please note: This permit expires two **years from the effective date unless you obtain the required permits and commence construction.**

Approval Date: **11/19/04**

Effective Date: 12/03/04

Expiration Date: 12/03/06

Don Bussey
Deputy Zoning Administrator

Joan Van der Hoeven
Project Planner

Appeals: Any property owner, or other person aggrieved, or any other person whose interests ***are*** adversely affected by any act or determination of the Zoning Administrator, may appeal the act or determination to the Planning Commission in accordance with chapter 18.10 of the **Santa** Cruz County Code.

CALIFORNIA ENVIRONMENTAL QUALITY ACT
NOTICE OF EXEMPTION

The Santa Cruz County Planning Department has reviewed the project described below and has determined that it is exempt from the provisions of CEQA as specified in Sections 15061 - 15332 of CEQA for the reason(s) which have been specified in this document.

Application Number: 02-0421
Assessor Parcel Number: 052-191-55
Project Location: 195 San Andreas Road, Watsonville

Project Description: Proposal to implement a gully restoration plan in an existing agricultural field

Person or Agency Proposing Project: Resource Conservation District **Attn:** Dawn Mathes

Contact Phone Number: **(831) 728-2892**

A. ____ The proposed activity is not a project under CEQA Guidelines Section 15378.
B. ____ The proposed activity is not subject to CEQA as specified under CEQA Guidelines Section 15060 (c).
C. ____ Ministerial Proiect involving only the use of fixed standards or objective measurements without personal judgment.
D. ____ Statutorv Exemption other than a Ministerial Project (CEQA Guidelines Section 15260 to 15285).

Specify type:

E. __X__ Categorical **Exemption**

Specify type: Class 3 - Action by Regulatory Agencies for Protection of Natural Resources, Section 15307.

F. Reasons **why the** project is exempt:

To control erosion from existing agricultural fields.

In addition, none of the conditions described in Section 15300.2 apply to this project.

Joan Van der Hoeven

Joan Van der Hoeven, AICP, Project Planner

Date: November 19,2004

EXHIBIT D

POR. SAN ANDREAS & PAJARO RANCHOS
SECS. 13 & 24 T.12S., R.1E., M.D.B. & M.

Tax Area Code
69-262

52-19

SA 130

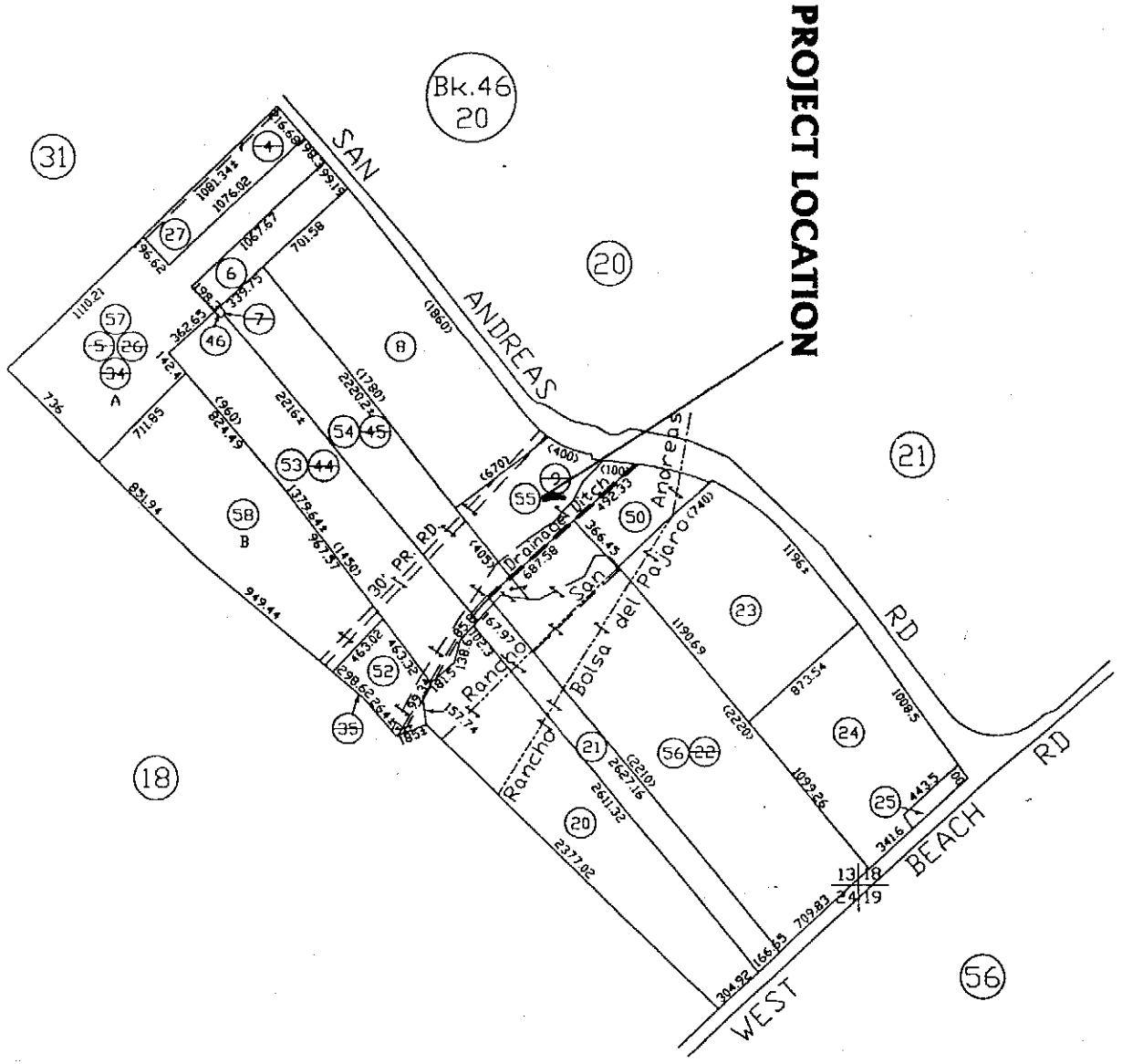
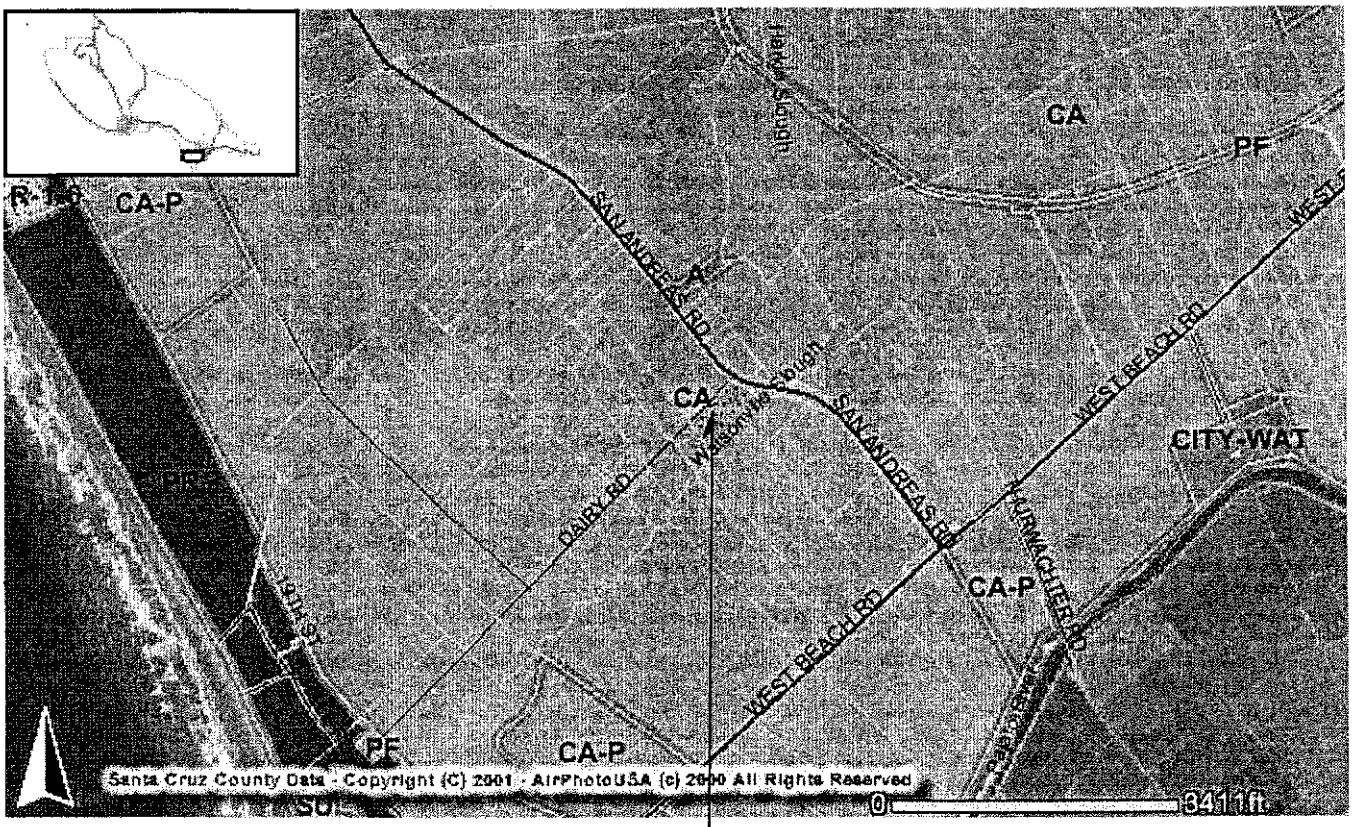


EXHIBIT E

Note - Assessor's Parcel Block & Lot Numbers Shown in Circles.

Assessor's Map No 52-19
County of Santa Cruz, Calif.
Aug. 1951

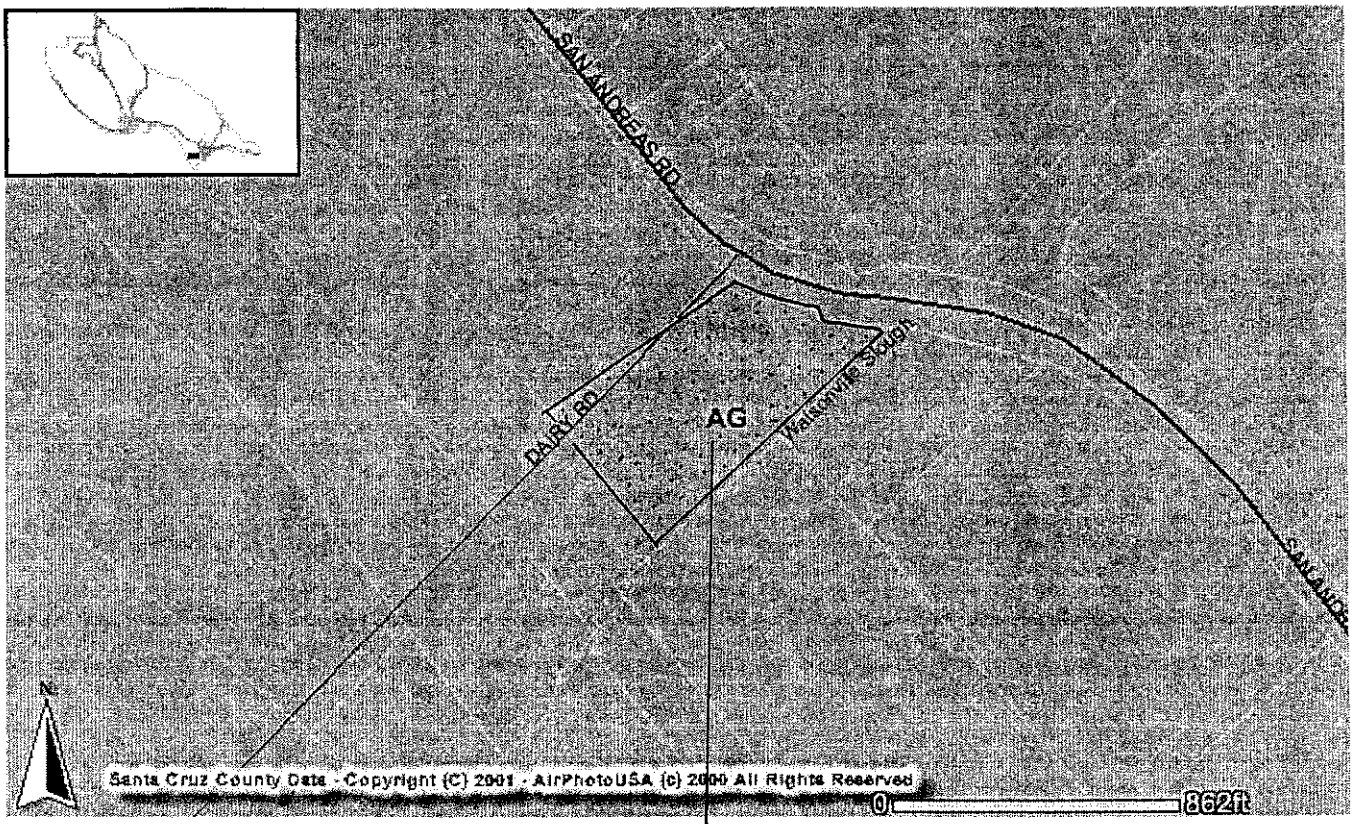


PROJECT LOCATION

ZONING: CA COMMERCIAL AGRICULTURE

EXHIBIT

16



PROJECT LOCATION

GENERAL PLAN - AGRICULTURE (A)

COUNTY OF SANTA CRUZ
DISCRETIONARY APPLICATION COMMENTS

Project Planner: Joan Van Der Hoeven
Application No.: 02-0421
APN: 052-191-55

Date: October 20, 2004
Time: 09:36:30
Page: 1

Environmental Planning Completeness Comments

========== REVIEW ON SEPTEMBER 11, 2002 BY KEVIN D CRAWFORD ==========
09/11/02 - Review comments of plan sheets 1-4 by B. Largay, dated 2/02. titled "Sediment Basin & Underground Pipe Outlet: General: 1) Provide a sheet with Vicinity Map. General Notes and Const. Notes, Bench Mark, APN, Engr's stamp & signature, grading quantities, etc (all general req'ts for grading plans; 2) Show all property lines, easements and public rights-of-way, including dimensions; 3) Show adjacent APN's; 4) Clearly show all limits of grading: 5) Use different line weights & include legend & clearly differentiate between existing and proposed features: 6) Make reference to appropriate sheets for details of proposed facilites. Shts 1 & 2: 1) Show basin elev. for Sed. Basin #2; 2) Section B-B (Sht 2) does not match plan view. There is no berm shown on plan view; 2) Show existing elev's of PVWMA pipeline below Basin 2. Will excavation conflict with this pipe?; 3) Provide design criteria for all proposed pipes, including pipe sizes, materials, slopes, flowlines. etc: 4) Identify rectangular area with zigzag cross hatching shown north of the Sed. Basins: 5) Provide existing contours at closer intervals and show proposed elev's around berms: 6) Provide more detail of proposed DI in Basin 1 and the rectangular shape around it: 7) Will basins require any waterproofing measures such as clay lining or cut-off trenches below berms?

Sht 3: 1) Pipe riser detail shows riser height to be 6 ft. This makes top of riser above the berm grade at Basin 1 and at the same grade as berm at Basin 2. Is this correct? Elev's shown on detail don't make sense relative to the basins in plan view. Please correct. 2) Provide clarification for pipe trench details - ie info on type of backfill material, compaction reqt's. where sand slurry is used, Note: hand compaction note would require more than 6 inches on either side of pipe.

Provide an Erosion Control Plan including pertinent details for all disturbed areas.
========== UPDATED ON OCTOBER 1, 2002 BY KEVIN D CRAWFORD ==========
10/01/02 - Site visit made today by Joe Hanna, Kent Edler & Kevin Crawford. The following comments should be added to those made already: 1) Please provide a Soils Report addressing construction and stability of proposed basins as well as backfill req'ts for pipeline construction. 2) This project needs a Riparian Exception approval for all work proposed within wetlands or the Watsonville Slough. 3) Permits from Fish & Game, Corps of Engr's and/or USF&W may be required. (this should be addressed with the Riparian Exc. 4) Please provide backup calculations for the earthwork quantities provided. If project involves more than 1,000 CY of material (cut or fill) an environmental review will be necessary to issue the grading permit.
========== UPDATED ON JULY 25, 2003 BY KEVIN D CRAWFORD ==========
07/25/03 - Review of resubmitted plans, Shts 1-4 by "PHV" of USDA Natural Resource Conservation Service dated 11/02: These plans are so lacking in basic engineering design, they cannot be reviewed. I strongly suggest the applicant hire a civil engineer to complete an accurate topographical survey of the project site and then prepare a complete set of construction plans. Extensive review comments on the previous submittal were provided and are still available for review, therefore will not be repeated here. They were obviously not reviewed for this submittal

Prior to making another submittal, please verify that the plans include all components listed on the "Minimum Grading Plan Intake" sheet. ========== UPDATED ON

EXHIBIT G

AUGUST 8, 2003 BY ROBERT S LOVELAND ========

1. Identify the 100 year floodplain and floodway on Sheet 1. ========= UPDATED ON APRIL 14, 2004 BY KEVIN D CRAWFORD ========
04/14/04 - Review comments for plans titled "Paul Tao - Dairy Road E.Q.I.P. by "PHV" of U.S.D.A.-N.R.C.S.& signed by David Robledo. Area Engineer, dated 02/04 & 4/12/04. Six sheets in set. Plans are greatly improved from previous submittals and application is deemed Complete for Environmental Review purposes.See Misc. Comments for plan review comments. ========= UPDATED ON MAY 5, 2004 BY ROBERT S LOVELAND =========

1. The 100 year FEMA floodplain boundary has been identified on the site plan. dated 2/04.

2. This project requires a riparian exception. The fee has been added to the application. The following work will be covered in the riparian exception: approximately 100 feet of 30" CMP. rock rip-rap energy dissipator. vegetated swale and associated revegetation work. Please provide a sheet similar to your site plan titled revegetation plan. Show that the first 21 feet of the energy dissipator will be armored with rock rip-rap. and that the remainder of the swale will be vegetated (identify vegetation type): and delineate all areas to be revegetated (bur-reed, arroyo willow, creeping wild rye, etc.) on this new sheet. ========= UPDATED ON JULY 20, 2004 BY KEVIN D CRAWFORD ========
See comments under Miscellaneous.

Environmental Planning Miscellaneous Comments

========= UPDATED ON JULY 20, 2004 BY KEVIN D CRAWFORD ========
Review comments for 7-sheet set of plans with same title and dates of 6-sheet set of plans submitted last April, These plans are essentially the same as before, but with some minor changes, an additional sheet, and an approval signature by D. Robledo. Area Engineer dated 7/04.

My previous comments, dated April 14, 2004 have been completely ignored. I will not repeat them here as they are still available above. The only additional comment I have is on Sheet 3 the profiles B/2/3 and A/2/3 appear to be mislabled. If this and my previous comments are ever addressed, I am prepared to issue a Grading Permit for this project upon overall approval of this Application. Please do not re-submit plans until the previous comments have been addressed. ========= UPDATED ON SEPTEMBER 24. 2004 BY KEVIN D CRAWFORD =========
09/24/04 - Review of revised 7-sheet set of plans, revision date 9/17/04, signed by David Robledo: These plans are acceptable to E.P. All previous comments have been addressed. Kevin Crawford

Long Range Planning Completeness Comments

LATEST COMMENTS HAVE **NOT YET** BEEN SENT TO PLANNER FOR THIS AGENCY

========= REVIEW ON JULY 11. 2003 BY MARK M DEMING ========
NO COMMENT
========= UPDATED ON JULY 30, 2003 BY MARK M DEMING ========

NO COMMENT

Long Range Planning Miscellaneous Comments

LATEST COMMENTS HAVE **NOT YET** BEEN SENT TO PLANNER FOR THIS AGENCY

========== REVIEW ON JULY 11, 2003 BY MARK M DEMING ==========
NO COMMENT
========== UPDATED ON JULY 30, 2003 BY MARK M DEMING ==========
NO COMMENT

Project Review Completeness Comments

LATEST COMMENTS HAVE **NOT YET** BEEN SENT TO PLANNER FOR THIS AGENCY

========== REVIEW ON SEPTEMBER 13, 2002 BY JOAN VAN DER HOEVEN ==========
Archaeologic results needed to confirm no conflict w/site improvements
========== UPDATED ON APRIL 28, 2004 BY JOAN VAN DER HOEVEN ==========
Arch test excavations document accepted/reviewed by EP

Project Review Miscellaneous Comments

LATEST COMMENTS HAVE **NOT YET** BEEN SENT TO PLANNER FOR THIS AGENCY

========== REVIEW ON SEPTEMBER 13, 2002 BY JOAN VAN DER HOEVEN ==========
Comments from Environmental Planning, Fish & Game not yet received
========== UPDATED ON APRIL 28, 2004 BY JOAN VAN DER HOEVEN ==========
NO COMMENT

Opw Drainage Completeness Comments

LATEST COMMENTS HAVE **NOT YET** BEEN SENT TO PLANNER FOR THIS AGENCY

========== REVIEW ON SEPTEMBER 11, 2002 BY DAVID W SIMS ==========
No design calculations have been received to support the submitted drawings and specifications. Please provide information on drainage area hydrology, structure hydraulics, and sediment delivery and maintenance projections. Address potential issues with proximity of proposed project to the alignment of the PVWMA pipeline. Is the Pajaro Valley Water Management Agency aware of this proposed project and the potential risks to its pipeline? Will locating a basin with a highly pervious bottom produce an increased risk of piping and washout to the deeper buried PVWMA pipeline? What is the quality and condition of the backfill around the older PVWMA pipeline? What advantage is there to routing the basins in series rather than having independent discharge from each? Provide a brief project narrative explaining design intentions,

More detailed comment will be provided upon receipt of the above items

Please call the Dept. of Public Works. drainage division, from 8:00 to 12:00 pm if you have questions. ========== UPDATED ON AUGUST 8, 2003 BY DAVID W SIMS ==========
2nd Routing:

Physical location of the project construction has been changed from that shown in the first routing, and the two sediment basins combined into one. This appears to be an improvement that would tend to lessen the concerns for construction and seepage over the PVWMA fiber optic line.

Not all previous review comments have been addressed, which prevents further review The following is still needed to begin assessing the project proposal:

1) Brief project narrative indicating design intent/goals

2) The designer should follow the design requirements of the County Design Criteria for stormwater drainage design, Copies of these criteria are available at the Public Works Survey Counter for a nominal charge.

3) Drainage area and hydrology calculations

4) Structure hydraulic calculations for pipes and operating water/sediment line levels in the basin.

5) Sediment delivery/yield from the drainage area and maintenance projections for the basin.

6) Site specific soils information beyond NRCS soil survey mapping, if available.

It is recommended that the above information be provided in a report format with necessary supporting maps, elevations, boundaries, etc- provided on the plans.

More detailed comment will be provided upon receipt of the above items.

Other items noted in the plan review of a more detailed nature, but which may be subject to change once the above report/calculations are received are as noted below:

a) The culvert under the Dairy Rd. entrance is likely within the San Andreas Road right-of-way. This needs to be determined and shown. If it is the case, then work done in the County right-of-way (excavation/connection) will require an encroachment permit.

b) The style of connection to the County culvert is not an acceptable method since the County provides maintenance of this culvert. This connection is likely to catch debris at the abrupt transition in pipe size. A short open channel gap-section without physical connection to the County culvert is most preferred by the County. Otherwise, a serviceable box should be placed at the transition, or a smoothly tapered, conic transition formed if no interior access is to be provided.

c) The fiber optic line does not appear to be aligned with the fiber optic concrete boxes. Is this represented accurately and is the point of crossing with the proposed pipe shown correctly?

d) It is not clear how field runoff will enter the 30-inch inlet/pipe riserlocated at station 2+50.

e) Topography should be shown for the entire vicinity of the project and particularly around all sides of proposed structures.

f) Not all pipes have labeled slopes

g) Two styles of anti-seep collars are shown. It is not clear where each is planned for use.

h) Elevations for earthwork should be provided that relate to elevations shown for hydraulic structures.

Please call the Dept. of Public Works, Stormwater Management section from 8:00 to 12:00 am if you have questions. ========= UPDATED ON AUGUST 15, 2003 BY DAVID W SIMS =========

Additional materials marked as a 4th routing were received, but were not new plans. Found was a copy of a letter to F&G discussing details of the outfall location at the slough, and a quantities estimate. This was read and added to the filed plans. ========= UPDATED ON MAY 7. 2004 BY DAVID W SIMS ========
4th Routing: (shown as 5th) 5/3/04

An engineered drainage plan was submitted with the application, and was reviewed for completeness of discretionary development. Most previous comments have been fully addressed. Marked up plans and calculations are being returned to the applicant through the County Planner pertaining to the changes found in the latest submittal. The applicant is to assure that these markups and comments reach the design engineer for review. The plan was found to need the following additional information/correction prior to approving discretionary stage Storm Water Management review for a grading permit:

1) Minimum pipe cover (stated @ 2.5ft) is not maintained in a number of locations. The first and most problematic location is in the lower field. At the outside/downstream toe of the sediment basin berm there appears to be virtually no soil cover over the 30"/36" basin release pipe. Common field implements will strike or crush a pipe placed this shallow. A second location is detail J/3/4 on sheet 4. With the elevations shown, pipe cover is 1.3 ft and not 2.5 ft. Additionally, plan view topography, indicates field elevation of 48.5 ft. at the inlet riser (sta. 2+50), but detail J/3/4 shows field elevation at 50.8 ft. Is the field to be locally raised with fill at this location, and if so will runoff still enter this inlet?

2) Pipe diameters are noted inconsistently throughout the plans. The existing County culvert is noted as both 30" and 36". The proposed basin release pipe is noted as both 30" and 36".

3) The profile A/2/3 needs to be increased in scale to improve congestion and readability. Dimensions and elevations are missing in several locations.

4) No elbow is shown on the outfall end of the pipe delivering water to the sediment basin. With a 10 ft. basin bottom width the rock apron of 21 ft.. shown in detail B/2/3, will not fit. Make a correction such that the plans are consistent.

5) The County standard maintenance agreement is to be notarized and legally recorded

on the parcel for the sediment basin. A completed copy is to be returned to Public Works. A blank form is being provided through the County Planner.

6) Final plans, reports and calculations are to be submitted with the design engineer's seal, signature and date.

7) Construction inspection of this project is required. If performed by the NRCS engineer in 'responsible charge' of the design, no additional requirements are made. If performed by County inspectors. additional fees and plan copy and distribution procedures must be met. Please contact the Storm Water Management reviewer for submittal requirements in advance of the next submittal if County inspection is selected.

Please call the Dept. of Public Works, Storm Water Management Section, from 8:00 am to 12:00 noon if you have questions. ========= UPDATED ON JULY 22, 2004 BY DAVID W SIMS =========
5th Routing: (shown as 6th) 7/22/04

The application is approved for technical review. Please see miscellaneous comments for noted items found in this review that should be corrected prior to construction.

Several procedural items need to be taken care of prior to issuance of a permit

1) The County standard maintenance agreement is to be notarized and legally recorded on the parcel for the sediment basin. A completed copy is to be returned to Public Works. A blank form was previously provided through the County Planner.

2) It is standard procedure for all County approved projects of this nature to have final plans, reports and calculations be submitted with the design engineer's seal. signature and date. While the Federal government is allowed an exemption from many of its employees having to stamp design work under specific conditions, this exemption does not apply to the County. It is not clear whether the relationship of the County as having permit oversite authority, allows the County to still require stamped plans in order to cover liability risk to itself as the permit issuer. This issue has been a question asked in the review of the RCD/NRCS blanket permit application review as well, and still requires resolution.

Dpw Drainage Miscellaneous Comments

LATEST COMMENTS HAVE **NOT YET** BEEN SENT TO PLANNER FOR THIS AGENCY

========= REVIEW ON SEPTEMBER 11, 2002 BY DAVID W SIMS =========
NO COMMENT
========= UPDATED ON AUGUST 8, 2003 BY DAVID W SIMS =========
NO COMMENT
========= UPDATED ON AUGUST 15, 2003 BY DAVID W SIMS =========
NO COMMENT
========= UPDATED ON MAY 7, 2004 BY DAVID W SIMS =========
NO COMMENT
========= UPDATED ON JULY 22, 2004 BY DAVID W SIMS =========

Miscellaneous (not required for approval):

3) Depth of cover over the basin outlet pipe that runs across the lower agricultural field has been improved to approximately 1.3 ft. This is still only about 50% of the cover specified in the SCS agency's criteria. It is not known whether this depth will be struck by operation of normal agricultural equipment. The only alternative solutions readily apparent to the reviewer would be to use an elliptical (squash) pipe, use smaller diameter twin pipes, or design for a basin release design storm less than a 100-year event. However, no further correction is required.

4) Sheet 5 of 7, detail G/3/5, portions of the elevation view have been deleted, but are still shown in the section C-C view.

5) Sheet 5 of 7, detail J/3/5, text related to construction note 2 has been deleted from the plan view of the pipe riser detail.

6) Sheet 6 of 7, detail L2/3/6, still shows 36" pipe where 30" pipe is planned. Also there are several misspellings in the construction notes.

7) It is assumed no County inspection is desired, and that others will inspect the project.

Please call the Dept. of Public Works, Storm Water Management Section. from 8:00 am to 12:00 noon if you have questions.

EXHIBIT G

PAJARO VALLEY WATER MANAGEMENT AGENCY

36 BRENNAN STREET • WATSONVILLE, CA 95076
TEL: (831)722-9292 • FAX: (831) 722-3139
email: info@pvwma.dst.ca.us • http://www.pvwrnadst.ca.us

January 16,2003

Karen Christiansen
Santa Cruz County Resource Conservation District
820 Bay Avenue
Capitola, CA 95010

Subject: Paul Tao Project

Dear Karen;

Pajaro Valley Water Management Agency (PVWMA) has reviewed the design for a winter runoff storm drain on the Paul Tao property at the comer of San Andreas Road and Dairy Road. Of particular concern for PVWMA was the possibility of interference with our Harkins Slough Project raw water distribution pipeline and appurtenances.

Based on our review of the design and the field efforts conducted by the RCD to locate the pipeline and fiber optic cable conduit, we approv-e of the design as shown in the plan drawings. We request that we be notified when fieldwork is to be conducted in the vicinity of our pipe alignment.

Please call if you have questions or require additional information regarding this project.

Sincerely,

Mary Bannister

Mary B. Bannister, CEG
Technical Division Manager

cc: Bryan Largay – Monterey County Resource Conservation District ✓
Jeff Parker – Water System Operator - PVWMA

EXHIBIT G

USDA

DRAWINGS AND SPECIFICATIONS

Paul Tao
Underground Outlet & Water and Sediment Basin
Job Code 620 & 638
Engineering Class IV

In cooperation with:

Santa Cruz Resource Conservation District

Prepared by:

Salinas Field Office
Monterey County

July, 2004

CALIFORNIA

NATURAL RESOURCES CONSERVATION SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

26

EXHIBIT

UNITED STATES DEPARTMENT OF AGRICULTURE

NATURAL. RESOURCES CONSERVATION SERVICE

SALINAS FIELD OFFICE, CALIFORNIA

Landowner/Grower: Paul Tao -EQIP
Project: Underground Outlet & Water and Sediment Detention Basin
Job Code: 620 & *638*
Engineering Class: IV

TABLE OF CONTENTS

EXHIBIT H

UNITED STATES DEPARTMENT OF AGRICULTURE

NATURAL RESOURCES CONSERVATION SERVICE

April 2, 2004

DESIGN REPORT

PROJECT: Underground Outlet & Water and Sediment Detention Basin
LANDOWNER/GROWER: Paul Tao -EQIP
LOCATION San Andreas Road at Dairy Road.
COUNTY: santa Cruz
RESOURCE CONSERVATION DISTRICT: Santa Cruz
NRCS OFFICE: Salinas Field Office and Capitola Local Partnership Office

Project Title: Paul Tao Sediment Basin
Environmental Quality Incentive Program

Project Location

- Property Location: The intersection of Dairy Road and San Andreas Road, Watsonville, Santa Cruz County, California Impacted waterbody: Watsonville Slough, which joins the Pajaro River estuary approximately 2 miles downstream. Surrounding land use is agricultural.
- APN 052 191 55
- USGS 7.5' Quadrangle Topographic Map Watsonville West
- Township, range, section: San Andreas Land Grant
- Latitude 36'53' N Longitude 121" 48' W, UTM (606,384, 4,083,032) m

SUMMARY

As part of the Environmental Quality Incentives Program (EQIP) and the Watsonville Sloughs Watershed geographic priority area, Paul Tao applied for and received funding to improve water quality by minimizing rill, sheet and gully erosion fiom cropland. The purpose of *the* proposed project is environmental enhancement. The net effect on water quality will be reduced sedimentation of Watsonville slough and adjacent wetlands. The net effect on streambank vegetation will be an increase in native species diversity and percent cover.

Currently, storm water runoff from 16 acres of strawberries on the north and south sides of Dairy Road flows down an earthen ditch, through an active gully, and into Watsonville Slough through a culvert. The ditch and gully are unstable and the culvert was placed under emergency conditions without conforming to *NRCS* engineering standards. The proposed project consists of installing an underground outlet pipe to collect storm water and carry that water away fiom the ditch and gully and down a *steep* slope into a detention basin. This basin will capture most of the sediment in the stormwater, releasing runoff only after the basin is full. Water retained *in* the basin will recharge groundwater. The basin outlet bypasses the existing culvert. It consists of another underground outlet pipe that discharges to a rock lined energy dissipator and vegetated swale parallel to Watsonville Slough. When water fills the swale, it will spread out over a 120 foot wide sill and flow over a vegetated embankment into the slough. The vegetated embankment adjacent to the sill will be reinforced with an erosion control blanket, native perennial

grasses and native woody shrubs. The vegetated embankment adjacent to Watsonville slough will be left undisturbed.

ORIGIN OF REQUEST

The landowner applied for technical and financial assistance from the USDA-Farm Service Agency (FSA) and the USDA-Natural Resources Conservation Service (NRCS) offices of Salinas and Capitola. The financial assistance will be provided through the EQIP program. The Natural Resources Conservation Service (NRCS) personnel of the Salinas Field Office and Capitola Local Partnership Office will provide the technical assistance in addition to staff of the Santa Cruz County Resource Conservation District and the Resource Conservation District of Monterey County.

DESCRIPTION OF PROBLEM

High intensity rainfall during 1995, 1997 and 1998 generated concentrated runoff from Dairy Road and the adjacent agricultural fields, and resulted in the formation of a gully on the property of Paul Tao. The gully drains to Watsonville Slough adjacent to the San Andreas Road bridge, which is four miles upstream from where the slough meets the Pajaro River. A 2500 square foot willow dominated wetland has formed in the gully. This gully is an unstable geomorphic feature with an eight (8) foot vertical head cut, and 300 linear feet of unstable side slopes. It is in close proximity to the San Andreas Road right of way. Currently, stormwater flows through this wetland into Watsonville Slough by way of a culvert placed as an emergency repair with uncompacted fill. Soil erosion from this gully and the farm fields above it currently deposits in the wetland and in Watsonville Slough. Stabilization of the gully is important to prevent further sedimentation and to avert potential damage to San Andreas Road and further damage to private property. Annual farming operations also generate erosion and yield sediment. Prior to the installation of the proposed project, the total estimated sediment yield from this farm to the wetland and Watsonville Slough is 170 tons per year. After this project is installed, the estimated yield will be 10 tons per year.

ALTERNATIVES AND SOLUTION

Alternatives considered for Project include the following:

(a) Route water away from the gully using an underground outlet pipe. Construct a water and sediment retention basin to treat the stormwater runoff. Construct a basin outlet pipe that discharges water to a level area adjacent to Watsonville Slough, permitting basin discharges to enter the slough in a dissipated, non-erosive manner.

(b) Armor the existing gully head cut and construct a water and sediment retention basin in the existing gully. Reinstall existing culvert. This alternative would have involved disruption of a wetland that has become established in the gully bottom, and substantial disturbance to native shrubs and trees that have become established along the bank of Watsonville Slough since the gully formed

(c) Do nothing, allowing the gully continue to erode and risking failure of the culvert at Watsonville Slough.

Alternative (c) is not a viable alternative, as it will result in substantial losses of farmland; damage to downstream water resources; and potentially impact San Andreas Road. Alternative (b) is a viable alternative, but has significant permitting barriers related to the disturbance to the wetland and riparian vegetation. Because of the proximity of the PVWMA pipeline, the size of this basin would also be smaller. Placing the basin adjacent to the wetland is difficult because of the existing Pajaro Valley Water Management Agency Harkin Slough Project valves located on site. The net ecological impacts of alternative (a) are the lowest, as there is no disturbance of native woody vegetation. Alternative (a) involves the disturbance of 120 linear feet of the bank of Watsonville slough, including the removal of 2400 square feet of vegetation and 90 cubic yards of grading. This activity will result in a net

environmental benefit because the area is dominated by non-native herbaceous plants that will be replaced with native grasses and shrubs. Alternate outlet structure designs were considered, but none were found to be technically feasible. The best alternative is (a).

105, 106	Baywood Loamy Sand	0-61	Loamy Sand to Sand	SM, S

EXHIBIT H

ENVIRONMENTAL IMPACTS

The purpose of the proposed project is environmental enhancement. The net effect on the streamside vegetation will be an increase in plant community diversity and native plant percent cover. The net effect on water quality will be reduced sedimentation. There will be no temporary or permanent adverse effects on wetlands or water bodies.

The gully to be addressed by the proposed project is an unstable geomorphic feature with an eight (8) foot vertical head cut, and 300 linear feet of unstable side slopes It is in close proximity to the San Andreas Road right of way and the road bed may be undermined within several years if erosion continues at the current rate. Currently, stormwater flows through this wetland into Watsonville Slough through a culvert that was placed in uncompacted fill during an emergency repair. Soil erosion fiom this gully and the farm fields above it currently deposits in the wetland and in Watsonville Slough. Stabilization of the gully is important to prevent further sedimentation and to avert potential damage to San Andreas Road and continued damage to private property. Annual farming operations also generate erosion and yield sediment. Prior to the installation of the proposed project, the total estimated sediment yield from this farm to the wetland and Watsonville Slough is 170 tons per year. After this project is installed, the estimated yield will be *20* tons per year.

Disturbance to the riparian corridor will include the removal of herbaceous vegetation in an area 120 feet long and 20 feet wide along the north bank of Watsonville Slough. This entire area is above the 100-year floodplain and is upslope and immediately adjacent to the wetlands fringing the slough. This area is located approximately 100 yards west of the San Andreas Road bridge over the slough. This area is dominated by non-native herbaceous vegetation including wild radish, mustard and poison hemlock. A 400 square-foot area of native herbaceous vegetation dominated by sedges is present in the area and will be salvaged and replanted in this disturbed area as part of the project. Twenty (20) tons of rock riprap will be installed at the pipe outlet to minimize erosion. Erosion control blanket will be placed on 2200 square feet of disturbed areas to minimize erosion during the establishment of vegetative cover. No materials will be placed below the 100-year flood height or in the wetlands fringing the slough.

Grading will be conducted between April 15 and October 15. Earthmoving and trenching along the streambank will be conducted with a backhoe, an excavator and/or hand labor. The equipment will not enter the channel or disturb the soil below the 100-year flood plain or the below the upslope edge of the wetlands fringing the slough. Excavation spoils will be spread in the adjacent agricultural fields and integrated into the topsoil. No fill will be discharged in any waters of the United States. A silt fence will be properly installed between the construction site and the wetlands fringing slough to prevent the movement of fill down slope. Appropriate erosion control methods will be used, and disturbed non-cropped areas will revegetated with native shrubs and trees such as creek side dogwood and arroyo willow, native grasses such as creeping wild rye and the sedges salvaged fiom the site, and non-invasive non-native plants such as cereal barley.

Watsonville slough is potential red-legged frog habitat. The project will be constructed under the assumption that the frog is present in the area. An NRCS biologist registered with the US Fish and Wildlife Service (USFWS) to monitor construction sites for red legged frogs will design and supervise a monitoring program that will include a trained person on site during all construction activities that modify potential red-legged frog habitat. If a frog is observed, work in the area will cease and the biologist will address the situation in accordance with USFWS policy. No other threatened or endangered species are likely to occur on site.

The wetland that has become established in the gully is dominated by arroyo willow and California blackberry. The wetland soils are sand to a depth of over three feet and standing water does not persist for more than a few minutes after it stops raining. The proposed project diverts stormwater runoff away from this area. The willows in the gully have most likely reached the shallow water table, which is less than ten feet below the ground surface. It is unlikely that routing water away from the gully will have a detrimental impact on the plant community there. Dewatering the gully is required if the near-vertical side slopes and head cut are to be stabilized without filling the wetland that has become established in the gully bottom.

CONSTRUCTION

A private contractor and/or the landowner will construct the project. Cal-OHSA safety requirements will be in effect during all construction. The Natural Resources Conservation Service (NRCS), the Santa Cruz County Resource Conservation District and the Resource Conservation District of Monterey County will provide construction layout and inspection. The landowner shall be responsible for obtaining any needed permits, easements, and/or right-of-ways, and meeting any legal requirements. Grading will be conducted between April 15 and October 15.

MAINTENANCE

Landowner is required to maintain the project for at least ten years.

1. Inspect the project after every large storm event and remove any debris as necessary. Repair as needed.

2. Sediment shall be removed annually from the sediment basin until the original design elevation is reached, or 3-A. below the top of the principal spillway.

3. All permanently vegetated areas are to be maintained during the rainfall season.

4. Inspect basin outlet swale annually for erosion and rodent damage.

5. Report any damage to the NRCS, schedule an inspection by an engineer or conservationist, and implement any subsequent recommendations.

REFERENCES

Santa Cruz County Planning Department Planning Information Interactive *Map*, http://gis.co.santa-cruz.ca.us/internet/planninginformation/viewer.htm, 2003

USDA, Natural Resources Conservation Service. Hydrology Computation, EFH-2, CaArea2-ENG-400 (03/97). Salinas Field Office.

USDA, Natural Resources Conservation Service. USLE Computation, CaArea2-ENG-804 (05/88). Salinas Field Office.

USDA, Natural Resources Conservation Service. Sediment Yield Computation, CaArea2-ENG-805 (05/96). Salinas Field Office.

USDA, Natural Resources Conservation Service. Drop Pipe Hydraulic Design, CaArea2-ENG-52 (05/93), DRP_PIPE.xls. Salinas Field Office

USDA, Natural Resources Conservation Service. Steep Pipe Hydraulic Design, CaArea2-ENG-50 (05/93), STP_PIPE.xls. Salinas Field Office.

USDA, Natural Resources Conservation Service. Open Channel Hydraulic Desim, CaArea2-ENG-501 (02/88), OPN_CHAN.xls. Salinas Field Office.

USDA, Natural Resources Conservation Service. Culvert Pipe Hydraulic Desim, Santa Maria-ENG-53 (10/88), CUL_PIPE.xls. Salinas Field Office.

USDA, Natural Resources Conservation Service. Field Office Technical Guide, Section IV. Salinas Field Office.

USDA Natural Resources Conservation Service. Soil Survey of Santa Cruz County, Sheet 9, 1980.

EXHIBIT

EXHIBIT H

Description: Uses NRCS Hydrology Method to compute peak discharge from small rural watersheds. Based on Engineering Field Handbook Chapter 2 (08/89), modified for California Area II. Includes CN adjustment for Antecedent Moisture Condition (AMC), Ponded and Swamp Area Adjustment Factor (Fp), and Flow Rate Attenuation (qo) due to Detention Storage (Vs).

Hydrology Computation. EFH-2
CaArea2-ENG-400 (03197)

U. S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONS. SERVIC

Sht: __ of __

Project: Tao
Filename: Tao EFM2 Steep Pipe
Quad. Map: Watsonville West
Soil Survey: Santa Cruz Co

Date: 9/27/2001
Computed by: 8. Largay
Checked by:_____

Note: Drainage to proposed underground pipe. uncluding the Dairy Road field and the three blocks uphill across Dairy Road.
Detention IS for a basin at the base of the Dairy Road field.

DRAINAGE AREA (DA): 15.8 acres

RUNOFF CURVE NUMBER (CN)

HSG	Landuse/Condition	CN	Area	CN X Area
A	Natural Vegetation	49	0.0	0.0
A	Strawberries, Plastic	98	5.4	529.2
A	Strawbenles, roads, furrows	70	5.4	378.0
A	Strawberries, Plastic	98	2.3	225.4
A	Strawberries, roads, *furrows*		2.3	161.0
A	Dairy Road	98	0.4	39.2
	Weighted CN=	84.4	158	1,332.8
	Use CN:	84.4		

TIME OF CONCENTRATION (Tc)

Flow Length (ft):	1,655	AMC (I,II,or III):	II
Watershed Slope (%):	900	Avg Velocity (fps)=	2.01
Ponded Area (%):	0.0	Time of Conc. (hr)=	0.23
		Use Tc (hr):	0.23

DESIGN PRECIPITATION (P). DESIGN RUNOFF (RO), 8 DISTRIBUTION TYPE

Freq. (yrs)	P6 (in)	P24 (In)	P6/P24 (in/in)	Distrib. Type	RO (in)
2	1.30	2.00	0.650	II	0.76
5	1.70	2.90	0.586	I	1.46
10	2.00	3.40	0.588	I	**1.88**
25	2.20	4.20	0.524	I	2.58
50	***2.50***	4.70	0.532	I	3.03
100	2.70	5.50	0.491	IA	3.77
			Use Type:	I	

DESIGN PEAK YIELD (Y) AND DISCHARGE (q)

Freq. (yrs)	Prob. (%/yr)	qu (cfs/ac-in)	Y (cfs/ac)	qi (cfs)	qo (cfs)
2	50	0.533	0.406	6.4	8.4
5	20	0.583	0.850	13.4	13.4
10	10	0.599	1.125	17.8	**17.8**
25	***4***	0.607	1.565	24.7	24.7
50	***2***	0.607	1.838	29.0	29.0
100	1	0.607	2.285	36.1	36.1
			Detention Storage (ac-R):		0.0

EXHIBIT H

Steep Pipe Hydraulic Design
CaArea2-ENG-50 (05/93)

U.S. DEPT. OF AGRICULTURE
SOIL CONSERVATION SERVICE

Sheet __ of __

Project: Tao
Pipeline:

Date: 4/6/04
Filename: pipe_tao.wk1

Computed by:
Checked by: _____

The Q (in) = 25 cfs

Runoff Yield (cfs/acre): 1.00

	Sta (ft)	Elev (ft)	Area (ac)	Qi (cfs)	Qm (cfs)	So (ft/ft)	dm (in)	Mat'l (abrv)	Factor "n"	dm (in/in)	Vm (fps)	So/Sc (ratio)	Lm (ft)	@ Hw (in)	di	Hw (ft)	@ Ho (ft)
	497.5	55.9	15.00	15.0										25.1	36.0	0.64	3.22
Riser #1	250.0	47.8	10.00	10.0	15.0	0.033	18.0	cpps	0.010	0.56	14.7	3.14	-247.6				
					25.0	0.080	18.0	cpps	0.010	0.58	23.5	2.60	-10.0	21.4	24.0	0.64	7.53
PI	240.0	47.0	0.00	0.0										-	0.0	-	-
					25.0	0.371	18.0	cpps	0.010	0.37	42.1	12.05	-37.3				
PI	205.0	34.0	0.00	0.0										-	0.0	-	-
					25.0	0.106	24.0	cmph	0.017	0.46	17.7	5.65	-28.4				
Outlet	176.8	31.0	0.00	0.0										-	0.0	-	-

36

EXHIBIT

Drop Pipe Hydraulic Design
CaArea2-ENG-52 (05/93)

U.S. DEPT. OF AGRICULTURE
SOIL CONSERVATION SERVICE

Sheet__ of__

Project. Paul Tao
Date: 4/6/2004 Computed by: B. Largay
Filename: Tao Basin DRP_Pipe Checked by:_____

I. Profile and Dimensions

		Weir Coeff, Riser.	3.10
Design Flow Rate, Qd (cfs):	36.1	Orifice Coeff, Riser:	0.60
Total Barrel Length (ft):	180.0	Orifice Coeff, Brl #1:	0.60

Point	Eiev (ft)	Pipe Length (ft)	Pipe Slope (ft/ft)	Pipe Sf @ Qd (ft/ft)	Pipe Diarn (in)	Pipe Mat'l (abrv)	Friction Factor ("n")
Crest, E/S	34.00					-	-
Crest, Riser	32.00	3.0	-	-	36	CMPh	0.019
Invert, Brl #1	29.00	10.0	0.020	0.015	30	CMPh	0.018
Invert, Brl #2	28.80,	170.0	. 0.019	0.015	30	crnph	0.018
Invert, Outlet	25.60		-	-	-		
Tailwater	26.60						

Head above Riser Crest @ Qd (ft)=	1.15
Freeboard below E/S Crest (ft)=	0.85
Outlet Velocity @ Qd (fps)=	9.1

EXHIBIT H

Composite Head-Discharge Curve
Head above Riser Crest (ft)
Crest E/S
Qd
Discharge (cfs)
Weir
Orifice
Short Tube
Full Pipe
Series5
Series6

EXHIBIT H

Open Channel Hydraulic Design
CaArea2-ENG-501 (02/88)

U.S
SC

Sheet __ of __

Project: Tao
Date: 1/5/04
Filename: Tao Outlet OPN_CHAN

Computed by: BGL
Checked by: _____

Caclulates depth of flow over weir crest at outlet. Calculates velocity of flow over the steepest portions of the slough bank (2:1 slope)

I. OPEN CHANNEL FLOW (Manning's Formula)

Depth (ft)	Bottom Width (ft)	Side Slope "z" Left	Side Slope "z" Right	Friction Factor "n"	Slope (ft/ft)	Q (cfs)	V (fps)	A (ft²)	(ft)
0.09	110.00	2.00	2.00	0.055	0.5000	38.0	3.83	9.92	110.36

Channel lining North American Green erosion control blanket P550 is rated to withstand flow velocities of 12.5 feet/second.

II. WEIR FLOW

Depth (ft)	Bottom Width (ft)	Side Slope "z" Left	Side Slope "z" Right	Weir Coeff "Cw1"	Weir Coeff "Cw2"	Q (cfs)	V (fps)	A (ft²)	(ft)
0.22	110.00	2.00	2.00	3.10	2.50	35.3	1.45	24.30	110.88

Determines required length of weir crest for outlet spillway.

EXHIBIT H

Soil Erosion and Savings Computations

U.S. DEPT. OF AGRICULTURE
SOIL CONSERVATION SERVICE
RESOURCE CONSERVATION DISTRICT OF MONTEREY COUNTY

Project: Tao
Date: 04/08/03
Computed by: B. Largay
Filename:

This spreadsheet is used for USLE calculations, addiiion of concentrated flow erosion as either a percentage of sheet and rill or as an independent estimate, input of sediment yield Percentagesfar both sheet and rill and concentrated flow erosion, and input of sediment savings percentages for the suite of practices installed.

CONDITIONS BEFORE PRACTICE INSTALLATION
Sheet and rill (in field conditions):

Strawberry fields managed with row arrangement and plastic ditches
Concentrated flow (road and drainage conditions):

	T (tn/ac)	R	K	I (ft)	s (%)	LS	C	P	A (tn/ac)	Acres	Total
Bottom Field	5.0	29	0.32	600	0.5	0.1	0.75	0.20	0.2	2	0.4

CONCENTRATED FLOW EROSION (FIELDS)

Concentrated Flow factor (multiplier of sheet and rill erosion)	0.50	72.1
Basis for factor used	Reduction due to use of plastic ditches in field.	
TOTAL FIELD EROSION BEFORE PROJECT		216

CONCENTRATED FLOW EROSION (INDIVIDUAL SOURCES NOT INCLUDED ABOVE)

Erosion Source, Segmented as necessary	Bed/bank/head cut erosion (feet/year) Length	Width (average)	Depth (average)	Shape Factor*	Yards Eroded	Tons
Ditch erosion	300.0	10.0	0.10	1.0	11	15.0
Gully erosion	3.0	10.0	5.00	1.0	6	7.5
x	0.0	0.0	0.00	0.0	0	0.0
x	0.0	0.0	0.00	0.0	0	0.0

*1.0 for rectangle, 0.5 for triangle

TOTAL OF INDIVIDUAL SOURCES	22.5
TOTAL EROSION AT SITE BEFORE PROJECT	239

SEDIMENT YIELD

	Delivery Ratio to Waterways/Wetlands	Basis for Yield Estimate	Tons/year
Fieid Erosion	70%	Proximity to wetland	151
individualconcentrated flow sources of erosion	90%	Proximity to wetland	20
TOTAL SEDIMENT YIELD BEFORE PROJECT			172

EXHIBIT H

PRACTICES INSTALLED

	NOTES	Percent Yield Reduction	Percent Erosion Reduction
Sediment Basin	Below field	85%	0%
Row arrangement	All fields	0%	10%
Road paving	Dairy road	23%	23%
Underground Outlet	Down embankment	11%	11%
CUMULATIVE PERCENT REDUCTION		95%	44%
BASIS FOR CUMULATIVE REDUCTION ESTIMATE		Table of savings by practice	

FIELD EROSION: USLE COMPUTATIONS

2-Yr 6-Hr Precip. (in): 1.3

Calif. "R Zone" (1-2): 1
Calif. "LS Area' (2-3): 3

Field NO	T (tn/ac)	R	K	l (ft)	s (%)	LS	C	P	A (tn/ac)	Acres	Total

CONCENTRATED FLOW EROSION [FIELDS)

Concentrated Row factor (multiplier of sheet and rill erosion)	0.50	36.0
Basis for factor used	Reduction due to use of plastic ditches in field.	
TOTAL FIELD EROSION AFTER PROJECT		108

CONCENTRATED FLOW EROSION (INDIVIDUAL SOURCES NOT INCLUDED ABOVE)

Erosion Source Segmented as necessary	Bed/bank/head cut erosion (feet/year) Length	Width (average)	Depth (average)	Shape Factor.	Yards Eroded	Tons
Ditch erosion	0.0	0.0	0.00	0.0	0	0.0
Gully erosion	0.0	0.0	0.00	0.0	0	0.0
x	0.0	0.0	0.00	0.0	0	0.0
x	0.0	0.0	0.00	0.0	0	0.0

1 .0 for rectangle, 0.5 for triangle

TOTAL OF INDIVIDUAL SOURCES	0.0
TOTAL EROSION AT SITE AFTER PROJECT	0

SEDIMENT YIELD	Delivery Ratio to Waterways/Wetlands	Basis for Yield Estimate	Tons/year
Field Erosion	20%	Basin removes sand	22
Individual concentrated flow sources of erosion	0%	Sources eliminated	0
TOTAL SEDIMENT YIELD AFTER PROJECT			22

TOTAL REDUCTION IN SOIL TRANSPORTED TO WATERWAYS AND WETLANDS	161
TOTAL REDUCTION IN SOIL EROSION	131
SEDIMENT TRAPPED IN BASIN	86

EXHIBIT H

APPROVAL

The controlling classification factor for this project, **Paul** Tao-EQIP, *is* the **flow** capacity. NRCS National Engineering **Manual, CA** 501 indicates **Class** IV **if** the design flow capacity (Q) **is** between 20 **and 40** cubic **feet per** second (cfs). Therefore, this **is a Class** IV project.

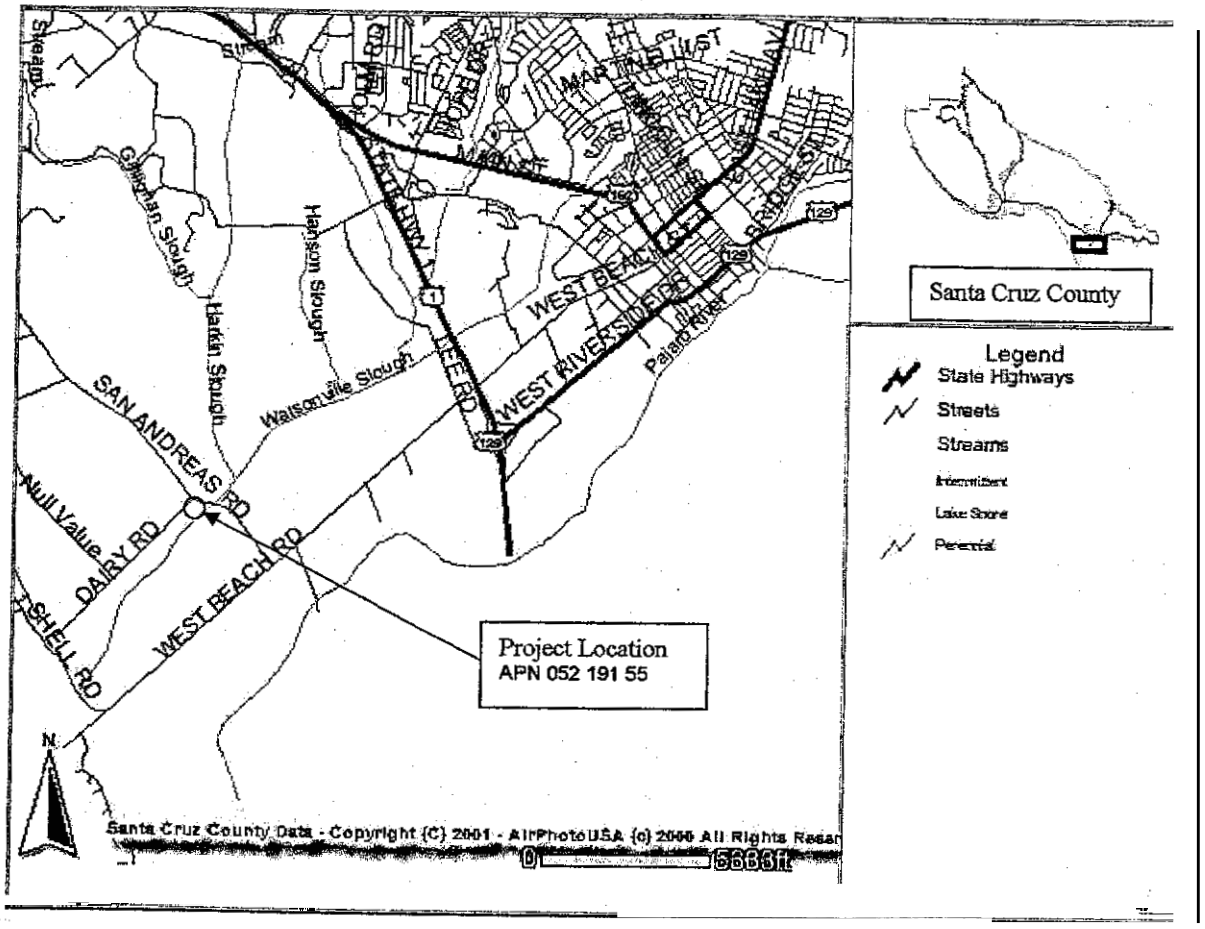
PREPARED B Y_____ Date:_____
Monterey *County* Engineer

REVIEWED B Y_____ Date:_____
Technician

APPROVED BY:_____ Date:_____
Area 11Engineer

EXHIBIT H

LOCATION *MAP*



- **USGS 7.5' Quadrangle** Topographic Map Watsonville **West**
- **Township, range, section:** San Andreas Land **Grant**
- **Latitude** 36°53' N **Longitude** 121" 48' **W,** UTM (606,384, 4,083,032) **m**

ENVIRONMENTAL ASSESSMENT

Date: April 8.2004

Client and/ or Business Name: Paul Tao

Purpose and Need Statement (Client Objective): Reduce soil erosion and impsove water quality.

Description of Proposed Project: Vegetative and structural practices will be implemented to achieve client objectives.

Treatment Unit | Farm#: 691 | Tract #: 7802 | Field#: 1

Watershed: Watsonville Slough

Name of Person(s) Completing Worksheet: Kelli Caniara

- This worksheet is used to document the effects a proposed activity may have on natural, human, and cultural resources, in compliance with NEPA and NRCS NEPA Policy (General Manual 190, Section 410).
- Effects are documented in terms of: Short Term – those that occur during installation/construction; and Long Term – those that occur during and after the activity is finished. Onsite and offsite, positive and negative, and cumulative effects must be documented. If mitigation is proposed effects must be documented.

1

	Environmental Effects Element	Description of Effects
I.	SOIL:	
a.	Soil structure (e.g. disruptions, truction of structure, displacements, compaction, deposition, removal of organic material, improvements)?	Initial installation of practices, underground outlet and structure for water control may result in compaction, removal of organic material, and destruction of soil structure. Reducing the gully erosion currently occurring and performing critical area planting will reduce compaction and soil loss and improve soil tilth over time.
b.	Soil Fertility7	Initial installation of practices will remove vegetation. Critical area planting, combined with reduced sediment loss, will improve fertility.
c.	Unique geologic or natural physical features (e.g. covering, modification, partial destruction, protection, etc.)?	Not applicable
d.	Wind or water erosion of soils, or soil erodibility, either on or off site?	Initial installation of practices will expose bare soil. Critical area planting will decrease soil erosion.
e.	Siltation, deposition or erosion, which may impact or modify the channel of a river, stream, ocean shoreline, or other water?	Combined with structural practices, ie. Sediment basin, critical area planting will reduce gully erosion and prevent siltation of Watsonville Slough
f.	Exposure of people or property to geologic hazards such as landslides. mudslides. subsidence or similar hazards?	Minimal
g.	Number of acres of prime &/or unique cropland?	N/A
h.	Other?	None
II.	WATER:	
a.	Stream channel dimension, pattern, and/ or slope (including down stream impacts)?	The gradient of the gully will be reduced to improve stability and to decreased sediment transport and improve water quality in the Slough.
b.	Surfac [illegible] velocities and/ or volumes?	Initial installation of practices may reduce infiltration, increasing water velocity and volume. Critical area planting, structural for water control and the sediment basin will slow surface flow, improve infiltration, and improve groundwater recharge.
c.	Quality or quantity of discharge into surface waters, including, but not limited to temperature, nutrients, bacteria, and turbidity?	Initial installations may increase water & sediment discharge into surface waters. Critical area planting, structural for water control and the sediment basin will reduce discharge quantity & improve water quality.
d.	Quantity of ground waters through either direct [illegible]	The water and sediment basin installation will improve groundwater recharge to the Slough area, which is impacted by salt water intrusion.
e.	Ground water quality?	Ground water quality will be improved through the installation of a water and sediment basin to decrease salinity through improved recharge.
f.	Amount of water available for public use?	Not applicable
g.	Exposure of people or property to flooding?	Reduction in sediment entering Watsonville Slough will minimize flooding potential.
h.	other?	None

	Environmental Effects Element	Description of Effects
III.	AIR:	
a.	Air quality?	Equipment emissions during practice installation and dust from bare soil may temporarily influence air quality. No long term effect.
b.	Odors?	May be a temporary odor during construction. No long term effect.
c.	Other?	None
IV.	PLANTS:	
a.	Diversity of species, or numbers of any plant species (upland, riparian, wetland, etc.)?	Critical area planting may positively influence species diversity and quantity.
b.	Numbers or health & vigor of any unique, species of concern, rare, threatened or endangered plants?	None known at this time.
c.	Normal recruitment of existing, native species:	N/A
d.	Other?	None
V.	ANIMALS	
a.	Diversity of species, or numbers of any species of animals, (birds, mammals, fish, invertebrates)?	Critical area planting may positively influence species numbers and diversity by enhancing and or creating habitat.
b.	Unique, species of concern, rare, threatened, or endangered animals (review T&E lists)?	Potential for Red Legged Frog. Long term effect of conservation practices will be beneficial to species.
c.	Native animals (migration barriers, competition from non-natives, etc.)?	Critical area planting may influence animal competition.
d.	Existing fish & wildlife habitat or critical habitat (nesting, spawning, etc.)?	Reduction in sediment transport to Watsonville Slough will improve critical habitat.
e.	Human activity during sensitive life stages (nesting, spawning, etc.)?	None
f.	Other?	None
VII	OTHER HUMAN CONSIDERATIONS:	
a.	Noise levels?	During construction, equipment noise may effect workers.
b.	Present or planned land uses?	Not applicable
c.	Aesthetic resource, scenic value, or natural area?	Practices will reduce soil erosion by improving vegetative cover and diverting excess water from highly erosive areas.
d.	Recreational opportunities?	Not applicable
e.	Public health and safety?	Soil, which may contain agricultural chemicals, is prevented from entering Watsonville Slough.
f.	Public interest related to the site or watershed:	As Watsonville Slough is listed on 303d list for sediment, practices will reduce sediment transport.
g.	Economic impacts to the clients, landowners, or public?	Initial cost. Implemented practices should protect Watsonville Slough, as well as reduce maintenance costs.
h.	Client well being?	Client will feel they're helping the environment.
i.	Environmental justice?	Not applicable
j.	Other?	None

SPECIAL ENVIRONMENTAL CONCERNS Check each category. If the effect is adverse or positive to any of the following, explain in the notes section or on an attachment. Under Present indicate Yes or No. For Cultural Resources purposes, if the activity is an "Undertaking", separate primary documentation is required. For other Concerns supplemental documentation may be required.

Concerns	NRCS Policy Procedure	Present	Positive/Adverse Effect
Threatened or Endangered Species (To ensure actions do not jeopardize T&E species)	190 GM- 410-22, California Endangered Species Handbook	Yes	Positive effect. Planned practices to control soil erosion and sedimentation will improve habitat for species.
Natural Area (To recognize and consider Impacts when planning and recommending actions adjacent to nearby Natural Areas)	190 GM 410.23	No	Positive effect. Soil erosion and vegetative plantings will reduce erosion and improve water quality and habitat of Watsonville Slough
Landscape Resource (To preserve and enhance scenic beauty or improve landscape)	190 GM 410.25	No	
Wetland (To protect, maintain and restore wetland functions and values)	190 GM 410.26 NFSA Manual	Yes	No effect
Stream Channel Modification (To maintain and restore streams, wetlands and riparian vegetation as functioning parts of a viable ecosystem)	190 GM 410.27-28	No	
Riparian Area (To protect, maintain, and restore riparian areas)	190 GM 411	Yes	Positive effect. Sediment transport prevented through conservation practices.
Prime and Unique Farmland (To minimize unnecessary and irreversible conversion of	310 GM 403	No	
Cultural Resources (To preserve and prevent the destruction or degradation of cultural resources, including historical archaeological sites and traditional cultural places)	410 GM 401	Yes	No effect.
Coastal Zone Management Area (To ensure conservation of coastal resources)	Federal Register 6/25/99, PL 92-583	Yes	Positive effect. Planned practices to control soil erosion, flooding and sedimentation will help to protect coastal resources
Wild and Scenic River (Consideration of impacts when actions affect areas adjacent to Wild and Scenic Rivers)	Federal Register 9/7/82, p. 39454	No	
Special Aquatic Site (To protect, restore and maintain special aquatic sites)	Federal Register 12/24/80 EPA 404(b)(1)230.3&231.10	No	
Essential Fish Habitat (To conserve and enhance fish habitat for salmon, shellfish, and marine fish)	50 CFR 600.905-930 Federal Register 12/19/97	No	

OTHER CONSIDERATIONS

Documentation of the following questions can be completed here.

a. If wetland impacts are proposed, conduct a wetland determination and complete the NRCS minimal effects procedure per the Food Security Act Manual. Make certain that the client contacts the US Army Crops of Engineers to determine the need for a Permit under Section 404 of the Clean Water Act and Section 10 Rivers and Harbors Act and the Regional Water Quality Control Board for Section 401 Clean Water Act certification.

ACOE should be consulted if working within US waters.

b. If a stream, lake or other water body is involved, the client should contact the California Department of Fish and Game for a Section 1600 Stream Alteration Agreement

CDFG should be consulted.

EXHIBIT 1

c. **Document** mitigation planned or required to avoid, minimize, or compensate for negative impacts:

Vegetative plantings will be implemented to reduce short term destruction of soil structure, to improve soil fertility, to decrease exposure of bare soil to wind and water erosion, and to improve infiltration due to the installation of structural practices

d. Document communication with the **USFWS,** NMFS, Corps of Engineers, EPA, CDFG, RWQCB, NRCS Biologists, etc

NOT APPLICABLE

e. Discuss any **Cumulative Effects** (beneficial or adverse):

Installation of practices to safely convey water combined with vegetative plantings will reduce erosion and prevent sediment and chemicals from entering Watsonville Slough. Vegetation will provide more habitat than barren slopes. Soil quality, structure, and fertility, and wildlife habitat will be enhanced over time.

f. Alternatives to Proposed **Action** that were considered (include reasons why alternative **was** not selected):

1. No action. This would allow erosion to continue.
2. Open channel **instead of** pipe. This would **allow** erosion to continue.
3. Use of vegetative measures only. This would allow erosion to continue.
4. Combination of management, vegetative and structural practices. Selected alternative.

g. Remarks or Other Considerations:

Assessment completed for Underground Outlet & **Water** and ***Sediment*** Detention Basin

RECOMMENDATION (check one)

[X] Based ***upon*** *the* conclusions below, **I** find that *this* action will not have significant adverse impacts on the **quality** of the human environment. No ***further*** environmental analysis is required. The assessment indicates work **should** proceed.

[ ] Further analysis is necessary, including *the* possible need to prepare an Environmental Impact Statement or a Finding Of No Significant **Impact.** The landowner will be **informed not** to proceed until further assessment ***is*** completed.

h. Conclusion$ based upon the assessment (rationale for *the* **findings** above):

In respect to long term benefits, **short-term** negative impacts are negligible. Proceed with conservation plan.

Signature (Planner)	Title	Date
K Lamar	Soil Conservationist	4/12/04
Reviewed/Concurred By	**Title (District Conservationist)**	**Date**
T Soule	District Conservationist	4/12/04

Alternative to Proposed Actions (include reasons why alternative was not selected):

SEE **ALTERNATIVES** AND SOLUTIONS (p. 2)

Landowner/grower will be informed of **their** responsibility in obtaining necessary permits.

Recommendation (check one)

☑ Evaluation indicates work should proceed. (Includes situations where long term beneficial **impacts** outweigh short-term adverse impacts).

☐ Continue evaluation for **further** information. Land user will be informed not to proceed with work until evaluation is completed. (Includes potentially controversial actions that should be reviewed by **Area** Interdisciplinary **Team).**

☐ Evaluation indicates significant adverse environmental impact **will** result.

Remarks and/or Summary Statement

Prepared **by:**_____

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
UTILITY CHECK SHEET

Reference Engr. Memo-73

Farm Name: Paul Tao

Location: San Andreas Road ai Dairy Road

Utilities **Involved** and Location: PVWMA Pipeline
And fiber optic conduit.

Landowner or operator notified (who): Paul Tao

(by whom):

Haw:

Date:

Work to be done: Install underground outlet pipe and sediment basin.

When:

Utility Company Notified (who): PVWMA

(by whom):

How:

Date:

Request to locate utility: Not **necessary,** but helpful.

Work to be done: Exploratory excavation to locate pipe

When:

Request for **Company** representative to be present: *YES*

Utility marked or **staked**

Date:

Representative present during construction:

Contractor Notified (who):

(by whom):

How:

Date:

Type of utility: Underground water supply pipe

Location: *See* Plans

Vertical location in relation to **work** Pipe crossed by project.

Horizontal location in relation to work Pipe **crossed** by project.

Contractor shown markings or stakes:

Utility location shown on plans: **YES**

Other remarks: **Lines** outside of work area.

Signature:_____

ENGINEER'S COST ESTIMATE

Landowner: Paul Tao
Project: EQIP 00-05, Water and Sediment Basin, Underground Outlet Pipe
Santa Cruz County, California

*Earthwork includes basin excavation, trench excavation, backfill and compacted backfill.

ENGINEER'S COST ESTIMATE

Item No.	Item Description	Spec No.	Qty	Unit	Unit Price	Amount
1	18" HDPE Liner Pipe	620	290	L.F.	16.00	4,640.00
2	18" HDPE Split Coupler	620	12	EA.	10.00	120.00
3	45 degree 18" HDPE Bend	620	1	EA.	300.00	300.00
4	45 degree 30" CMPh Bend	620	1	EA.	500.00	500.00
5	36" CMPh Pipe for Risers	620	9	L.F.	60.00	540.00
6	24" CMPh Pipe	620	30	L.F.	25.00	750.00
7	30" CMPh Pipe	620	180	L.F.	30.00	5,400.00
8	24" CMPh Coupling	620	1	EA.	27.00	27.00
9	30" CMPh Coupling	620	9	EA.	32.50	292.50
10	Thrust Block and Concrete Collars	901	1	C.Y.	100.00	100.00
11	Trench Excavation	903	190	C.Y.	4.00	760.00
12	Trench Backfill	903	190	C.Y.	2.00	380.00
13	Trench Compacted Backfill	903	190	C.Y.	4.00	760.00
14	Basin Excavation	378	630	C.Y.	5.00	3,150.00
15	Basin Compacted Embankment	378	260	C.Y.	10.00	2,600.00
16	Rock Riprap	907	25	Tans	55.00	1,375.00
17	Surplus from Excavation		200	C.Y.	1.00	200.00
18	Concrete Pads	901	4	C.Y.	100.00	400.00
19	Rubberized Anti-Seep Collars		85	S.F.	3.5	297.50
20	Geotextile	905	480	S.F.	0.25	120.00
21	9" Landscape Stables	342E	2	Box	30.00	60.00
22	Erosion Control Blanket	342E	4	Rolls	250.00	1,000.00
23	Creeping Wild Rye	342E	250	Plugs	1.00	250.00
24	Willow Stakes	342G	20	EA.	10.00	200.00
25	Barley Seed	342	30	Lbs	3.00	90.00
					TOTAL =	$24,312.00

CaArea2-ENG-200 (4/5/04)

BID SCHEDULE

Landowner: Paul Tao
Project: EQIP 00-05, Water and Sediment Basin, Underground Outlet Pipe
Santa Cruz County, California

BID SCHEDULE

Item No.	Item Description	Spec No.	Qty	Unit	unit Price	Amount
1	18" HDPE Liner Pipe	620	290	L.F.		
2	18" HDPE Split Coupler	620	12	EA.		
3	45 degree 18" HDPE Bend	620	1	EA.		
4	45 degree 30" CMPh Bend	620	1	EA.		
5	36" CMPh Pipe for Risers	620	9	L.F.		
6	24" CMPh Pipe	620	30	L.F.		
7	30" CMPh Pipe	620	180	L.F.		
8	24" CMPh Coupling	620	1	EA.		
9	30" CMPh Coupling	620	9	EA.		
10	Thrust Block and Concrete Collars	901	1	C.Y.		
11	Trench Excavation	903	190	C.Y.		
12	Trench Backfill	903	190	C.Y.		
13	Trench Compacted Backfill	903	190	C.Y.		
14	Basin Excavation	378	630	C.Y.		
15	Basin Compacted Embankment	378	260	C.Y.		
16	Rock Riprap	907	25	Tons		
17	Surplus from Excavation		200	C.Y.		
18	Concrete Pads	901	4	C.Y.		
19	Rubberized Anti-Seep Collars		85	S.F.		
20	Geotextile	905	480	S.F.		
21	9" Landscape Stables	342E	2	Box		
22	Erosion Control Blanket	342E	4	Rolls		
23	Creeping Wild Rye	342E	250	Plugs		
24	Willow Stakes	342G	20	EA.		
25	Barley *Seed*	342	30	Lbs		

TOTAL=

***Earthwork** includes basin excavation, trench excavation, backfill and compacted backfill.

CaArea2-ENG-200 (4/05/04)

U.S DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
CALIFORNIA

PRACTICE **REQUIREMENTS**
FOR
378 – POND

For:

Business Name	Paul Tao	
Job Location	San Andreas h a d at Dairy Road. Watsonville	
county **Santa** Cruz	**RCD** Santa Cruz County	Farm/Tract No. 4
Referral No.	Prepared By D. Robledo	Date 414104

IT SHALL BE THE RESPONSJBILITY **OF** THE **OWNER TO** OBTAIN ALL NECESSARY PERMITS **AND/OR RIGHTS,** AND **TO** COMPLY WITH ALL **ORDINANCES** AND LAWS PERTAINING TO THIS INSTALLATION.

Installation shall be in accordance with **the** following drawings, specifications and special requirements. NO CHANGES *ARE* TO BE MADE IN THE DRAWINGS **OR** SPECIFICATIONS WITHOUT PRIOR APPROVAL OF THE **NRCS TECHNICIAN.**

1. **Drawings, No.** EQIP 00-05

2. Practice Specifications: Pond (378), Underground Outlet (620), Critical Area Planting (342E,G)

3. **Earthfill** Compaction **by** Method To be determined by contractor equipment and **in** accordance w/ practice specification 378 III-D (pond -compaction)

4. Special Requirements: NRCS engineer will provide grade and construction layout. Embankment and excavation **shall** have 2:1 **side** slopes.
Disturbed soil areas shall be seeded with cereal barley at 100 lbs/acre. Outlet swale and erosion control blanket shall be planted with creeping wildrye plugs on 3' centers and arroyo willow on 10' centers. Nine (9) inch staples are acceptable for the erosion control blanket.

5. **Special** Maintenance Requirements: Sediment shall be removed annually. Traffic will not be allowed on embankment. Inspect embankment for settlement or cracks after major storm events. **Keep** embankment and surrounding areas **free** of rodents.

PRACTICE APPROVAL:

Job Classification: **(Ref:** Section 501 NEM)

Show **the** limiting elements for this job. This job is classified as, Class IV

Limiting elements:	Units
Effective height	3.0 ft
Hazard Class	a
Drainage Area	0.04 **square** miles
Spillway capacity	**36** cfs

Design Approved **by:**_____ Date: 4/5/04

LANDOWNER'S/OPERATOR'S ACKNOWLEDGEMENT:

The landowner/operator acknowledges that:

a. He/she has received a copy of the construction drawings and specification, and that he/she has an understanding of **the contents,** and **the** requirements.

b. He/she has obtained all **the** necessary permits.

c. No changes will be made in **the** installation of **the** job without prior concurrence of **the** NRCS technician.

d. Maintenance of **the** installed work **is** necessary for proper performance during the project **life.**

Accepted by:_____ Date:_____

PRACTICE COMPLETION

I have made an on site inspection of **the** site (or I **am** accepting owner/contractor documentation), and have determined that **the** job as installed does conform to **the** drawings and practice specifications.

Completion Certification by:

/s/_____ Date _____

U.S DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
CALIFORNIA

PRACTICE REQUIREMENTS
FOR
620 - UNDERGROUND OUTLET

For:

Business Name Paul Tao
Job Location San Andreas Road at Dairy Road, Watsonville
County Santa Cruz RCD Santa Cruz County Farm/Tract No. 4
Referral No. _____ Prepared By D. Robledo Date 4/4/04

IT SHALL BE THE RESPONSIBILITY OF THE OWNER TO OBTAIN ALL NECESSARY PERMITS AND/OR RIGHTS, AND TO COMPLY WITH ALL ORDINANCES AND LAWS PERTAINING TO THIS INSTALLATION.

Installation shall be in accordance with the following drawings, specifications and spec requirements. NO CHANGES ARE TO BE MADE IN THE DRAWINGS OR SPECIFICATIONS WITHOUT PRIOR APPROVAL OF THE NRCS TECHNICIAN.

1. **Drawings, No.** EQIP 00-05

2. Practice Specifications: Pond (378), Underground Outlet (620), Critical Area Planting (342E,G)

3. Type and size **of** pipe: 24-inch Corrugated Metal Pipe (Helical) (CMPh) and 18-inch Smooth Walled Corrugated Plastic Pipe (CPPs)

4. Type **of** outlet: 24-inch CMPh, 30-inch CMPh

5. Structure required Rock riprap energy dissipator

6. Special Requirements NRCS engineer will provide grade and construction layout for underground pipe. A minium of **2.5'** earth cover is required. NRCS engineer shall inspect trench subgrade prior to laying the pipe and backfilling. All pipe connections and joints shall be watertight. A total of five anti-seep collars are required. Rock riprap **shall** have an average diameter of 12-in (D_{50}); a maximum diameter of 18-in (D_{100}); and a specific gravity of no less **than** 2.5. Rock riprap shall be placed **in** accordance **with** Construction Specification 907-(Rock Riprap).

7. **Special** Maintenance Requirements: Keep inlet **free** of any debris. Perform **a** visual inspection of **the** underground outlet system (including grouted rock riprap) after major storm events. Keep area free of rodents.

PRACTICE APPROVAL :

Job Classification: (Ref: Section 501 NEM)

Show the limiting elements for this job. This job is classified as, Class V

Limiting **elements:**	Units:
Desim capacity	*25* cfs

Design **Approved by**_____ **Date:**_____

LANDOWNER'S/OPERATOR'S ACKNOWLEDGEMENT:

The landowner/operator acknowledges that:

a. He/she **has** received a copy of the drawings and specification, and that he/she has an understanding of the contents, and **the requirements.**

b. He/she has obtained all the necessary permits.

c. No changes will **be** made in the installation of the job without prior concurrence of the NRCS technician.

d. Maintenance of the installed work is necessary for proper performance during the project **life.**

Accepted **by:**_____ Date:_____

PRACTICE COMPLETION

I have made an on site inspection of **the site** (or I **am** accepting owner/contractor documentation), and have determined that the job as installed does conform to **the** drawings and practice specifications.

Completion Certification by:

/s/_____ Date _____

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE SPECIFICATION

378 - POND

I. SCOPE

The work shall consist of constructing an earthfill embankment and appurtenances to the lines, grades, elevations and dimensions shown on the drawings or as staked in the field for the purpose to construct a pond.

II. FOUNDATION PREPARATION

The foundation area shall be cleared of trees, logs, stumps, mots, brush, boulders, sod, and rubbish, and shall be shipped to sufficient depth to remove all objectionable material. If needed to establish vegetation, the topsoil and sod shall be stockpiled and spread on the completed dam and spillways. Foundation surfaces shall be sloped no steeper than 1:1. The foundation area shall be thoroughly scarified before placement of the fill material. The surface shall have moisture added or it shall be compacted if necessary so that the first layer of fill material can be compacted and bonded to the foundation.

The cutoff trench and any other required excavation shall be excavated to the elevations and cross sections shown on the drawings or as staked in the field. Suitable excavated materials shall be used in the embankment fill. Compacted backfill shall not he placed in the trench until the engineer has inspected and approved the trench.

Existing stream channels in the foundation area shall be sloped no steeper than 1:1 and deepened and widened as necessary to remove all stones, gravel, sand, stumps, roots, and other objectionable material and to accommodate compaction equipment.

III. EARTHFILL PLACEMENT

Material

All fill materials shall be obtained from approved borrow pits and from excavations (if acceptable) required for other parts of the work Fill materials shall contain no sod, brush, roots, or other perishable or unsuitable material. Cobbles and rock fragments having a maximum dimension of more than six inches shall be removed from the materials prior to compaction, and be disposed of or placed in areas designated by the Engineer.

Placement

Foundation areas shall be kept free of standing water when fill is being placed on them.

The placing and spreading of fill material shall be started at the lowest point of the foundation and the fill brought up in horizontal layers of such thickness that the required compaction can be obtained. The fill shall be constructed in continuous horizontal layers except where openings or sectionalized fills are required. In those cases, the slope of the bonding surface between the embankment in place and the embankment to be placed shall not be steeper than 3 horizontal to 1 vertical. The bonding surface shall be treated the same as that specified for the foundation so as to insure a good bond with the new fill.

The distribution and gradation of materials shall be such that there are no lenses, pockets, streaks, or layers of material. If it is necessary to use materials of varying texture and gradation, the more impervious material shall be placed in the center and upstream parts of the fitl. If zoned fills of substantially differing materials are specified, the zones shall be placed according to lines and grades shown on the drawings.

Selected backfill material shall be placed around structures, pipe conduits, and anti-seep collars at about the same rate on all sides of prevent damage from unequal loading.

Fill placed around structures will be brought up at approximately uniform height on all sides of the structure.

Moisture content of the fill material shall be adequate for obtaining the required compaction. Material that is too wet shall be dried to meet this requirement, or removed, and material that is too dry shall have water added and mixed until the requirement is met.

The proper moisture content for compaction will be determined by inspection during the placement operation. The material should maintain a ball shape when squeezed in the hand. When specified, the moisture shall be maintained within 2 percentage points of optimum as determined by ASTM D-698.

As far as practicable, the material shall be brought to the proper water content in the borrow pits before excavation. Supplemental water, when required, may be applied by sprinkling the materials on the fill. Uniform distribution of the moisture shall be obtained by discing, blading or other approved method prior to compaction.

Compaetion

Construction equipment shall be operated over each layer of fill to insure that the required compaction is obtained. Special equipment shall be used if needed to obtain the required compaction.
Compaction shall meet the requirements of the method specified on the Practice Requirements sheet and as described below:
A. Sheepsfoot roller - the maximum layer thickness shall be **8** inches before compaction. The roller shall have staggered, uniformly spaced tamping feet and be equipped with suitable cleaners. The weight of the roller shall not be less than **2,500** pounds per foot of width. The maximum speed of the compaction equipment shall be **3** miles per hour. The entire surface of each layer placed should receive *6* **passes** of this equipment *to* attain the **necessary** compaction.
B. Pneumatically tired equipment - The maximum layer thickness before compaction shall be *6* inches. **A** loaded scraper may be considered a pneumatic roller. The wheels of this equipment must pass over 90 percent of the surface of each lift before a **new** lift is placed.
C. Track laying equipment (bulldozer) - The maximum layer thickness before compaction shall be **4** inches. The **tracks** of the equipment must pass over 90 percent of the surface of each lift before **a** new lifl is placed.
D. Compaction shall result in densities equal to or greater than **95** percent of the **maximum** obtained by laboratory compaction *at* optimum moisture of like soils in accordance with the procedure given in ASTM D-698, Procedure **A.**
E. Compaction shall result in densities equal to or greater than 90 percent of the maximum obtained by laboratory compaction at optimum moisture of like soils in accordance with the procedure given *in* **ASTM D-1557,** Procedure **A.**
Heavy compaction equipment shall not be operated within **2** feet of any structure. Hand **directed tampers** or compactors shall be **used** on area not accessible to heavy compaction equipment, and within *2* feet of any structure. Fills compacted in this manner shall be placed in layers not greater than **4** inches in thickness before compaction, and shall meet the same density requirement as for the adjacent *area.*
Compliance with this compaction requirements will be determined by the procedure given in **ASTM D-1556** or **D-2167** for methods **D** and **E** and by observation of performance for methods **A, B,** and **C.**
Fill not meeting the specified requirements shall be reworked or removed and replaced with acceptable fill.
Fill adjacent to structures, pipe conduits, and anti-seep **collars shall** be compacted to a density equivalent to that of the surrounding fill by means of hand tamping or manually directed power tampers or plate vibrators.
The passage of heavy equipment will not be allowed (1) over cast-in-place conduits prior to seven days after placement of the concrete, or **(2)** over any type of conduit until the compacted backfill has been placed over the top surface of the Structure equal to one-half the clear span width of the structure or pipe, or two feet whichever **is** greater.
Compaction of backfill adjacent to **structures** shall not be started until after the expiration of the following minimum time interval after placement of the concrete:

Walls and counterforts	IO days
Anti-seer, collars, conduits, and cantilever outlet, bents	3 days

IV. PRINCIPAL SPILLWAY (WHEN SPECIFIED)

Corrugated metal pipe shall conform to the requirements of ASTM **B-745** or ASTM **A-760, as** appropriate. Other pipe materials shall conform to specifications suitable for the intended purpose. Anti-seep collars shall he of materials compatible with the pipe and shall be installed so that they are watertight. The pipe shall be installed according to the manufacturer's instructions. The pipe **shall** be firmly and uniformly bedded throughout its length and shall be installed *to* the line and grade *shown* on the drawings.
V. CONCRETE (WHEN SPECIFIED)

Concrete shall conform to the requirement of Construction specification **701** - Concrete
VI. FOUNDATION AND EMBANKMENT DRAINS (WHEN SPECIFIED)

Foundation and embankment **drains** shall be placed to the line and grade shown on the **drawings.** Detailed requirements for drain material and any required pipe shall be **shown** on the drawings and in the specifications. Trenches for the filter or filter drains shall be excavated to lines, shapes, and dimensions **shown** on the drawings. Over excavation disturbing the compacted foundation will *not* be permitted, and any disturbed material shall be removed **and** replaced with compacted ***earth*** fill or filter material. The filter material shall be placed and tamped in place to the dimensions shown. When **drain** pipes **are** used, they will be installed on line and grade, without displacement due to placement of filter material.
The filter material shall conform to the following gradation unless otherwise specified.

U.S. Standard Sieve Size	Percent Passing
2"	85-90
3/4"	50-90
#16	15-50
Less than #16	0-15

VII. EXCAVATED PONDS

Excavated material may be disposed of away from the job site or placed adjacent to the excavation at locations as shown on the drawings.
Where water storage will occur against fill material, only suitable material excavated from the pond shall be used, and compacted by one of the methods specified above.
The vegetative requirements shall apply to the waste fill area when such fill is within the area of work.

VIII. VEGETATIVE COVER

Unless otherwise specified, a protective cover of vegetative shall be established on the disturbed area. The planting of vegetative materials shall conform to the requirements of Practice Specifications 342, Critical Area Planting.

IX. FENCING (WHEN SPECIFIED)

The embankment, spillway, and other areas shall be fenced as shown on the drawings, and shall be installed in accordance with Practice Specifications 382, Fence.

X. SPECIAL MEASURES

Measures and construction methods shall be incorporated as needed and practical that enhance fish and wildlife values. Special attention shall be given to protecting visual resources and maintaining key shade, food and den trees.

XI. CONSTRUCTION OPERATIONS

Construction operations shall be done in such a manner that erosion and air and water pollution are minimized and held within legal limits. The owner, operator, Contractor or other persons will conduct all work and operations in accordance with proper safety codes for the type of construction being performed with due regards to the safety of all persons and property.
The completed job shall be workmanlike and present a good appearance

OPERATION AND MAINTENANCE ITEMS

A properly operated and maintained water impoundment structure is an asset to your farm. This structure was designed and installed to entrap and provide storage to runoff water for beneficial use. The estimated life span of this installation is at least 10 years. The life of this installation can be assured and usually increased by developing and carrying out a good operation and maintenance program.
This practice will require you to perform periodic operation to maintain satisfactory performance. Here are some recommendations to help you develop a good operation and maintenance program.
Periodically inspect the spillways and control gates for proper functioning for their ability to maintain the water level to design elevations.
Immediately remove any blockage or obstructions in spillways.
Maintain vigorous growth of vegetative coverings. This includes reseeding, fertilization, and application of herbicides when necessary. Periodic mowing may also be needed to control height.
If fences are installed, they shall be maintained to prevent unauthorized or livestock entry.
Removal of debris that may accumulate at the Pond and immediately upstream or downtream from the pond.
Immediately repair any vandalism, vehicular, or livestock damage to any earthfills, spillways, outlets or other appurtenance.
Make sure all structure drains are functional and soil is not being transported through the drainage system. The screens and/or rodent guards shall also be kept in place.
Eradicate or otherwise remove all rodents or burrowing animals and repair any damage caused by their activity.
Other items specific to your project are listed on the "Practice Requirement" sheet.

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE SPECIFICATION

620 - UNDERGROUND OUTLET

I. SCOPE

The work shall consist of furnishing materials and installing underground outlet with appurtenances to the lines, grades, and elevations as shown on the drawings or as staked in the field.

II. EXCAVATION

Excavation shall be to the lines and grades shown on the drawings. Where trenches are excavated in soils containing rock or other hard material, or soils subject to appreciable swelling and shrinking, or when the trench bottom is unstable, the trenches shall be overexcavated and backfilled with selected materials to sufficient depth to provide a suitable base. If water is in the trench, that water shall be removed before placement of the pipe.

The width of the trench *at* any point below the top of the pipe shall be no wider than is necessary to, join, and backfill the pipe, and in no event be more than 24 inches wider than the nominal diameter of the pipe.

III. PLACEMENT

No pipe shall he laid which is cracked, checked, spalled, or damaged beyond ASTM specification tolerances; and all such sections of pipe shall be permanently removed from the work site.

Before final positioning of the pipe for jointing, the bedding for the pipe shall be made by tamping the pipe firmly into the bedding and not be by wedging or blocking.

The interior of the pipe shall be kept free of dirt and other foreign material as pipe installation progress.

IV. BACKFILLING

Initial Backfill

Either hand, mechanical, or water packing methods are optional.

The initial backfill material shall be selected soil or sand free from rocks or stones larger than one inch in diameter. *At* the time of placement, the moisture content of the material shall be such that the required degree of compaction can be obtained with the backfill method to be used. The initial backfill material shall be so placed that the pipe will not be displaced, excessively deformed, or damaged.

Hand or Mechanical Backfill

Compaction shall be accomplished by means of hand tamping or manually directed power tamper, or plate vibrators, or as approved by the technician. Fill shall be placed in approximately horizontal layers. Hand compacted fill shall be placed in layers not more than 4 inches thick before compaction. Fill shall be placed in a manner that will prevent damage to the conduit. The height of the fill adjacent to the conduit shall be increased at approximately the same rate on all sides. Water shall be added to the fill material to obtain the *proper* moisture for compaction as directed by the technician.

Water Packing

When water packing is used, the pipeline first shall be filled with *water.* The initial backfill, before wetting shall be of sufficient depth to insure complete coverage of the pipe after consolidation has taken place. Water packing is accomplished by adding water to diked reaches of the trench in such quantity as to thoroughly saturate the initial backfill without excessive pooling of water. After saturation, the pipeline shall remain full until after final backfill is made. The wetted fill shall be allowed to *dry* until firm before final backfill is begun.

Final Backfill

Final backfill material shall be free of large rocks, frozen clods and other debris *greater* than three inches in diameter. The material shall be placed and spread in approximately uniform layers in such a manner that there will be no unfilled spaces in the backfill and the backfill will he level with the natural ground or at the design grade required to provide the minimum depth of cover after settlement has taken place. Rolling equipment shall not be used to consolidate the final backfill until a minimum depth of cover of 2 feet has been placed.

All special backfill requirements of the pipe manufacturer shall be complied with during the backfill operations.

V. MATERIALS

Pipe

The pipe shall be of the size and conform to the requirements of the Specification listed on the "Practice Requirement" sheet. Prior to purchase of the pipe, the owner should check with the Engineer to determine if the manufacturer of the pipe is listed on the "Prequalified" list of suppliers.

Appurtenances

All appurtenances shall conform to the specifications listed on the "Practice Requirement" sheet and to the sizes and dimensions as shown on the drawings.

Appurtenances shall include, hut not be limited to, anti-seep collars, outlets, and energy dissipators. Backfill adjacent to appurtenances is critical, and shall be manually directed and to the same density the adjacent undistributed earth.

VI. BASIS OF ACCEPTANCE

The acceptability of the pipeline shall be determined by inspections to insure wmpliance with all the provisions of this specification with respect to the design of the line, the pipe and pipe markings, the appurtenances, and the minium installation requirements.

VII. VEGETATIVE COVER

Unless otherwise specified, a protective cover of vegetation shall be established on the disturbed area. The planting of vegetative materials shall conform to the requirements of Practice Specification 342, Critical Area Planting.

VIII. SPECIAL MEASURES

Measures and construction methods shall be incorporated as needed and practical that enhance fish and wildlife values. Special attention shall be given to protecting visual resources and maintaining key shade, food and den trees.

IX. CONSTRUCTION OPERATIONS

Construction operations shall be done in such a manner that erosion and air and water pollution are minimized and held within legal limits. The owner, operator, Contractor or other persons will wnduct all work and operations in accordance with proper safety codes for the type of construction being performed with due regards to the safety of all persons and property.

The completed job shall be workmanlike and present a good appearance.

OPERATION AND MAINTENANCE ITEMS

A properly operated and maintained underground outlet for water is an asset to your farm. This outlet was designed and installed to pressurize and convey water in a pipeline where it can be released without causing erosion. The estimated life span of this installation is at least 10 years. The life of the practice can be assured and usually increased by developing and carrying out a good operation and maintenance program

This practice will require you to perform periodic maintenance and may *also* require operational items to maintain satisfactory performance. Here are some recommendations to help you develop a good operation and maintenance program.

Check all above ground connections, valves, gates, trash racks, rodent guards, inlets and outlets to make sure they are functioning properly.

Maintain design depth of cover on all pipelines and ***structures.***

Avoid operation of tillage and subsoiling equipment that could damage any component of the system.

Remove all foreign debris that hinders system operation.

Limit traffic over pipeline to designated sections that were designed for traffic loads

Maintain vigorous growth of vegetative coverings. This includes reseeding, fertilization and application of herbicides when necessary. Periodic mowing may also be needed to control height.

Eradicate of otherwise remove all rodents or burrowing animals. Immediately repair any damage caused by their activity.

Immediately repair any vandalism, vehicular or livestock damage.

Other items **specific** to **your** project are **listed** on the "Practice Requirement" sheet.

EXHIBIT H

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE SPECIFICATION

3423 - CRITICAL AREA PLANTING - EROSION CONTROL BLANKET

I. SCOPE

The work shall consist of furnishing all materials and placing them on all exposed, disturbed, or barren areas within the project area or site to the limits as shown on the drawings, or as staked in the field.

II. MATERIALS

Seed

All seed shall be delivered to the site tagged and labeled in accordance with the California Agricultural Code, and shall be acceptable to the County Agricultural Commissioner.
Bag tag figures will be evidence of purity and germination Time since date of seed test shall not exceed 9 months Seed shall be of a quality that weed seed shall not exceed 0.5 percent of the aggregate of pure live seed (PLS) (percent germination x percent purity) and other material.

Fertilizer

Unless otherwise specified on the Practice Requirements sheet, all fertilizer shall he Ammonium Phosphate Sulfite containing a minimum of 16 percent Nitrogen, 20 percent available phosphoric acid and 0 percent water soluble potash and be uniform in composition, *dry* and free flowing, pelleted or granular.
All fertilizer shall be labeled in accordance with applicable state regulations and bear the warranty of the producer for the grade furnished.

Inoculants

The inoculant for treating legume seeds shall be a pure culture of Nitrogen fixing bacteria prepared specifically for the plant species and shall not be used later than the date indicated on the container. A mixing medium, as recommended by the manufacturer or approved substitute, shall be used to bond the inoculant to the seed. For nonpellet inoculated seed, two times the amount of the inoculant recommended by the manufacturer shall be used and seed shall be sown within 24 hours.
For pellet inoculated seed, at least 30 pounds of inoculant shall be used per 1,000 pounds of raw seed and the seed shall be labeled to show the Lot Number, Expiration Date, and Percent Coat of the finished product. Pellet inoculated seed shall be kept cool and sown within 180 days.

Wood Fiber

Wood fiber shall be a wood cellulose fiber that contains neither germination nor growth inhibiting factors. The wood fiber shall be produced from nonrecycled wood such as wood chips or similar wood materials and shall have the property to be evenly dispersed and suspended when agitated in water. It shall be colored with a nontoxic water-soluble green dye to provide a proper gauge for metwng of material over ground s&~.
The wood fiber mulch may also be produced from the following materials:

a. recycled wood fiber, such as wood chips or similar wood materials

b. a combination of recycled newsprint and cardboard materials that contain at least 50 percent cardboard, or

c. a combination of recycled newsprint and non-recycled wood fiber or recycled wood fiber materials that does not contain more than 50 percent newsprint

Erosion Control Blanket

The erosion control blanket shall consist of a machine-produced mat of wood excelsior fiber with consistent thickness and fiber evenly distributed over the entire area of the blanket. At least 70- percent of the fibers shall be six (6) inches or longer in length. The topside of each blanket shall be covered with biodegradable extruded plastic mesh with openings not exceeding two inches by two inches.
Erosion control blankets may also be machine produced mats of 70 percent wheat straw and 30 percent coconut fiber or 100 percent coconut fiber with consistent thickness and fiber evenly distributed over the entire area of the blanket. These blankets shall have a minimum density of 0.5 pounds per square yard and be enclosed in netting material.

Staples

Staples shall be "U" shaped with legs ai least ten (10) inches in length and have a two **(2)** inch crown and shall be made of eleven (11) gauge or heavier wire.

III. SEEDING MIXTURE AND PLANTING DATE

The seed(s) and rate(s) specified on the Practice Requirements *sheet* shall be used. The seeding rate(s) shall be the weight exclusive of any coating maierial. **Any** legume seed used shall be inoculated. Based on bag tags, the seeding rates shall be adjusted to insure the required amounts of pure live seed.

Planting shall be performed after final grading is completed unless otherwise specified on the Practice Requirements sheet.

IV. SEEDBED PREPARATION

The area to be planted shall be weed free and have a firm seedbed which has previously been roughened by ***scarifying,*** disking, harrowing, chiseling, or otherwise worked to a depth of 2 to **4** inches. No implement shall be used that will create an excessive amount of downward movement of clods on sloping areas. Seedbed may be prepared ***at*** time of completion of earth moving **work.**

Rocks larger than 6 inches **in** diameter, trash, weeds, and other debris that will interfere with **seediig** or maintenance **shall** be removed.

Seedbed preparation shall be suspended when soil moisture conditions **are** not suitable for obtaining a satisfactory seedbed.

V. FERTILIZING, SEEDING, MULCHING

Fertilizing

Fertilizer shall be distributed uniformly over the seedbed at the rate of 500 **pounds** per acre unless a different amount is specified on the **Practice** Requirements sheet.

Fertilizer shall be applied in any way that will result in **uniform** distribution. When specified on the Practice Requirements sheet, fertilizer shall be incorporated into the soil **as** part of the seedbed preparation or **as** part of the seeding operation.

Fertilizer shall be applied hydraulically by hydroseeder in the form of **a** slurry that **also** contains the required seed. Fertilizer shall not remain in the slurry longer than two (2) hours.

Seeding

Seed shall be drilled, broadcast, or distributed uniformly in a water slurry by hydroseeder. **When** specified on the Practice Requirements sheet, **seed** shall be incorporated into the soil but not more than the specified depth.

The hydroseeder shall be equipped with a built-in continuous agitation system of sufficient operating capacity to produce a homogeneous slurry and a discharge system that will apply the slurry to the slopes at a continuous and uniform rate.

Seed shall not remain in the slurry longer than thirty *(30)* minutes. The slurry shall **also contain wood** fiber **at** the rate of 500 pounds per **acre** and the required fertilizer. **The** wood fiber shall not remain in the slurry longer than two (2) hours. Water used shall be potable water or **Class** 1 or 2 agricultural irrigation water.

Application rates for **wood** fiber mulch products that have moisture contents greater than 15 percent shall be increased by the following factor, c:

$$c = \frac{85 \text{ percent}}{\text{percent fiber (solids) in product}}$$

The slurry shall be continuously mixed and shall be mixed for ***at*** least five (5) minutes after the last **addition** before application ***starts.*** The slurry shall be applied uniformly over the site at a **rate *that*** is nonerosive and minimizes runoff.

Mnlcbing

Erosion control blankets shall be distributed uniformly over the surface of the seeded area within **48** hours following seeding. The blankets shall be **started** on the backside three **(3)** feet below the crest of the treated slope and installed vertically **down** the treated slope. The netting shall be on top and the fibers in contact with the soil. The edges shall overlap ai **least** four **(4)** inches **onto** adjoining blankets

Anchoring the Mulch

Staples shall be driven vertically into the ground with reference to the slope. Four (4) staples shall be uniformly spaced across the start and end of each roll and placed four **(4)** inches from the starting **edge *at*** the crest of the slope and **two (2)** inches from the end of each roll.

Staples shall also be uniformly spaced down both sides of each roll at six (6) foot intervals and two (2) inches from the edge. Staples shall also be spaced down the center of each roll at six (6) foot intervals and alternately spaced with respect to the staples on each side.

VI. IRRIGATION

When specified, irrigation water shall he applied at the times and rates as listed on the Practice Requirements sheet.

VII. SPECIAL MEASURES

Measures and methods that enhance fish and wildlife values, protect visual resources, and maintain key shade, food, and den trees shall be performed when specified on the Practice Requirements sheet.

VIII. OTHER REQUIREMENTS

Other details for the establishment and maintenance of the plants including, but not limited to, the need for livestock and traffic control shall be applied when specified on the Practice Requirements sheet.

Operations shall be done in such a manner that erosion and air and water pollution are minimized and held with legal limits.

The ouner, operator, contractor, and other persons shall conduct all work and operations in accordance with proper safety codes for the type of equipment and operations being performed with due regards to the safety of all persons and property.

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE SPECIFICATION

342G - CRITICAL AREA PLANTING - WOODY CUTTINGS

I. SCOPE

The work shall consist of furnishing all materials and placing them within the project area or site to the limits as shown on the drawings, or as staked in the field.

II. MATERIALS

Woody cuttings shall be made &om healthy green plants during the dormant season. No more than 2/3ds of each plant will be removed. Select cuttings with leaf buds near the top of each cut.
Stem or branch cuttings of soft wood, hard wood or firm wood should be taken whenever possible &om plants that are native to the locality or grown on similar sites.
Cuts shall be made clean with sharp tools. The butt end of the stem shall be a slant cut and the tip end shall be cut square across the stem.
Size:
Slips: The diameter of the cutting shall not he more than 11/2 inches at the butt end nor smaller than 1/4 inch at the tip. Cuttings shall have a minimum length of 2 feet and a maximum length of 4 feet unless otherwise specified on the Practice Requirements Sheet.
Poles: The diameter of the cutting shall not be more than 4 inches nor smaller than 1inch at the butt end and ½ inch at the tip. Cuttings shall have a minimum length of the depth to the water table plus 3 feet unless otherwise specified on the Practice Requirements Sheet.
Cuttings shall not be allowed to dry and shall not be more than 7 days old when planted unless otherwise specified on the Practice Requirements sheet

III. PLANT MATERIALS AND PLANTING DATE

The kinds of cuttings specified on the Practice Requirement sheet shall be used.
Planting shall be performed after final grading is completed unless otherwise specified on the Practice Requirements sheet.

IV. SITE PREPARATION

The area to be planted shall be weed free and have a uniform surface. No implement shall be used that will create an excessive amount of downward movement of clods on sloping areas. The site may be prepared at time of completion of earth moving work
Trash, weeds, and other debris that will interfere with planting or maintenance shall be removed.

V. PLANTING REQUIREMENTS

Cuttings shall be planted in one *or* more rows as shown on the drawings) as vertical as possible. Cuttings shall be spaced 3 feet apart in the row and in multiple row plantings, spacing between rows shall be **3 feet.** Cuttings shall be staggered with respect to those in adjacent rows unless otherwise specified on the Practice Requirement sheet.
Cuttings shall be planted in prepared holes or "V" furrows to avoid stripping the bark, especially in rocky or hard soils. Cuttings may be pushed into soil if the soil is saturated with moisture. Cuttings shall be placed in the soil with the butt end in a downward position
All cuttings shall have 6 inches to a maximum of I-foot including at least two nodes above the ground level.
Cuttings shall be placed into the soil to a depth specified on the Practice Requirements sheet. If however, due to some physical condition in the soil this planting depth cannot be attained, the cuttings shall be set with 3/4 of its length in the soil upon approval of the NRCS technician. At a minimum they must be placed into the soil 18 inches.
Poles: Plant in adequately sized, sod-free boles. Auger a hole to the water table. Place materials in the augured hole one-half foot above the growing season water table.
After planting, pack the soil firmly around each pole to eliminate air pockets. "Mudding" by filling the bole with water and then adding more soil to make a slurry can remove air pockets.

VI. IRRIGATION

When specified, irrigation water shall be applied at the times and rates as listed on the Practice Requirements sheet to keep the soil in the lower two feet of the planted cutting moist.

VII. SPECIAL MEASURES

Measures and methods that enhance fish and wildlife values, protect visual resources, and maintain key shade, food, and den trees shall be performed when specified on the Practice Requirements sheet.

VIII. OTHER REQUIREMENTS

Other details for the establishment and maintenance of the plants including, but *not* limited to, the need for livestock and traffic control shall be applied when specified on the Practice Requirements sheet.
Operations shall be done in such a manner that erosion and air and water pollution are minimized and held within legal limits.
The owner, operator, contractor, and other persons shall conduct all work and operations in accordance with proper safety codes for the type of equipment and operations being performed with due regards to the safety of all persons and property.

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August 18,2003

Phuc Vu
USDA – Natural Resources Conservation Service
744-A LaGuardia Street
Salinas, California 93905

Subject: Soils Report for Paul Tao EQIP Project (Revised)

On July 23,2003 I visited the site of the Paul Tao EQIP Project about 2.5 miles southwest of Watsonville, and south of the intersection of San Andreas and Dairy Roads, Santa Cruz County, California. See the Location Map. I logged the soil at the ends of the proposed basin and inspected the overlying scarp for stability. See the Site Map for details. Here is my assessment of the stability of the scarp, and inventory of the soil features affecting the construction and performance of the proposed basin.

Stability of Scarp to Northwest of Proposed Basin:

Geology: The proposed basin site is on undifferentiated Pleistocene terrace deposits "that are weakly consolidated to semiconsolidated heterogeneous deposits of moderately to poorly sorted silt, silty clay, sand, and gravel. [They were] mostly deposited in a fluvial environment. Thickness [is] highly variable; locally [it is] as much as 60 ft. thick: Some of the deposits are relatively well indurated in upper 10 ft. of weathered zone." (Brabb, E.E., 1989, Geologic map of Santa Cruz County, California: U.S. Geological Survey, Miscellaneous Investigations Series Map I-1905, scale 1:62500.) The scarp itself is uniform in composition throughout its height of 18 feet with no evidence of contrasting layers that could restrict permeability and act as a slip plane. It is partly overblown by the Pleistocene Sunset Beach eolian deposits that consist of "weakly consolidated, well-sorted, fine- to medium-grained sand. [It] forms an extensive coastal dune field. Thickness ranges from 5 to 80 ft." (Brabb, 1989)

Construction of Scarp: The Tao family created the scarp prior to 1970 when they leveled the surrounding fields. The *original* slope descended more gradually from Dairy Road to Watsonville Slough. This slope was cut and steepened to form the *scarp.* The fill was used to level the lower field.

Hazard of Erosion by Water: There is a minimum risk of water erosion down the face of the scarp, and transport of sediment into the proposed basin. There are no significant gullies or rills running down the face of the scarp above the proposed basin, so there must be a minimum flow of water over the rim of the scarp. There is one gulley and underlying sediment fan west of the proposed basin. We should continue to insure runoff is intercepted above the scarp and safely transported around the scarp

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Hazard d ***Landslide:*** There is moderately low risk of iandslide on the scarp. There are no scars from historical soil slumps above the proposed basin. There is one shallow soil slump (about 2' deep) to the west of the proposed basin. At this one soil slump, sandy soil (eolian deposit) has slumped down the slope over weakly consolidated sandy sediment (terrace deposit). The scarp itself rises for about 18' and runs horizontally for about 40'. This is a 2: 1 slope, which is fairly stable. It consists of sandy soil about one foot thick over weakly consolidated sandy sediment at least 18' thick. The height of the scarp is 18' and it is all underlain by weakly consolidated sandy sediment. I did not detect any discontinuities that would serve as a slip plane except for the contact between the sandy material **and** the weakly consolidated sandy sediment. There is no evidence of springs or seepage on the face of the scarp. The vegetation is annual grasses with a few coyotebrush, but no hydrophytic vegetation. This scarp has remained in place through the Loma Prieta earthquake in 1989 and through severe storms since 1995. Roberts and Barron do not show any landslide deposits in the vicinity of this project on their map. (Roberts, Sebastian, Baron, A.D., Brabb, E.E., and Pike, R.J., 1998, Digital compilation of "Preliminary map of landslide deposits in Santa Cruz County, California, by Cooper-Clark and Associates, 1975": a digital map database: U.S. Geological Survey, Open-File Report OF-98-792, scale 1:62500.)

Recommendations for Desim of Basin:

Excavation of the basin should be a minimum distance from the toe of the scarp to avoid under-cutting the *toe* of the scarp. The following formula gives the minimum distance needed between the basin and the toe of the scarp. L=D*(40/18) where L in feet is the distance between the basin and the toe of the scarp, D in feet is the depth of excavation of the basin, 40 feet is the run of the scarp, and 18 feet is the rise of the scarp.

Water is unlikely to stand in the basin long enough to saturate the toe of the scarp if the basin is excavated *4* or more feet deep. The site of the basin is underlain by loamy sand to very gravelly loamy coarse sand below a depth of 4 feet and water in the basin should drain through these textures in less than **24** hours.

An excavation of 3 feet deep must be 7 feet away from the toe of scarp to avoid undercutting the toe of the scarp. There is a low hazard of cut banks caving in a basin excavated to a depth of 3 feet based on soil textures exposed by the cut. The soil .in the floor of this basin has a permeability of 0.2 to 0.6 inches/hour based on soil texture. Water will drain through the floor of this basin at a rate of 0.4 to 1.2 feet in *24* hours. Fine sediment collecting in the basin must be regularly removed to maintain this infiltration rate.

An excavation of **4** feet deep must be 9 feet away from the toe of scarp to avoid undercutting the toe of the scarp. There is a severe hazard of cut banks 'caving in a basin excavated to a depth of 4 feet based on soil textures exposed by the cut. The soil in the floor of this basin has a permeability of 6 to 20 inches/hour based on soil texture. Water will drain

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through the floor of this basin at a rate of 12 to 40 feet in 24 hours. This basin could be back-filled with sand to lessen the depth of the basin and still maintain the high infiltration rate. Fine sediment collecting in the basin must be regularly removed to maintain this infiltration rate.

See table: "Soil Log Report (Unified Classification System)". See table: "Soil Properties Based on Unified Classification" for estimates of engineering characteristics of soil.

Thanks for asking.

Ken Oster
Area Resource Soil Scientist

cc: David Robledo, USDA-NRCS, Salinas Area Office

EXHIBIT 1

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Location Map
Paul Tao EQIP
Watsonville, Santa Cruz County, California

USDA - Natural Resources Conservation Service
July 23, 2003

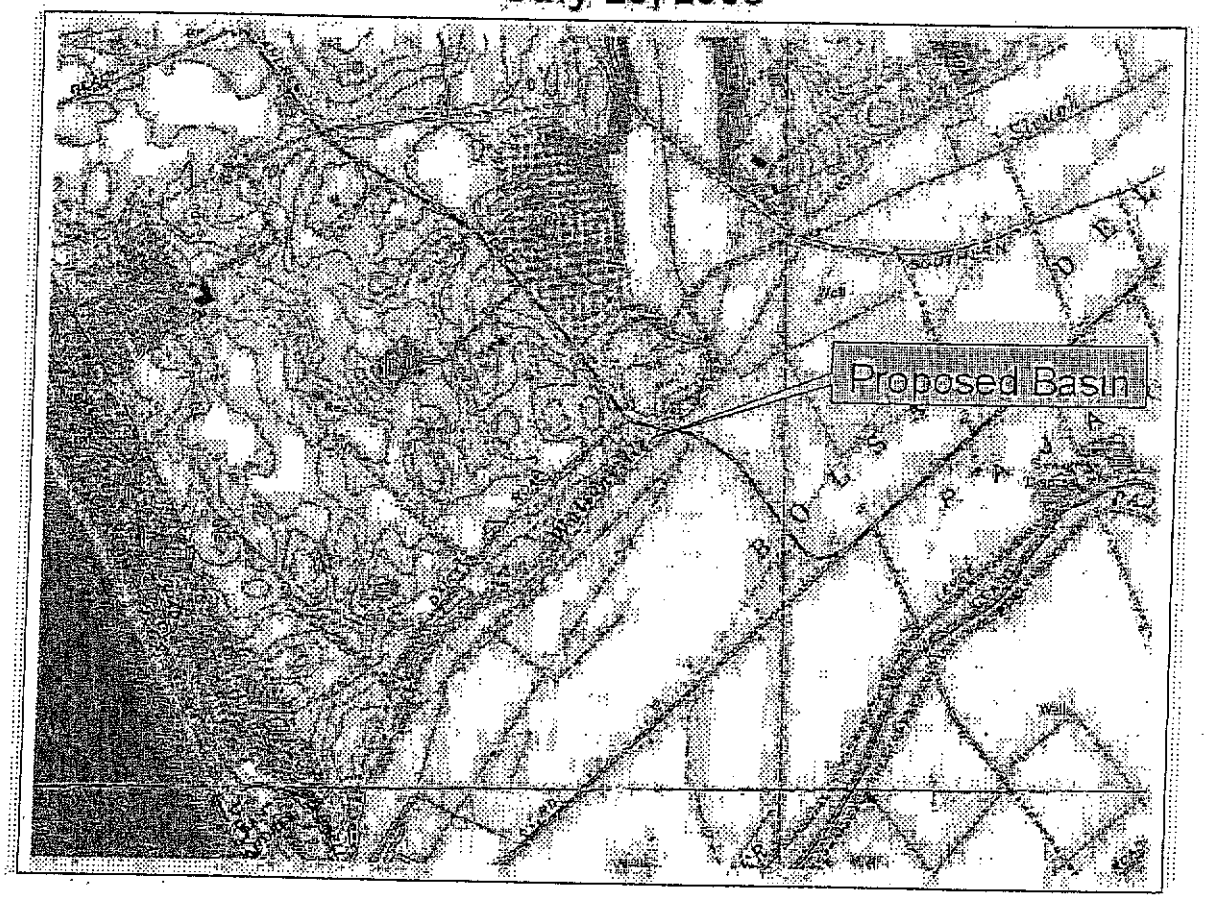

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EXHIBIT H

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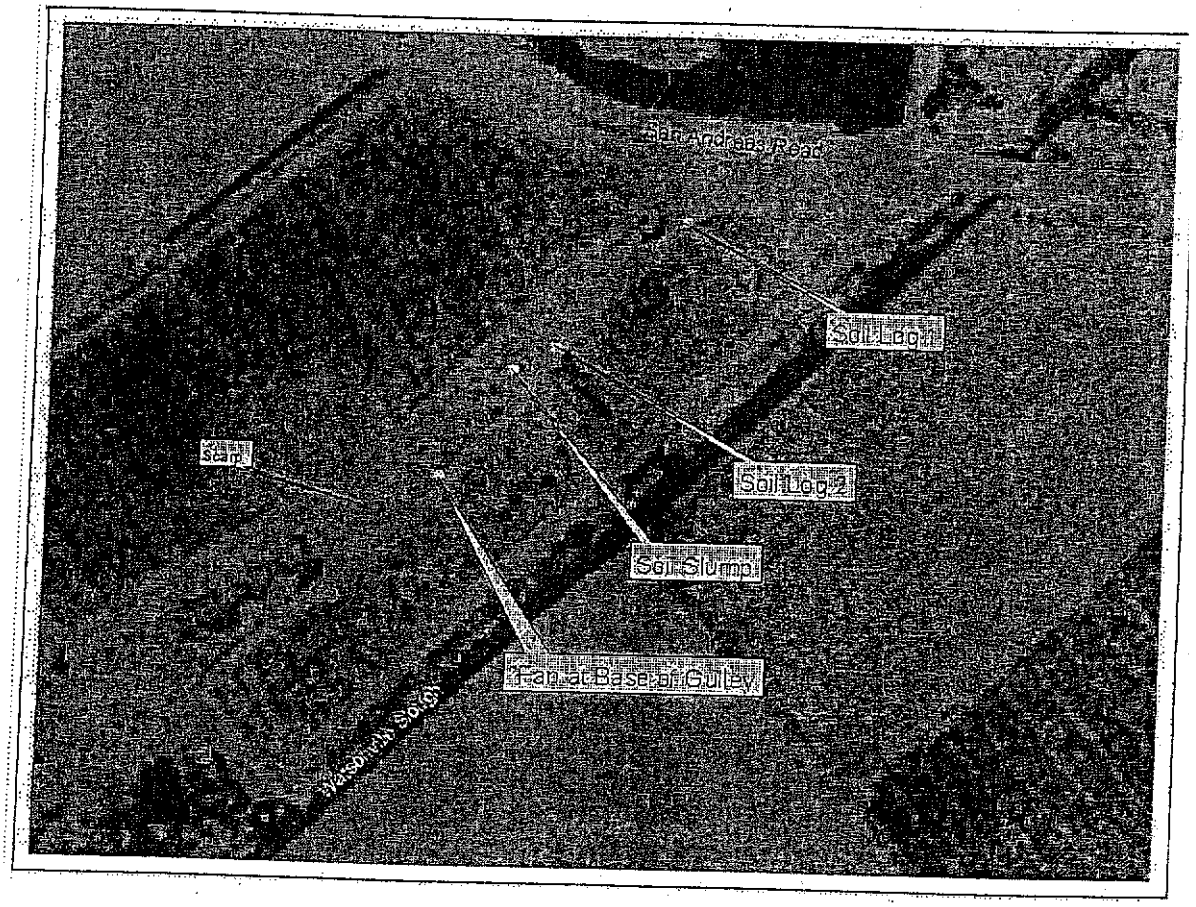
Site Map
Paul Tao EQIP Project
Watsonville, Santa Cruz County, California

USDA - Natural Resources Conservation Service
July 23, 2003



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Soil Log Report (Unified Soil Classification System)

Date: 7-23-03 | Logged by: Ken Oster
Client: Paul Tao
Site Name: Paul Tao EQIP Project
Project: Basin
Location: About 2.5 miles southwest of Watsonville, Santa Cruz County, California; on an unsectioned land grant, about 320 feet west and 230 feet south of the intersection of San Andreas and Dairy Roads.

Data Point	Top Depth (feet)	Bottom Depth (feet)	Thick-ness (feet)	Unified Symbol (Field Estimate)	Group Name	% Gravel > 1/4"	Structure	Water Content	Consistency	% Clay (Field Estimate)	USDA Soil Texture (Field Estimate)	Permeability (Estimated) (inches/hour)
1	Latitude: 36.88759706					Longitude: -121.8057460						
	0.0	2.0	2.0	SM	Silty Sand	5	homogeneous	dry	soft	10	sandy loam	2 to 6
	2.0	2.3	0.3	SM	Silty Sand with Gravel	15	homogeneous	dry	soft	15	very gravelly sandy loam	2 to 6
	2.3	2.8	0.5	SC	Clayey Sand with Gravel	20	homogeneous	moist	soft	20	extremely gravelly sandy clay loam	0.2 to 0.6
	2.8	3.4	0.7	SM	Silty Sand with Gravel	20	homogeneous	moist	soft	15	extremely gravelly sandy loam	2 to 6
	3.4	3.9	0.5	SM	Silty Sand	5	homogeneous	moist	soft	5	gravelly loamy coarse sand	6 to 20
	3.9	4.6	0.7	SM	Silty Sand with Gravel	20	homogeneous	moist	soft	5	gravelly loamy sand	6 to 20
	4.6	5.0	0.4	SM	Silty Sand	0	homogeneous	moist	soft	5	loamy sand	6 to 20
2	Latitude: 36.88723454					Longitude: -121.8062154						
	0.0	0.8	0.8	SM	Silty Sand	5	homogeneous	dry	soft	5	loamy sand	6 to 20
	0.8	1.5	0.7	SM	Silty Sand	5	homogeneous	dry	soft	10	sandy loam	2 to 6
	1.5	1.8	0.3	SM	Silty Sand with Gravel	15	homogeneous	dry	soft	5	verygravelly loamy coarse sand	6 to 20
	1.8	3.8	2.0	SC	Clayey Sand with Gravel	15	homogeneous	moist	soft	25	very gravelly sandy clay loam	0.2 to 0.6
	3.8	5.0	1.2	SM	Silty Sand with Gravel	15	homogeneous	moist	soft	5	very gravelly loamy coarse sand	6 to 20

TR-1

EXHIBIT H

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Soil Properties Based on Unified Classification (1)		
Unified Classification	SM	SC
Shear Strength	Good to Fair	Good to Fair
Compressibility	Low	Low
Compaction Characteristics	Good with close control	Good
Standard Proctor Unit Density (lbs. per cu. ft.)	110 - 125	105 - 125
Permeability	Medium	Low
Compressibility	Slight	Slight
Resistance to Piping	Poor to Very Poor	Good
Ability to Take Plastic Deformation Under Load Without Shearing	Poor to Very Poor	Fair
Description & Use for Embankments	Fairly stable, not well suited to shells, but may be used for impervious cores or dikes	Fairly stable, use for impervious core for flood control structures
Erosion Resistance (2)	8	5
Bearing Value	Good to Poor depending on density	Good to Poor
Presumptive Allowable Bearing Stress Values (3)	3,000 psf	2,000 psf
Shrink-Swell Potential (4)	Low for Plastic Index of NP to 5.	Low to medium for Plastic Index of 10 to 20.

(1) Soil Conservation Service, Engineering Field Manual, Chapter 4. Elementary Soil Engineering, Figure 4-14, p. 4-35 to 4-37 (1990)

(2) 1 is least erodible, and 10 is most erodible.

(3) Basic Building Code, 12th Edition, 1993, Building Officials and Code Administrators, Inc. (BOAC) as quoted in USDA-NRCS Field Office Technical Guide, Section IV, Standards and Specifications 313-3. Unified Soil Classification Added by Ken Oster, Area

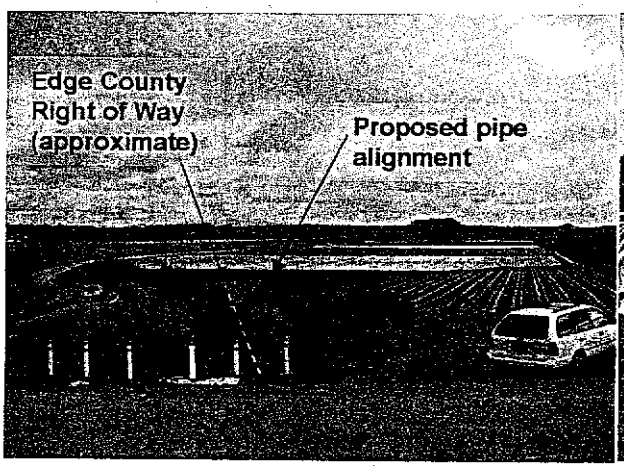
(4) Soil Conservation Service, Engineering Field Manual, Chapter 4. Elementary Soil Engineering, Table 4-13, **p.** 4-34 (1990)

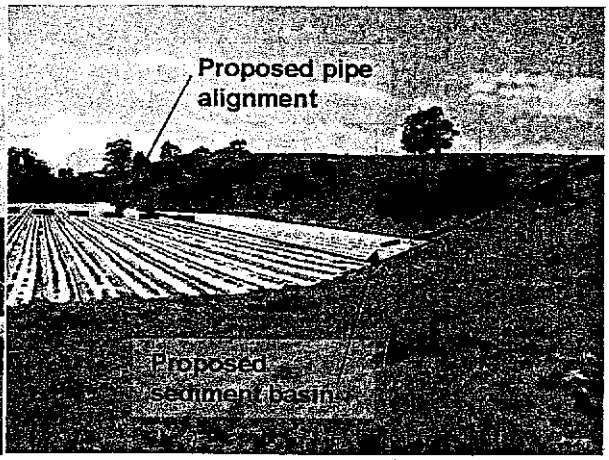
EXHIBIT H

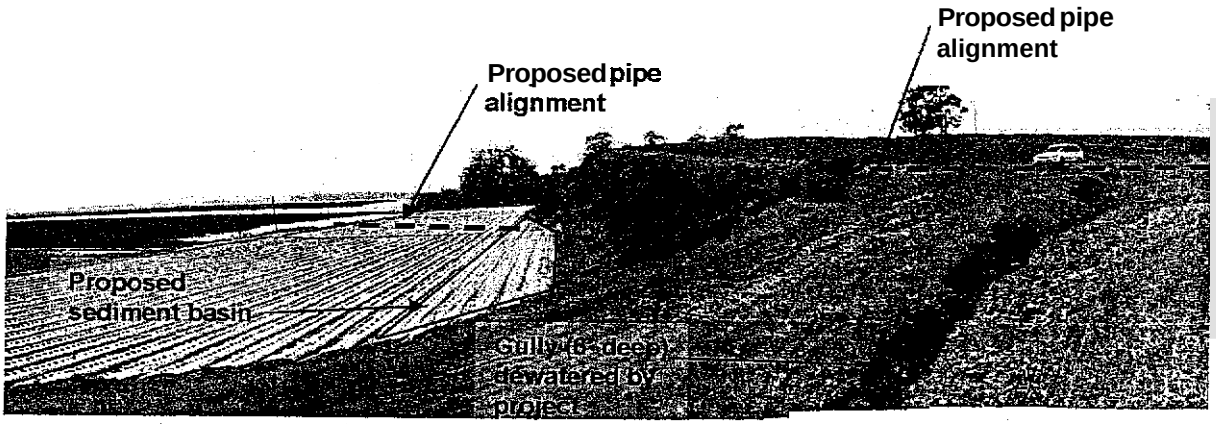
Appendix B

Paul Tao Sediment Basin Project

Illustrations of site conditions and proposed structures.







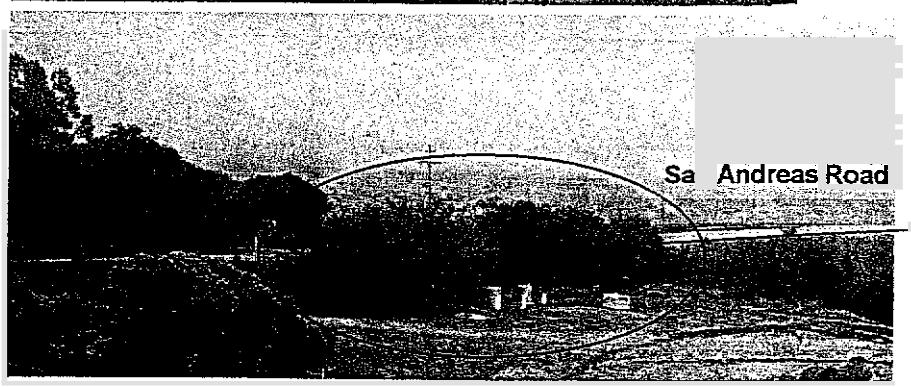


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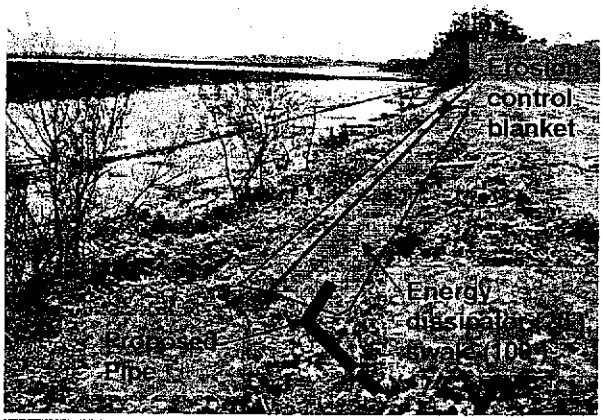
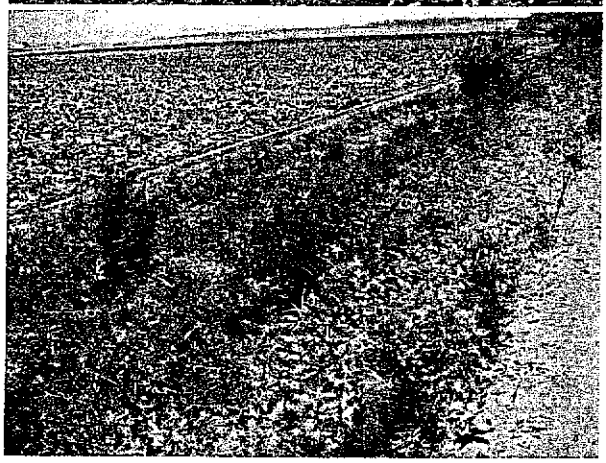
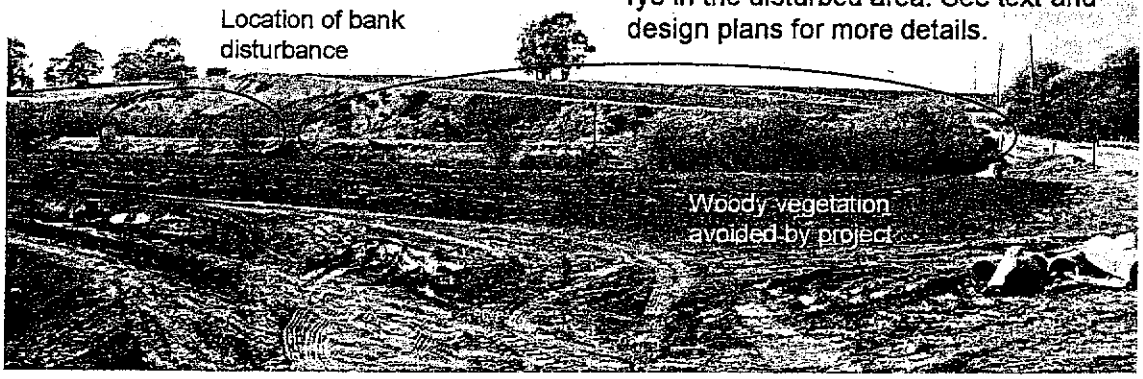
EXHIBIT H

Basin Outlet, Energy Dissipator **and** Swale Location.
Riparian Area Disturbance







These photos illustrate the bank of Watsonville Slough where the outlet energy dissipator and distribution swale are to be located. Adjacent to the Slough is an abandoned, level road. The basin will drain when full through a 30-inch diameter corrugated metal pipe. The pipe will end in an elbow in line with this road. The road will be shaped into a 120' long swale one foot deep and 4 feet wide which will fill before allowing the water to flow in a distributed manner down the bank and into the slough. The first 21 feet of the swale will be armored with a rock rip rap energy dissipator.

The top photo shows site under typical winter conditions and a 6' rod for scale. The second photo shows the pipe, energy dissipator and swale, and site conditions following a 5-year storm (February 2004). The bank will only be disturbed above the elevation of the 100-year flood and above the elevation of wetlands fringing the slough. The third photo shows the vegetation during the fall of 2003. The bottom photo shows the site from the floodplain on the opposite side of Watsonville Slough.

Vegetation affected by the proposed disturbance is strictly herbaceous. Ninety percent of the vegetation is non-native, with radish, mustard and poison hemlock dominating. A area of bur-reed will be salvaged and re-planted during the project revegetation phase, which also includes establishing arroyo willow and creeping wild rye in the disturbed area. See text and design plans for more details.

EXHIBIT H