Staff Report to the Planning Commission

Application Number: 08-0106

Applicant: Pete and Haruyo Pearson
Owner: Pete and Haruyo Pearson, Soquel Union School District
APN: 102-121-33, -34, -37, -70

Agenda Date: July 14, 2010
Agenda Item #: 8

Time: After 9:00 a.m.

Project Description: The project proposes to re-contour, install drainage improvements, and revegetate approximately 600 feet of an unnamed ephemeral drainage that drains a large portion of the Santa Cruz Gardens subdivision. The project is designed to repair severe bed and bank erosion, prevent future erosion, provide some detention, and establish native riparian vegetation along the impacted drainage corridor. Several gabion drop structures would be constructed within the drainage corridor to allow for backfilling, re-contouring, and storm water detention that would enable the establishment of native riparian vegetation along the currently eroded drainage. A gabion energy dissipater would also be constructed at the downstream end of the project area to reduce the velocity of storm water flows in an effort to eliminate downstream erosion.

Location: The project site is located in an unnamed ephemeral drainage located approximately 125 feet southwest of the intersection of Benedict Avenue and Cabrillo Avenue between Benedict Avenue and Cabrillo Avenue in the unincorporated community of Live Oak in Santa Cruz County.

Supervisoral District: First District (District Supervisor: John Leopold)

Permits Required: Preliminary Grading Aproval and Riparian Exception
Technical Reviews: Biotic Report Review, Soils Report Review

Staff Recommendation:

- Certification of the Mitigated Negative Declaration per the requirements of the California Environmental Quality Act.
- Approval of Application 08-0106, based on the attached findings and conditions.

Exhibits

A. Project plans
B. Findings
C. Conditions
D. Mitigated Negative Declaration (CEQA Determination)
E. Assessor's, Location, Zoning and General Plan Maps
F. Comments & Correspondence

Parcel Information

Parcel Size:	7.08 (102-121-33), .16 acres (102-121-34); .61 acres (102-121-37); 2.89 acres (102-121-70)
Existing Land Use - Parcel:	102-121-33 School; 102-121-34 and 37 are vacant; 102-121-70 has 1 SFD
Existing Land Use - Surrounding:	Single Family Residential, Elementary School
Project Access:	Benedict Ave off Cabrillo Ave in Santa Cruz Gardens
Planning Area:	Live Oak
Land Use Designation:	P (Public Facility), R-S (Suburban Residential)
Zone District:	PF (Public and Community Facilities), RA (Residential Agriculture)
Coastal Zone:	__ Inside _X_ Outside
Appealable to Calif. Coastal Comm.	__ Yes _X_ No

Environmental Information

Geologic Hazards:	Over-steepened & failing slopes adjacent to numerous properties
Soils:	Mapped as Nisene / Aptos Complex
Fire Hazard:	Not a mapped constraint
Slopes:	Up to vertical in some locations
Env. Sen. Habitat:	Riparian, no other habitat mapped/no physical evidence on site
Grading:	Approximately 24,000 cubic yards of fill
Tree Removal:	None with this project, approximately 93 hazardous Eucalyptus trees were removed as part of a prior permit
Scenic:	Not a mapped resource
Drainage:	Drainage to be modified to provide detention and reduce erosion
Archeology:	Not mapped/no physical evidence on site

Services Information

Urban/Rural Services Line:	__ Inside _X_ Outside
Water Supply:	Not Applicable
Sewage Disposal:	Not Applicable
Fire District:	Central Fire Protection District
Drainage District:	Zone 5

History

Much of the drainage from the Santa Cruz Gardens subdivision drains to the head of a ravine on the subject property via a 24-inch culvert. The street and roof drainage for approximately 40 homes in the Santa Cruz Gardens subdivision and much of the drainage from the Santa Cruz Gardens Elementary School is conducted into the ravine. Prior to construction of the subdivision, it is estimated that the tributary drainage area that flowed into the ravine was approximately five acres. The construction of the subdivision altered the tributary drainage area to approximately 17 acres. This increase in drainage area has resulted in an increase in the average discharge as well as an

increase in the peak runoff. Applicant contends that this increased discharge has caused accelerated erosion in the ravine, and that this erosion has caused the failure of slopes behind several residences along Cabrillo Avenue as well as causing many large eucalyptus trees, that have since been removed, to fall over.

The drainage and erosion problems were the subject of a contested lawsuit involving the applicant, several property owners in the Santa Cruz Gardens subdivision, and the County of Santa Cruz. That lawsuit was settled prior to trial, and the purpose of the proposed project is to remedy any drainage issues and associated erosion on the subject properties. The project would also provide for storm water detention and for slope stabilization behind the residences along Cabrillo Avenue.

Project Setting

The project site is located in an unnamed ephemeral drainage located approximately 125 feet southwest of the intersection of Benedict Avenue and Cabrillo Avenue between Benedict Avenue and Cabrillo Avenue in the unincorporated community of Live Oak in Santa Cruz County (Figure 1).

The project site is bounded by single-family residential uses to the south and southeast, an elementary school to the north and northwest, and riparian open space to the west that is dominated by eucalyptus groves.

The project site drains a small portion of the marine terrace that lies between Rodeo Gulch Creek and Arana Gulch. The stream is ephemeral and flows toward the south-southwest. The ravine is between 20-30 feet deep near its head at Benedict Avenue, deepening progressively on the downstream end. The side slopes are steep, ranging from vertical, in the scarps formed by the recent slope failures, to about 70-80 percent in the area of the proposed project. The County of Santa Cruz Planning Department previously issued a Riparian Exception (on October 10, 2008) to remove approximately 93 eucalyptus trees within the project area that had either fallen or were in danger of falling due to the severe bank erosion problem. As a result, slopes in the ravine are currently devoid of most vegetation. However, the eucalyptus stumps that remain have since sprouted and are providing some slope protection.

The Riparian Exception specified that the stumps and leaf litter were to be left in place to prevent erosion until a permanent revegetation and erosion control plan is approved as part of the current proposal. The removal of the 93 hazardous trees qualified for a Statutory Exemption under the California Environmental Quality Act (CEQA) for Emergency Projects (Section 15269(c)). Several mature eucalyptus trees had fallen and others were threatening the adjacent homes; therefore, it was determined to be an emergency occurrence involving a clear and imminent danger demanding immediate attention.

An extensive fill prism is present on the west side of the ravine. The outboard portion of that fill prism adjacent to Benedict Avenue is clearly non-engineered fill. Several small debris slide scars are present on the face of the fill slope. The slide deposits are distributed across the slopes below the scars and in the bottom of the ravine. In December 2005, a landslide exposed a thick section of old poorly consolidated, non-engineered fill, portions of which are at least 15 feet thick.

A fill prism was also placed on the southeast side of the ravine in the 1960s. It appears that the entire fill has incrementally failed and slid into the ravine over the past 35 plus years, as the materials

exposed in the scarps are native soils and sediments. The erosion and formation of small landslides on the slopes behind the homes along Cabrillo Avenue has been exacerbated by the disposal of residential surface and roof drainage (along with yard cuttings, soils and some junk) into the ravine on the project site.

Detailed Project Description

The project proposes to re-contour, install drainage improvements, and revegetate approximately 600 feet of an unnamed ephemeral drainage that drains a large portion of the Santa Cruz Gardens subdivision (Figure 2). The project is designed to repair severe bed and bank erosion by re-contouring the banks and installing gabion weirs and overflow drainage pipes to detain storm water, prevent future erosion, and establish native riparian vegetation along the impacted bed and banks. The County of Santa Cruz Planning Department previously authorized the cutting of approximately 93 eucalyptus trees within the project area that were in danger of falling due to the severe bank erosion problem.

Under this proposal, five gabion check dams and two gabion apron energy dissipaters would be constructed within the drainage corridor to allow for backfilling, re-contouring and storm water detention that would enable the establishment of native riparian vegetation along the currently eroded drainage channel. The gabion energy dissipaters would also be constructed to eliminate downstream erosion. The proposed drainage system has been designed to only allow 10-year storm event runoff along the surface of the drainage. The flow velocity along the surface drainage would be reduced from 9.2 feet per second (ft/sec) in the swale (pre-improvement) to 3.5 ft/sec at the check dams (post-improvement). In the event that a greater storm event occurs, a control structure with a regulating weir would route excess runoff through a 24-inch diameter High-Density Polyethylene (HDPE) underground pipe to the downstream energy dissipater (See Attachment 4).

The two gabion riprap apron energy dissipaters with gabion check dams would be constructed approximately 100 feet apart to dissipate runoff at the outlet. The first energy dissipater would handle up to a 10-year storm event. Excess runoff over a 10-year event would be routed through a 24" culvert down to the second energy dissipater. The second gabion apron energy dissipater would be sized to handle both high and low flow events and to further reduce the peak flow velocity from 21.9 ft/sec to 3.9 ft/sec for a 100-year storm event at the outfall (See Attachment 4).

A draft revegetation and monitoring plan is also being proposed (see Attachment 6) to ensure that the project site is revegetated with appropriate native species that would ultimately provide slope stability, improved water quality, improved wildlife habitat, and improved aesthetic values. Table 1 below provides a complete plant palette that identifies species proposed for use in the revegetation effort, and Figure 3 provides the conceptual planting plan.

Riparian Exception

The proposed project has the potential to conflict with Chapter 16.30 of the County of Santa Cruz County Code, know as the Riparian Corridor and Wetlands Protection Ordinance. For this reason, careful consideration has been given to the proposed project design and revegetation effort.

According to Section 16.30.030, the project area is considered a Riparian Corridor because it contains "lands within a stream channel, including the stream and the area between the mean rainy season (bankfull) flowlines."

Section 16.30.040 of the County Code states prohibits development activities other than those allowed through exemptions and exceptions within riparian corridors and adjacent buffer zones.

The Findings for approval of a Riparian Exception can be made for the project because the project will improve riparian habitat value, improve drainage, improve water quality, and fix erosion and slope stability problems. The specific Findings are detailed in Exhibit B.

Grading Permit

According to Section 16.20.040 of the County Code, a grading permit is required for this project due to grading volumes of approximately 24,000 cubic yards of fill. The fill is required to stabilize the slope and to better control the drainage that enters the project area from the adjacent Santa Cruz Gardens sub-division. A large portion of the fill (approximately 9,000 cubic yards) will be generated by over-excavation / re-compaction of the existing soils for keying and benching to create stable slopes. The remainder of the fill (approximately 15,000 cubic yards) will be imported to establish finish grades.

A soils report has been prepared by Geoforensics, Inc., and the grading plans were prepared by Bowman and Williams Consulting Civil Engineers. Both the soils report and grading plans have been reviewed by civil engineering staff and the County Geologist in the Planning Department for conformance with County Codes and Policies.

The Findings for approval of the grading can be made since the project is consistent with the General Plan policies of Chapter 13.01 and the design is in compliance with County Code since the project proposes to restore the riparian area, stabilize the slopes, improve drainage, and does not cause excessive or unnecessary disturbance The specific Findings are detailed in Exhibit B.

Environmental Review

Environmental review has been performed for the proposed project per the requirements of CEQA. The project was reviewed by the County's Environmental Coordinator on May 17, 2010. A preliminary determination to issue a Negative Declaration with Mitigations (Exhibit D) was made on May 24, 2010. The mandatory public comment period expired on June 25, 2010, with no comments received.

The environmental review process focused on the potential impacts of the project in the areas of geology and soils, hydrology, biological resources, transportation and traffic, and noise. The environmental review process generated mitigation measures that would reduce potential impacts from the proposed development to a less than significant level and adequately address these issues.

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

- Certification of the Mitigated Negative Declaration per the requirements of the California Environmental Quality Act.
- **APPROVAL** of Application Number **08-0106,** based on the attached findings and conditions.

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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_____

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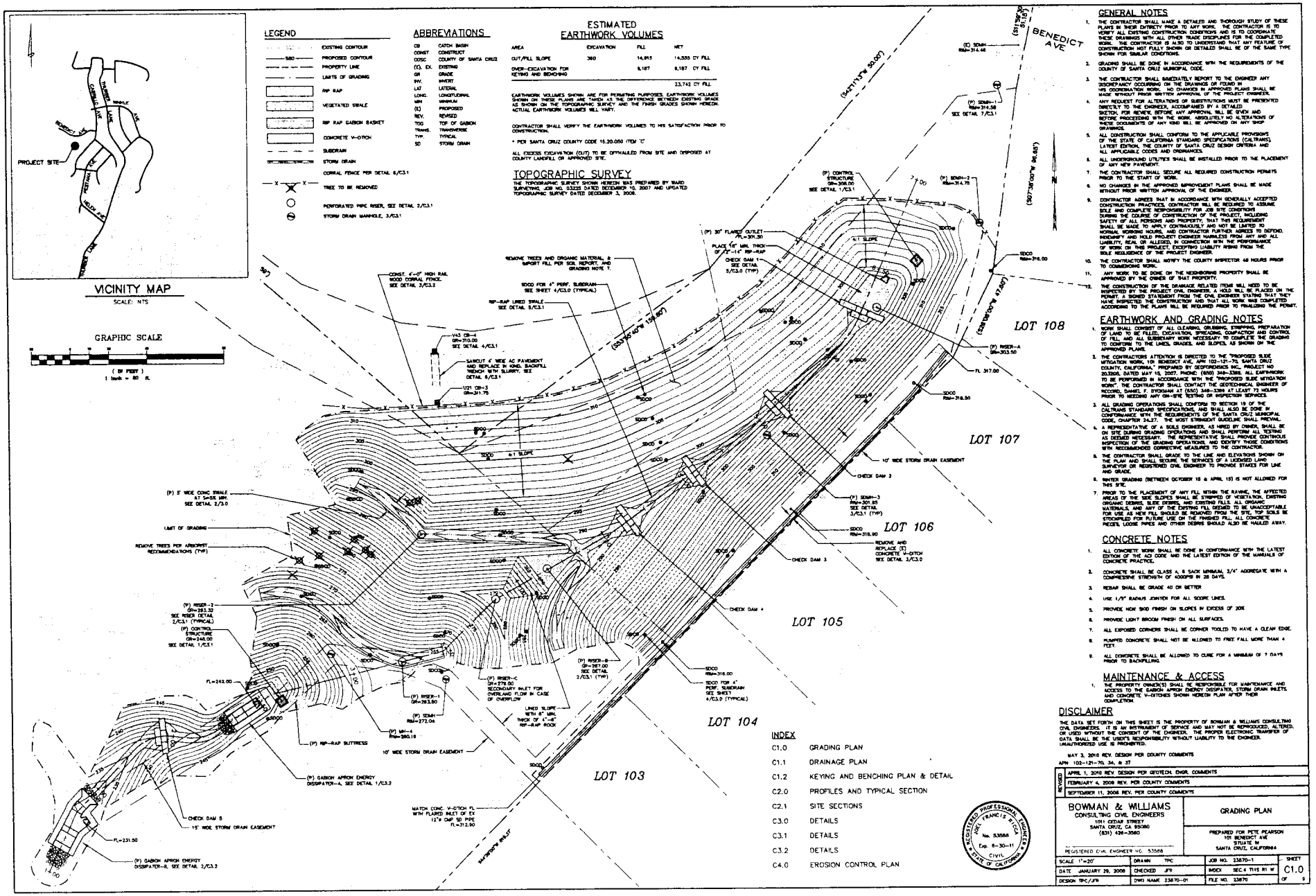
Report Reviewed By: _____

Claudia Slater
Principal Planner
Santa Cruz County Planning Department



VICINITY MAP

SCALE: NTS

GRAPHIC SCALE

(IN FEET)
1 inch = 80 ft.

LEGEND

- EXISTING CONTOUR
- 580 PROPOSED CONTOUR
- PROPERTY LINE
- LIMITS OF GRADING
- RIP RAP
- VEGETATED SWALE
- RIP RAP GABION BASKET
- CONCRETE V-DITCH
- SUBDRAIN
- STORM DRAIN
- CORRAL FENCE PER DETAIL 6/C3.1
- TREE TO BE REMOVED
- PERFORATED PIPE RISER, SEE DETAIL 2/C3.1
- STORM DRAIN MANHOLE, 3/C3.1

ABBREVIATIONS

CB	CATCH BASIN
CONST	CONSTRUCT
COSC	COUNTY OF SANTA CRUZ
(E), EX.	EXISTING
GR	GRADE
INV.	INVERT
LAT	LATERAL
LONG.	LONGITUDINAL
MIN	MINIMUM
(P)	PROPOSED
REV.	REVISED
TOG	TOP OF GABION
TRANS.	TRANSVERSE
TYP.	TYPICAL
SD	STORM DRAIN

ESTIMATED EARTHWORK VOLUMES

AREA	EXCAVATION	FILL	NET
CUT/FILL SLOPE	380	14,915	14,535 CY FILL
OVER-EXCAVATION FOR KEYING AND BENCHING		8,187	8,187 CY FILL
			23,742 CY FILL

EARTHWORK VOLUMES SHOWN ARE FOR PERMITTING PURPOSES. EARTHWORK VOLUMES SHOWN ON THESE PLANS ARE TAKEN AS THE DIFFERENCE BETWEEN EXISTING GRADE AS SHOWN ON THE TOPOGRAPHIC SURVEY AND THE FINISH GRADES SHOWN HEREON. ACTUAL EARTHWORK VOLUMES WILL VARY.

CONTRACTOR SHALL VERIFY THE EARTHWORK VOLUMES TO HIS SATISFACTION PRIOR TO CONSTRUCTION.

* PER SANTA CRUZ COUNTY CODE 16.20.050 ITEM 'C'

ALL EXCESS EXCAVATION (CUT) TO BE OFFHAULED FROM SITE AND DISPOSED AT COUNTY LANDFILL OR APPROVED SITE.

TOPOGRAPHIC SURVEY

THE TOPOGRAPHIC SURVEY SHOWN HEREON WAS PREPARED BY WARD SURVEYING, JOB NO. 03225 DATED DECEMBER 10, 2007 AND UPDATED TOPOGRAPHIC SURVEY DATED DECEMBER 3, 2008.

GENERAL NOTES

1. THE CONTRACTOR SHALL MAKE A DETAILED AND THOROUGH STUDY OF THESE PLANS IN THEIR ENTIRETY PRIOR TO ANY WORK. THE CONTRACTOR IS TO VERIFY ALL EXISTING CONSTRUCTION CONDITIONS AND IS TO COORDINATE THESE DRAWINGS WITH ALL OTHER TRADE DISCIPLINES FOR THE COMPLETED WORK. THE CONTRACTOR IS ALSO TO UNDERSTAND THAT ANY FEATURE OF CONSTRUCTION NOT FULLY SHOWN OR DETAILED SHALL BE OF THE SAME TYPE SHOWN FOR SIMILAR CONDITIONS.
2. GRADING SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE COUNTY OF SANTA CRUZ MUNICIPAL CODE.
3. THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE ENGINEER ANY DISCREPANCY OCCURRING ON THE DRAWINGS OR FOUND IN HIS COORDINATION WORK. NO CHANGES IN APPROVED PLANS SHALL BE MADE WITHOUT PRIOR WRITTEN APPROVAL OF THE PROJECT ENGINEER.
4. ANY REQUEST FOR ALTERATIONS OR SUBSTITUTIONS MUST BE PRESENTED DIRECTLY TO THE ENGINEER, ACCOMPANIED BY A DETAILED SKETCH, FOR REVIEW, BEFORE ANY APPROVAL WILL BE GIVEN AND BEFORE PROCEEDING WITH THE WORK. ABSOLUTELY NO ALTERATIONS OF THESE DOCUMENTS OF ANY KIND WILL BE APPROVED ON ANY SHOP DRAWINGS.
5. ALL CONSTRUCTION SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS (CALTRANS), LATEST EDITION, THE COUNTY OF SANTA CRUZ DESIGN CRITERIA AND ALL APPLICABLE CODES AND ORDINANCES.
6. ALL UNDERGROUND UTILITIES SHALL BE INSTALLED PRIOR TO THE PLACEMENT OF ANY NEW PAVEMENT.
7. THE CONTRACTOR SHALL SECURE ALL REQUIRED CONSTRUCTION PERMITS PRIOR TO THE START OF WORK.
8. NO CHANGES IN THE APPROVED IMPROVEMENT PLANS SHALL BE MADE WITHOUT PRIOR WRITTEN APPROVAL OF THE ENGINEER.
9. CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD PROJECT ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE PROJECT ENGINEER.
10. THE CONTRACTOR SHALL NOTIFY THE COUNTY INSPECTOR 48 HOURS PRIOR TO COMMENCING WORK.
11. ANY WORK TO BE DONE ON THE NEIGHBORING PROPERTY SHALL BE APPROVED BY THE OWNER OF THAT PROPERTY.
12. THE CONSTRUCTION OF THE DRAINAGE RELATED ITEMS WILL NEED TO BE INSPECTED BY THE PROJECT CIVIL ENGINEER. A HOLD WILL BE PLACED ON THE PERMIT. A SIGNED STATEMENT FROM THE CIVIL ENGINEER STATING THAT THEY HAVE INSPECTED THE CONSTRUCTION AND THAT ALL WORK WAS COMPLETED ACCORDING TO THE PLANS WILL BE REQUIRED PRIOR TO FINALIZING THE PERMIT.

EARTHWORK AND GRADING NOTES

1. WORK SHALL CONSIST OF ALL CLEARING, GRUBBING, STRIPPING, PREPARATION OF LAND TO BE FILLED, EXCAVATION, SPREADING, COMPACTION AND CONTROL OF FILL, AND ALL SUBSIDIARY WORK NECESSARY TO COMPLETE THE GRADING TO CONFORM TO THE LINES, GRADES, AND SLOPES, AS SHOWN ON THE APPROVED PLANS.
2. THE CONTRACTORS ATTENTION IS DIRECTED TO THE "PROPOSED SLIDE MITIGATION WORK, 109 BENEDICT AVE, APN 102-121-70, SANTA CRUZ COUNTY, CALIFORNIA," PREPARED BY GEOFORENSICS INC., PROJECT NO 20.2305, DATED MAY 15, 2007, PHONE (650) 349-1366. ALL EARTHWORK TO BE PERFORMED IN ACCORDANCE WITH THE "PROPOSED SLIDE MITIGATION WORK". THE CONTRACTOR SHALL CONTACT THE GEOTECHNICAL ENGINEER OF RECORD, DANIEL T. KYSHAR, AT (650) 349-1366 AT LEAST 72 HOURS PRIOR TO NEEDING ANY ON-SITE TESTING OR INSPECTION SERVICES.
3. ALL GRADING OPERATIONS SHALL CONFORM TO SECTION 19 OF THE CALTRANS STANDARD SPECIFICATIONS, AND SHALL ALSO BE DONE IN CONFORMANCE WITH THE REQUIREMENTS OF THE SANTA CRUZ MUNICIPAL CODE, CHAPTER 24.27. THE MOST STRINGENT GUIDELINE SHALL PREVAIL.
4. A REPRESENTATIVE OF A SOILS ENGINEER, AS HIRED BY OWNER, SHALL BE ON SITE DURING GRADING OPERATIONS AND SHALL PERFORM ALL TESTING AS DEEMED NECESSARY. THE REPRESENTATIVE SHALL PROVIDE CONTINUOUS INSPECTION OF THE GRADING OPERATIONS, AND IDENTIFY THOSE CONDITIONS WITH RECOMMENDED CORRECTIVE MEASURES TO THE CONTRACTOR.
5. THE CONTRACTOR SHALL GRADE TO THE LINE AND ELEVATIONS SHOWN ON THE PLAN AND SHALL SECURE THE SERVICES OF A LICENSED LAND SURVEYOR OR REGISTERED CIVIL ENGINEER TO PROVIDE STAKES FOR LINE AND GRADE.
6. WINTER GRADING (BETWEEN OCTOBER 15 & APRIL 15) IS NOT ALLOWED FOR THIS SITE.
7. PRIOR TO THE PLACEMENT OF ANY FILL WITHIN THE RAVINE, THE AFFECTED AREAS OF THE SIDE SLOPES SHALL BE STRIPPED OF VEGETATION, EXISTING ORGANIC DEBRIS, SLIDE DEBRIS, AND EXISTING FILLS. ALL ORGANIC MATERIALS, AND ANY OF EXISTING FILL DEEMED TO BE UNACCEPTABLE FOR USE AS NEW FILL SHOULD BE REMOVED FROM THE SITE. TOP SOILS BE STOCKPILED FOR FUTURE USE ON THE FINISHED FILL. ALL CONCRETE PIECES, LOOSE PIPES AND OTHER DEBRIS SHOULD ALSO BE HAULED AWAY.

CONCRETE NOTES

1. ALL CONCRETE WORK SHALL BE DONE IN CONFORMANCE WITH THE LATEST EDITION OF THE ACI CODE AND THE LATEST EDITION OF THE MANUALS OF CONCRETE PRACTICE.
2. CONCRETE SHALL BE CLASS A, 6 SACK MINIMUM, 3/4" AGGREGATE WITH A COMPRESSIVE STRENGTH OF 4000PSI IN 28 DAYS.
3. REBAR SHALL BE GRADE 40 OR BETTER
4. USE 1/2" RADIUS JOINTER FOR ALL SCORE LINES.
5. PROVIDE NON SKID FINISH ON SLOPES IN EXCESS OF 20%
6. PROVIDE LIGHT BROOM FINISH ON ALL SURFACES.
7. ALL EXPOSED CORNERS SHALL BE CORNER TOOLED TO HAVE A CLEAN EDGE.
8. PUMPED CONCRETE SHALL NOT BE ALLOWED TO FREE FALL MORE THAN 4 FEET.
9. ALL CONCRETE SHALL BE ALLOWED TO CURE FOR A MINIMUM OF 7 DAYS PRIOR TO BACKFILLING.

MAINTENANCE & ACCESS

1. THE PROPERTY OWNER(S) SHALL BE RESPONSIBLE FOR MAINTENANCE AND ACCESS TO THE GABION APRON ENERGY DISSIPATER, STORM DRAIN INLETS, AND CONCRETE V-DITCHES SHOWN HEREON PLAN AFTER THEIR COMPLETION.

DISCLAIMER

INDEX

C1.0	GRADING PLAN
C1.1	DRAINAGE PLAN
C1.2	KEYING AND BENCHING PLAN & DETAIL
C2.0	PROFILES AND TYPICAL SECTION
C2.1	SITE SECTIONS
C3.0	DETAILS
C3.1	DETAILS
C3.2	DETAILS
C4.0	EROSION CONTROL PLAN

REGISTERED PROFESSIONAL ENGINEER JOEL FRANCIS RYAN No. 53588 Exp. 6-30-11 CIVIL STATE OF CALIFORNIA

MAY 3, 2010 REV. DESIGN PER COUNTY COMMENTS
APN 102-121-70, 34, & 37

REVISED
APRIL 1, 2010 REV. DESIGN PER GEOTECH. ENGR. COMMENTS
FEBRUARY 4, 2009 REV. PER COUNTY COMMENTS
SEPTEMBER 11, 2008 REV. PER COUNTY COMMENTS

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560
REGISTERED CIVIL ENGINEER NO. 53588

GRADING PLAN

PREPARED FOR PETE PEARSON
109 BENEDICT AVE
SITUATE IN
SANTA CRUZ, CALIFORNIA

SCALE 1"=20'	DRAWN TPC	JOB NO. 23870-1	SHEET
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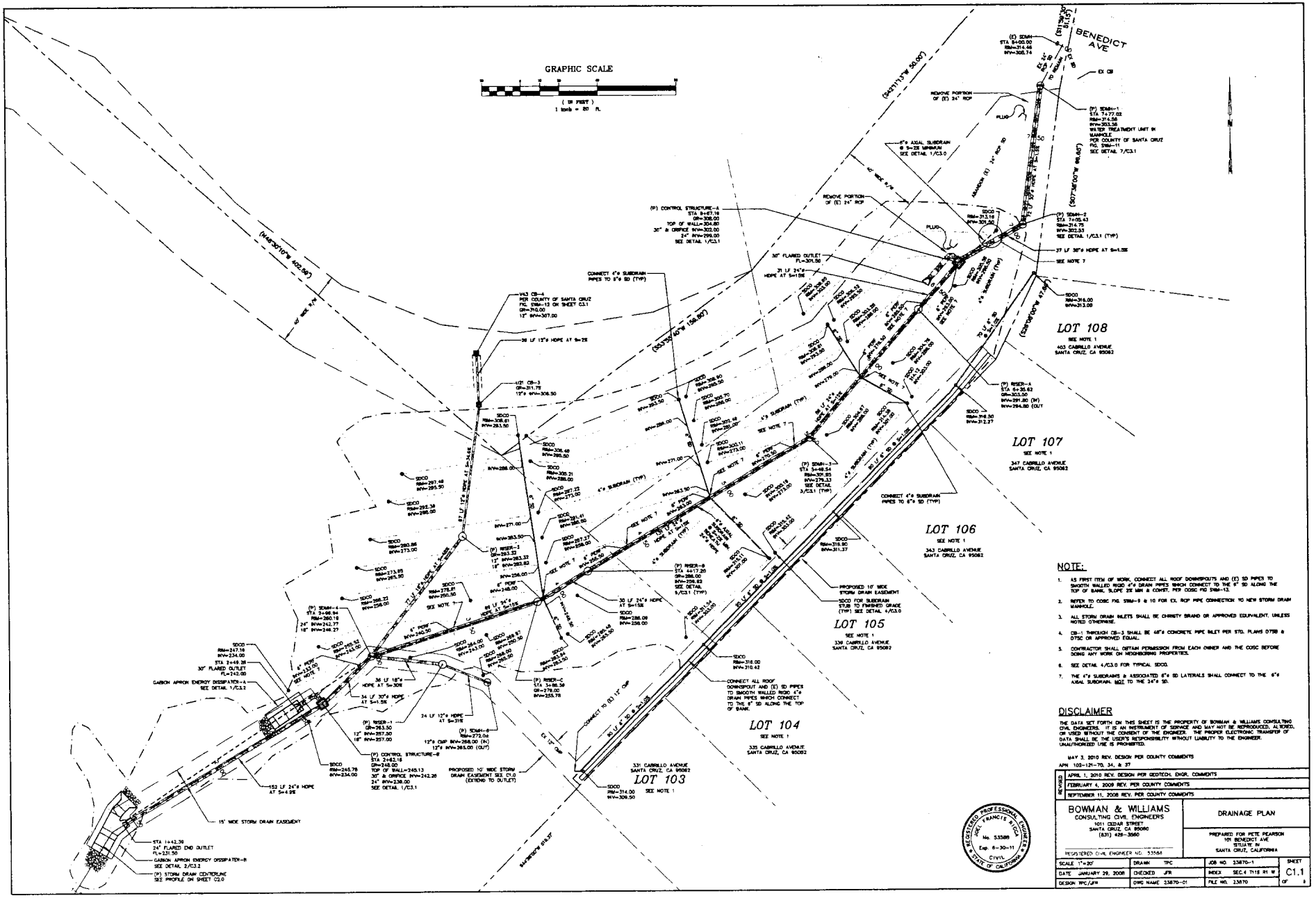
GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.
BENEDICT AVE
LOT 108
SEE NOTE 1
403 CABRILLO AVENUE
SANTA CRUZ, CA 95062
LOT 107
SEE NOTE 1
347 CABRILLO AVENUE
SANTA CRUZ, CA 95062
LOT 106
SEE NOTE 1
343 CABRILLO AVENUE
SANTA CRUZ, CA 95062
LOT 105
SEE NOTE 1
339 CABRILLO AVENUE
SANTA CRUZ, CA 95062
LOT 104
SEE NOTE 1
335 CABRILLO AVENUE
SANTA CRUZ, CA 95062
LOT 103
SEE NOTE 1
331 CABRILLO AVENUE
SANTA CRUZ, CA 95062
(P) CONTROL STRUCTURE-A
(P) CONTROL STRUCTURE-B
(P) RISER-A
(P) RISER-B
(P) RISER-C
(P) RISER-D
(P) SDMH-1
(P) SDMH-2
(P) SDMH-3
(P) SDMH-4
(P) SDMH-5
(P) SDMH-6
(E) SDMH
VAULT CB-3
VAULT CB-4
PROPOSED 10' WIDE STORM DRAIN EASEMENT
15' WIDE STORM DRAIN EASEMENT
SDCO
EX CB
EX 12" CMP
EX 24" CMP
BASKETBALL COURT
NOTE:
1. AS FIRST ITEM OF WORK, CONNECT ALL ROOF DOWNSPOUTS AND (E) SD PIPES TO SMOOTH WALLED RIGID 4"ø DRAIN PIPES WHICH CONNECT TO THE 6" SD ALONG THE TOP OF BANK. SLOPE 2% MIN & CONST. PER COSC FIG SWM-13.
2. REFER TO COSC FIG. SWM-9 & 10 FOR EX. ROP PIPE CONNECTION TO NEW STORM DRAIN MANHOLE.
3. ALL STORM DRAIN INLETS SHALL BE CHRISTY BRAND OR APPROVED EQUIVALENT, UNLESS NOTED OTHERWISE.
4. CB-1 THROUGH CB-3 SHALL BE 48"ø CONCRETE PIPE INLET PER STD. PLANS D7SB & D7SC OR APPROVED EQUAL.
5. CONTRACTOR SHALL OBTAIN PERMISSION FROM EACH OWNER AND THE COSC BEFORE DOING ANY WORK ON NEIGHBORING PROPERTIES.
6. SEE DETAIL 4/C3.0 FOR TYPICAL SDCO.
7. THE 4"ø SUBDRAINS & ASSOCIATED 6"ø SD LATERALS SHALL CONNECT TO THE 6"ø AXIAL SUBDRAIN, NOT TO THE 24"ø SD.
DISCLAIMER
THE DATA SET FORTH ON THIS SHEET IS THE PROPERTY OF BOWMAN & WILLIAMS CONSULTING CIVIL ENGINEERS. IT IS AN INSTRUMENT OF SERVICE AND MAY NOT BE REPRODUCED, ALTERED, OR USED WITHOUT THE CONSENT OF THE ENGINEER. THE PROPER ELECTRONIC TRANSFER OF DATA SHALL BE THE USER'S RESPONSIBILITY WITHOUT LIABILITY TO THE ENGINEER. UNAUTHORIZED USE IS PROHIBITED.
MAY 3, 2010 REV. DESIGN PER COUNTY COMMENTS
APN 102-121-70, 34, & 37
REVISED
APRIL 1, 2010 REV. DESIGN PER GEOTECH. ENGR. COMMENTS
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BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560
REGISTERED CIVIL ENGINEER NO. 53568
DRAINAGE PLAN
PREPARED FOR PETE PEARSON
101 BENEDICT AVE
SITUATE IN
SANTA CRUZ, CALIFORNIA
REGISTERED PROFESSIONAL ENGINEER JOEL FRANCIS WILLIAMS No. 53568 Exp. 6-30-11 CIVIL STATE OF CALIFORNIA
SCALE 1"=20'
DRAWN TPC
JOB NO. 23870-1
SHEET C1.1
DATE JANUARY 29, 2008
CHECKED JFW
INDEX SEC.4 T11S R1 W
DESIGN TPC/JFW
DWG NAME 23870-01
FILE NO. 23870
OF 8

EXHIBIT A

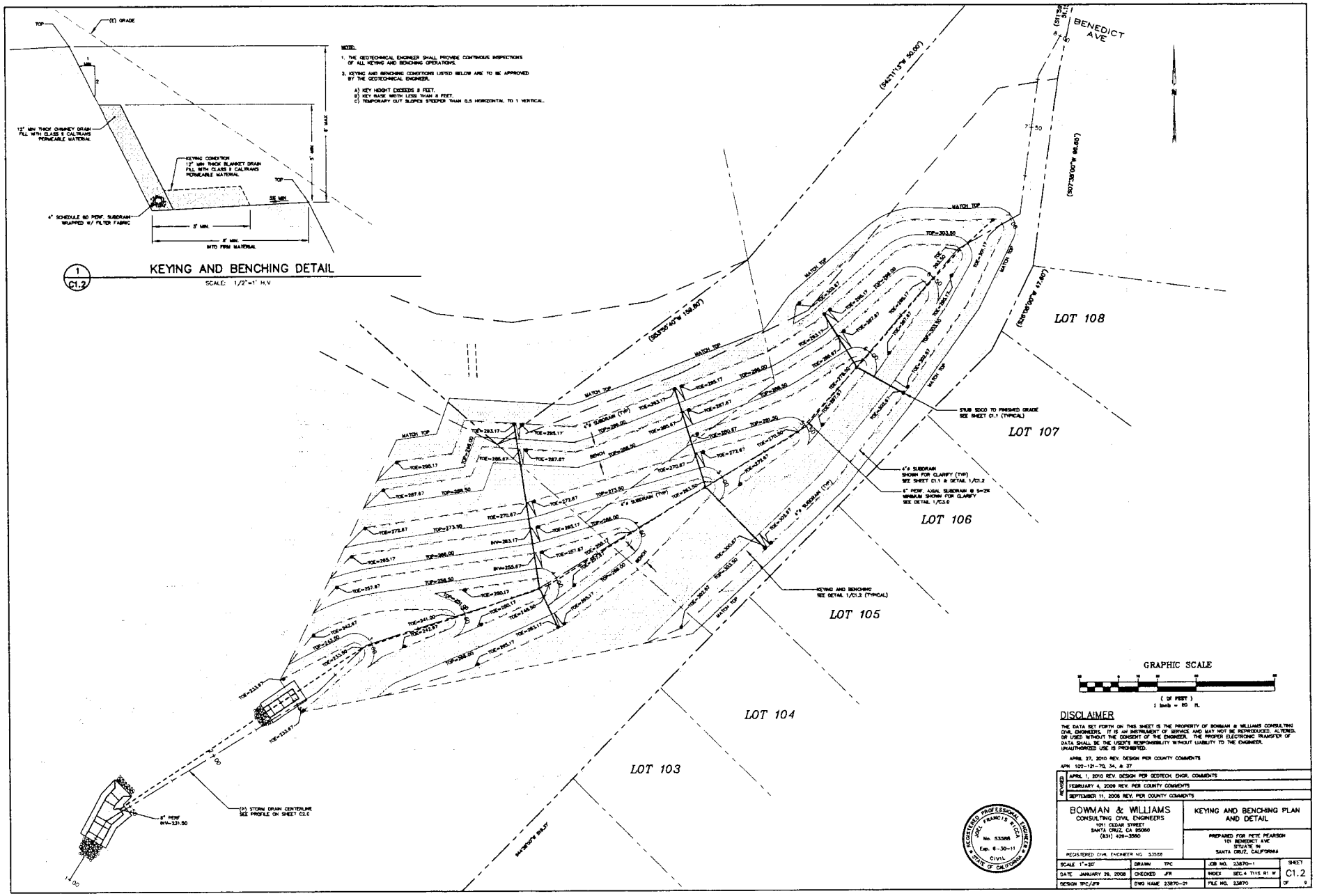
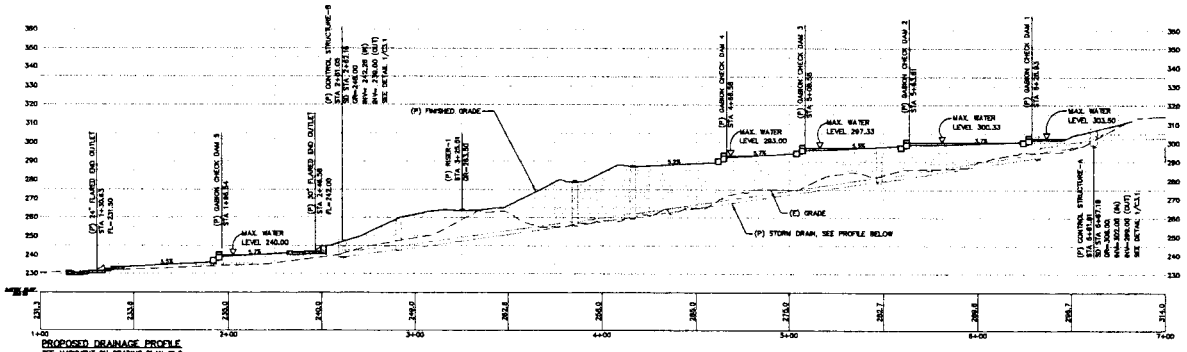
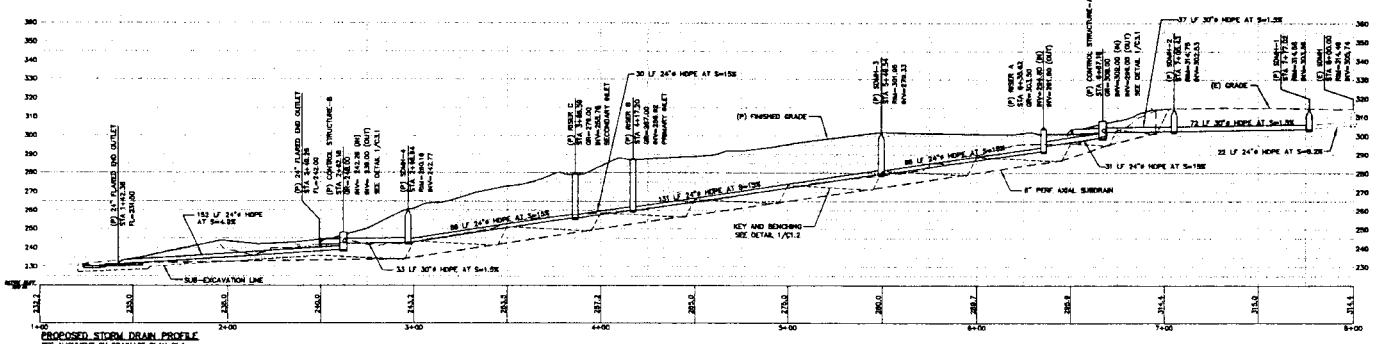

KEYING AND BENCHING DETAIL
SCALE: 1/2"=1' H,V
NOTE:
1. THE GEOTECHNICAL ENGINEER SHALL PROVIDE CONTINUOUS INSPECTIONS OF ALL KEYING AND BENCHING OPERATIONS.
2. KEYING AND BENCHING CONDITIONS LISTED BELOW ARE TO BE APPROVED BY THE GEOTECHNICAL ENGINEER.
A) KEY HEIGHT EXCEEDS 8 FEET.
B) KEY BASE WIDTH LESS THAN 8 FEET.
C) TEMPORARY CUT SLOPES STEEPER THAN 0.5 HORIZONTAL TO 1 VERTICAL.
BENEDICT AVE
LOT 108
LOT 107
LOT 106
LOT 105
LOT 104
LOT 103
STUB EDGE TO FINISHED GRADE SEE SHEET C1.1 (TYPICAL)
KEYING AND BENCHING SEE DETAIL 1/C1.2 (TYPICAL)
GRAPHIC SCALE
DISCLAIMER
BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
KEYING AND BENCHING PLAN AND DETAIL
C1.2

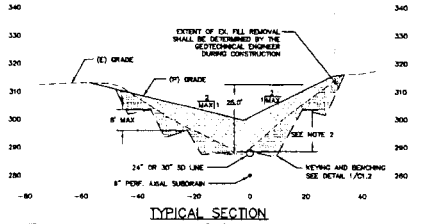
EXHIBIT A



PROPOSED DRAINAGE PROFILE
SEE ALIGNMENT ON GRADING PLAN C1.0
SCALE: 1"=30' H,V



PROPOSED STORM DRAIN PROFILE
SEE ALIGNMENT ON DRAINAGE PLAN C1.1
SCALE: 1"=30' H,V



TYPICAL SECTION
SCALE: 1"=20' H,V

NOTE

1. WHERE FILL THICKNESS EXCEEDS 25 FEET, THE LOWER PORTIONS OF THE FILL MUST BE COMPACTED TO A MINIMUM OF 95 PERCENT OF THEIR MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557. WHERE FILLS ARE THINNER THAN 25 FEET, AND IN THE UPPER 25 FEET OF A DEEPER FILL, THE SOILS NEED ONLY BE COMPACTED TO A MINIMUM OF 90 PERCENTS OF THEIR MAXIMUM DRY DENSITY.
2. KEYING AND BENCHING CONDITIONS LISTED BELOW ARE TO BE APPROVED BY THE GEOTECHNICAL ENGINEER.
   A) KEY HEIGHT EXCEEDS 8 FEET.
   B) KEY BASE WIDTH LESS THAN 8 FEET.
   C) TEMPORARY CUT SLOPES STEEPER THAN 0.5 HORIZONTAL TO 1 VERTICAL.
3. USE C.G.S.C. FIG. SWM-13 FOR TRENCH DETAIL

DISCLAIMER

APRIL 27, 2010 REV. DESIGN PER COUNTY COMMENTS
APN 102-121-70, 34, & 37

REVISED
- APRIL 1, 2010 REV. DESIGN PER GEOTECH. ENGR. COMMENTS
- FEBRUARY 4, 2009 REV. PER COUNTY COMMENTS
- SEPTEMBER 11, 2008 REV. PER COUNTY COMMENTS

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560
REGISTERED CIVIL ENGINEER NO. 53188

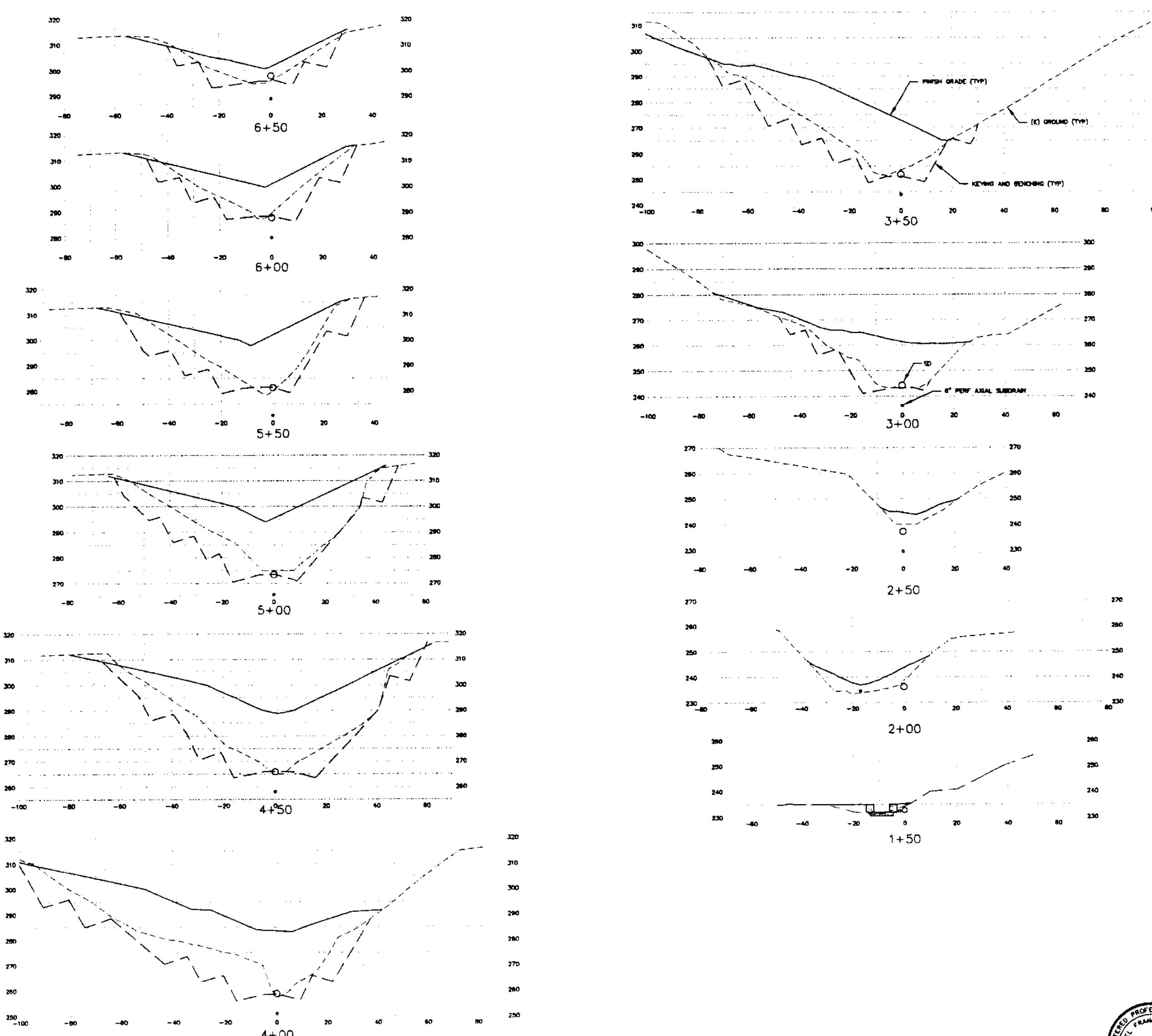
PROFILES AND TYPICAL SECTION

PREPARED FOR PETE PEARSON
101 BENEDICT AVE
SPLIT R
SANTA CRUZ, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER FRANCIS P. CIVELLO No. 53188 Exp. 6-30-11 CIVIL STATE OF CALIFORNIA

SCALE 1"=20'	DRAWN TPC	JOB NO. 23870-1	SHEET
DATE JANUARY 29, 2008	CHECKED JFR	INDEX SEE 4 THIS R1 W	C2.0
DESIGN TPC/JFR	DWG NAME 23870-01	FILE NO. 23870	OF 9

A



SECTION NOTE

1. SITE SECTIONS ARE TAKEN ALONG PROPOSED STORM DRAIN ALIGNMENT

DISCLAIMER

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REVISED
APRIL 1, 2010 REV. DESIGN PER GEOTECH. ENGR. COMMENTS
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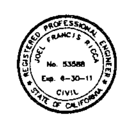


BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560

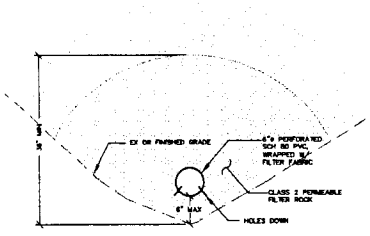
REGISTERED CIVIL ENGINEER NO. 53588

SITE SECTIONS

PREPARED FOR PETE PEARSON
101 BENEDICT AVE
SITUATE IN
SANTA CRUZ, CALIFORNIA

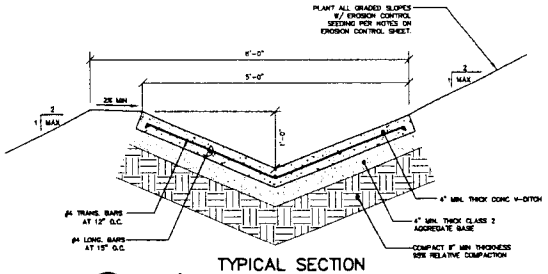
SCALE 1"=20'	DRAWN TPC	JOB NO. 23670-1	SHEET
DATE JANUARY 29, 2008	CHECKED JFR	INDEX SEC.4 T11S R1 W	C2.1
DESIGN TPC/JFR	DWG NAME 23670-01	FILE NO. 23670	OF 1

EXHIBIT A



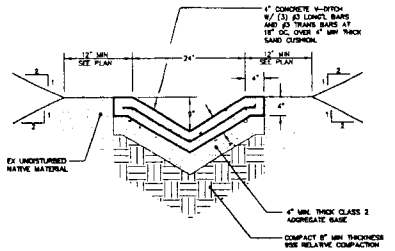
1 C3.0 TYPICAL SECTION AXIAL SUBDRAIN

SCALE: 1"=1'-0"



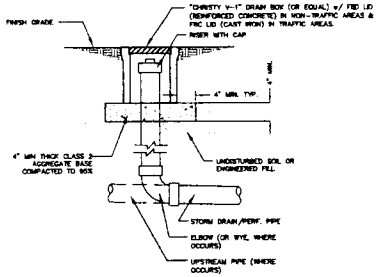
2 C3.0 TYPICAL SECTION 5' WIDE CONCRETE V-DITCH

SCALE: 1"=1'-0"



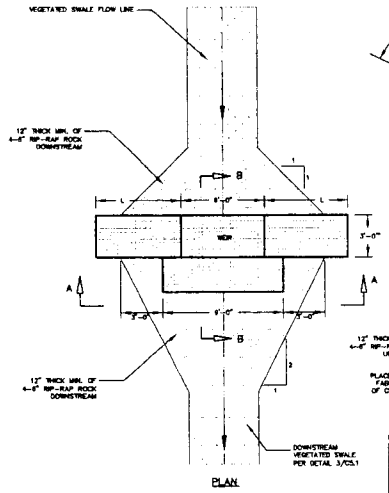
3 C3.0 TYPICAL SECTION 2' WIDE CONCRETE V-DITCH

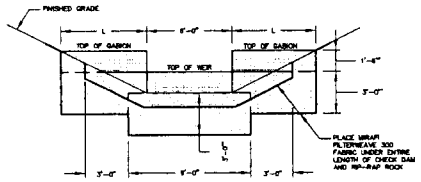
SCALE: 1"=1'-0"



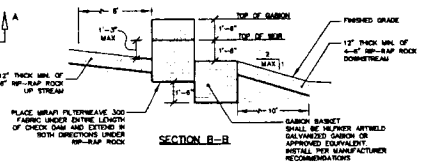
4 C3.0 STORM DRAIN CLEANOUT (SDCO) DETAIL

SCALE: 1"=1'-0"





SECTION A-A



SECTION B-B

GABION CHECK DAM SCHEDULE

DAM #	1	2	3	4	5
L (FT)	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"
TOP GABION EL.	304.00	301.83	298.83	294.50	291.50
TOP OF WEIR	302.50	300.33	297.33	293.00	290.00

5 C3.0 GABION CHECK DAM DETAIL

SCALE: 1/4"=1'-0"

DISCLAIMER

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BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
101 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560
REGISTERED CIVIL ENGINEER NO. 53588

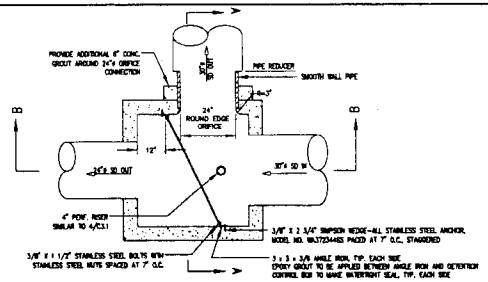
DETAILS

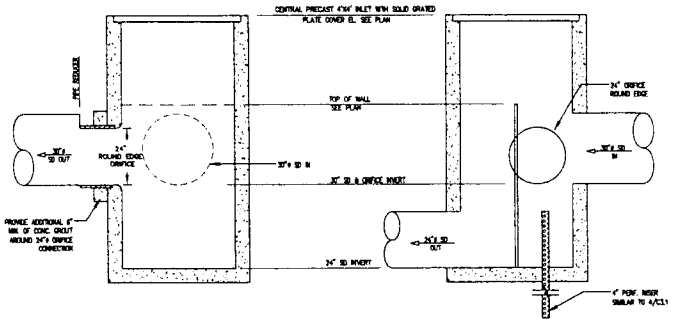
PREPARED FOR PETE PEARSON
701 BENEDICT AVE.
SITUATE IN
SANTA CRUZ, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — JOEL FRANCIS PUGA — No. 53588 — Exp. 6-30-11 — CIVIL — STATE OF CALIFORNIA

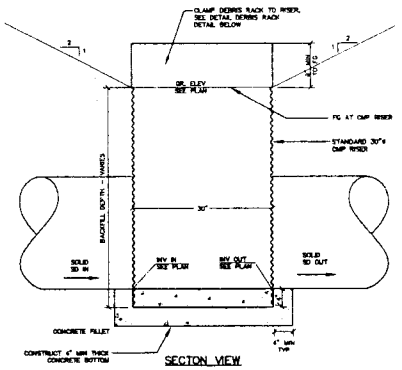
SCALE AS SHOWN	DRAWN TPC	JOB NO. 23870-1	SHEET C3.0
DATE JANUARY 29, 2008	CHECKED JFR	INDEX SEC.4 T11S R1 W	OF 8
DESIGN TPC/JFR	DWG NAME 23870-01	FILE NO. 23870	

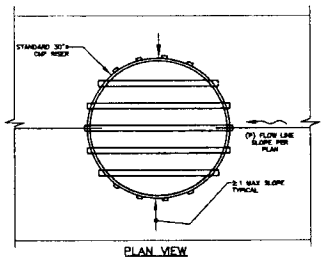
EXHIBIT A



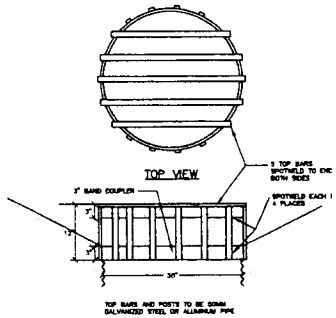


1 C3.1 CONTROL STRUCTURE
SCALE: 1/2"=1'-0"



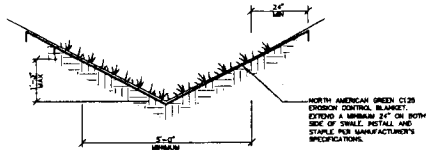


PERFORATED CMP RISER DETAIL

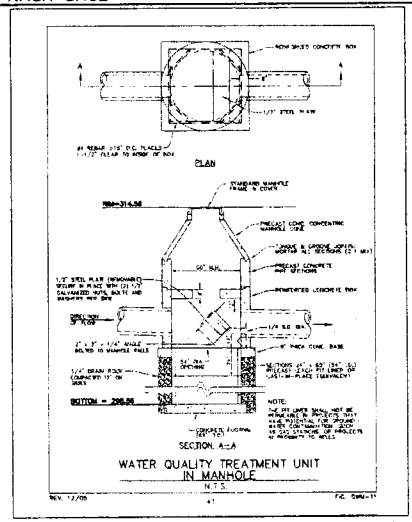


DEBRIS RACK CAGE DETAIL

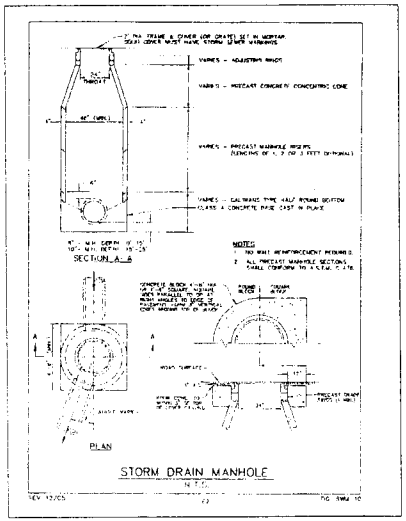
2 C3.1 PERFORATED PIPE RISER WITH DEBRIS RACK CAGE
SCALE: 1"=1'



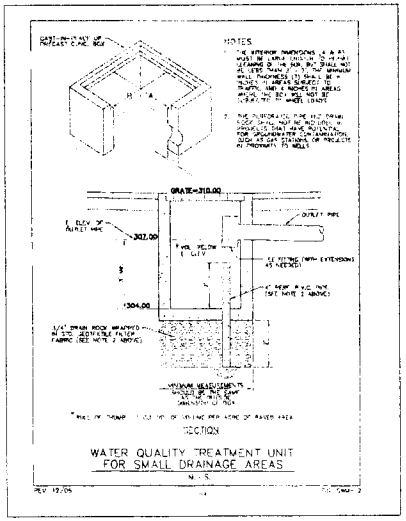
5 C3.1 VEGETATED SWALE
SCALE: NTS



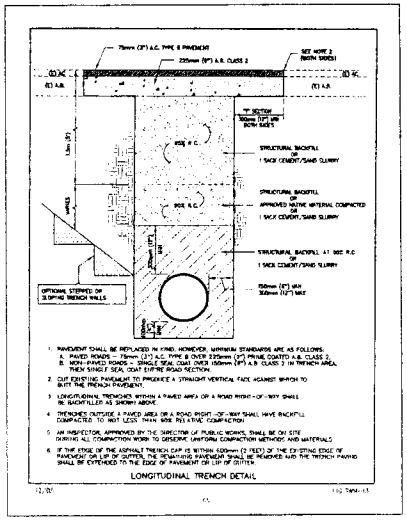
7 C3.1 WATER TREATMENT UNIT IN MANHOLE
SCALE: NTS



3 C3.1 STORM DRAIN MANHOLE
SCALE: NTS



4 C3.1 WATER TREATMENT UNIT
SCALE: NTS (USED FOR CB-4)



6 C3.1 TRENCH DETAIL
SCALE: NTS

REGISTERED PROFESSIONAL ENGINEER — JOEL FRANCIS PITCA — No. 53508 — Exp. 6-30-11 — CIVIL — STATE OF CALIFORNIA

REVISED	
MAY 3, 2010	REV. DESIGN PER COUNTY COMMENTS
APRIL 1, 2010	REV. DESIGN PER GEOTECH. ENGR. COMMENTS
FEBRUARY 4, 2009	REV. PER COUNTY COMMENTS
SEPTEMBER 11, 2008	REV. PER COUNTY COMMENTS

APN 102-121-70, 34, & 37

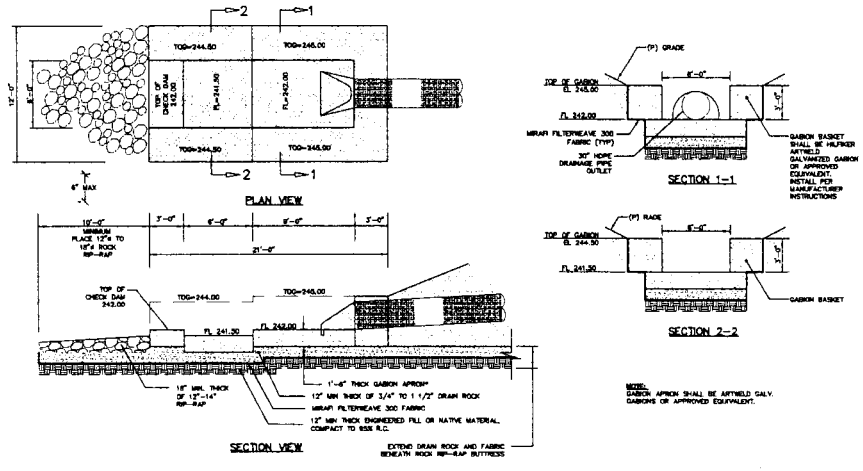
BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560
REGISTERED CIVIL ENGINEER NO. 53508

DETAILS

PREPARED FOR PETE PEARSON
101 BENEDICT AVE
SITUATE IN
SANTA CRUZ, CALIFORNIA

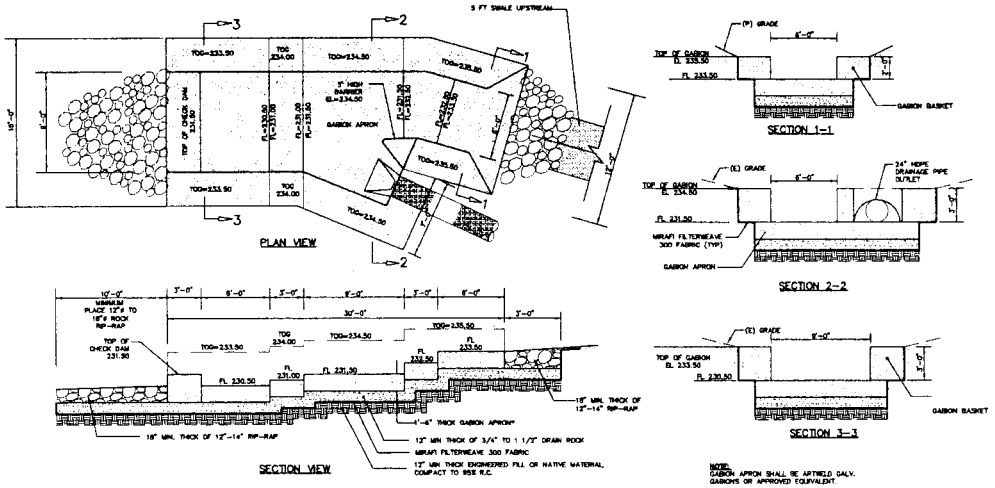
SCALE AS SHOWN	DRAWN TPC	JOB NO. 23870-1	SHEET
DATE JANUARY 29, 2008	CHECKED JFR	BOOK SEC.4 T11S R1 W	C3.1
DESIGN TPC/JFR	DWG NAME 23870-01	FILE NO. 23870	OF 6

EXHIBIT A



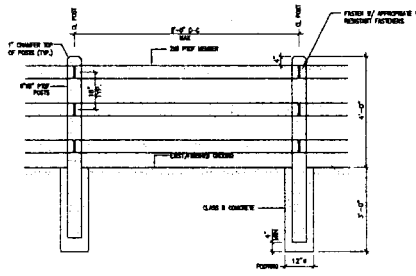
1 C3.2 GABION APRON ENERGY DISSIPATER-A

SCALE: 1"=5'-0"



2 C3.2 GABION APRON ENERGY DISSIPATER-B

SCALE: 1"=5'-0"



3 C3.2 WOOD CORRAL FENCE

SCALE: 1/2" = 1'-0"

DISCLAIMER

MAY 3, 2010 REV. DESIGN PER COUNTY COMMENTS

APN 102-121-70, 34, & 37

REVISED

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BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560

REGISTERED CIVIL ENGINEER NO. 53588

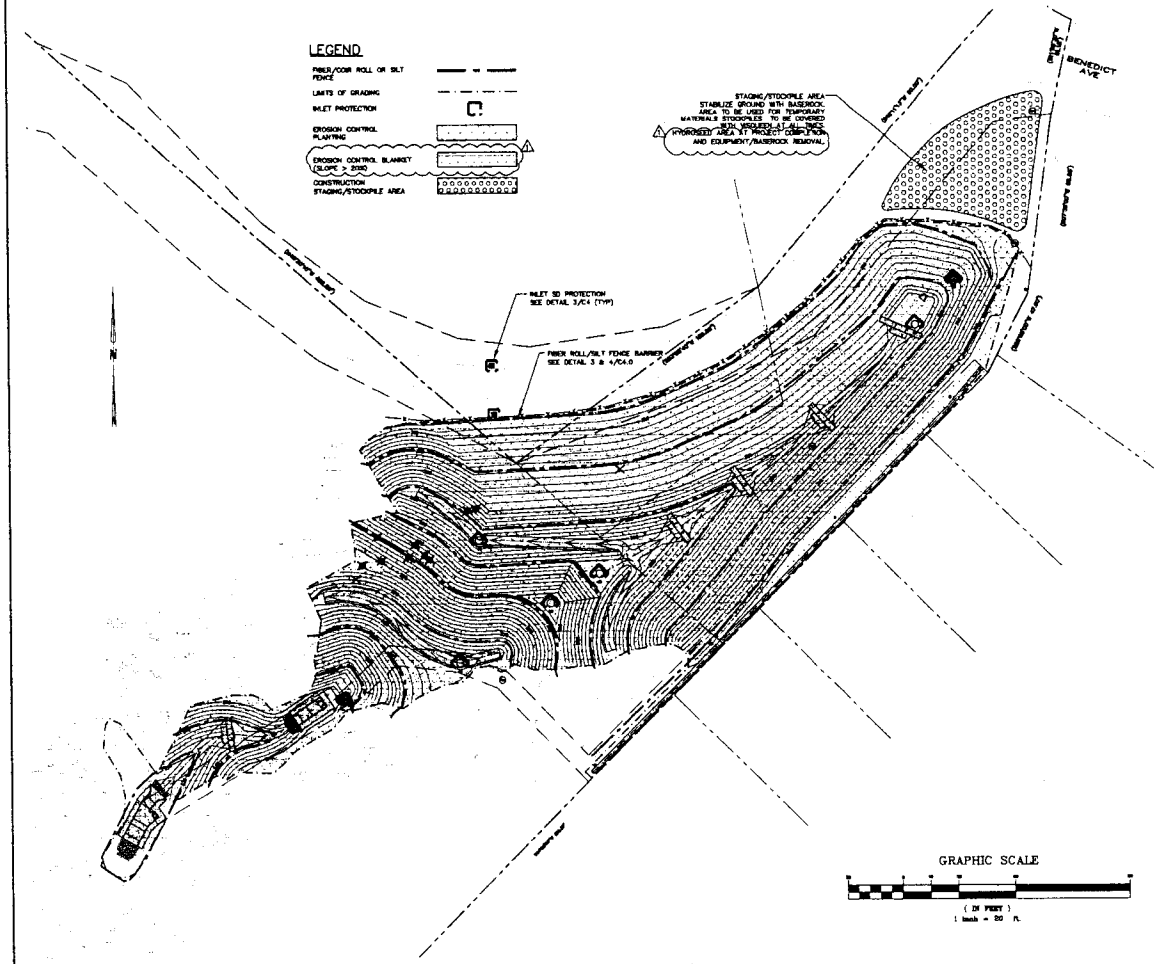
No. 53588
Exp. 6-30-11
CIVIL
REGISTERED PROFESSIONAL ENGINEER
JOE FRANCIS PITCA
STATE OF CALIFORNIA

DETAILS

PREPARED FOR PETE PEARSON
TOR BENEDICT AVE
SITUATE IN
SANTA CRUZ, CALIFORNIA

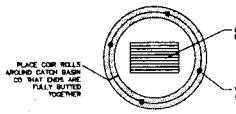
SCALE AS SHOWN	DRAWN TPC	JOB NO. 23670-1	SHEET
DATE JANUARY 29, 2008	CHECKED JFR	INDEX SEC.4 T11S R1 W	C3.2
DESIGN TPC/JFR	DWG NAME 23670-01	FILE NO. 23670	OF 9

EXHIBIT A



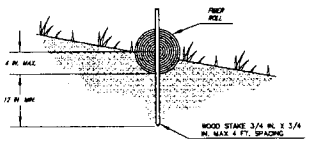
PLAN

SCALE: 1"=20'

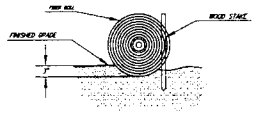


3 C4.0 STORM DRAIN PROTECTION

SCALE: NTS



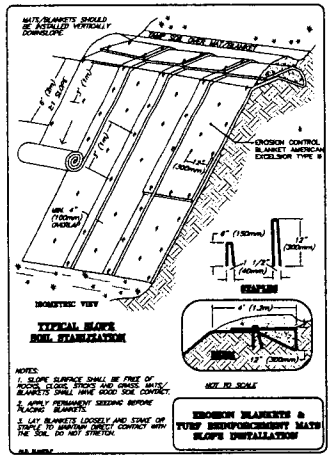
ENTRENCHMENT DETAIL IN SLOPE AREA



ENTRENCHMENT DETAIL IN FLAT AREA

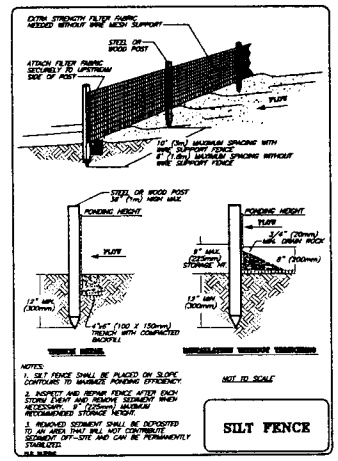
4 C4.0 FIBER ROLL SILT BARRIER

SCALE: NTS



1 C4.0 EROSION BLANKET

SCALE: NTS



2 C4.0 SILT FENCE

SCALE: NTS

TEMPORARY EROSION CONTROL MEASURES

1. NO LAND CLEARING, GRADING, OR EXCAVATION SHALL BE DONE BETWEEN OCTOBER 15TH AND APRIL 15TH. ANY DEVIATION FROM THIS CONDITION REQUIRES REVIEW AND APPROVAL OF A SEPARATE WINTER EROSION CONTROL PLAN BY ENVIRONMENTAL PLANNING PRIOR TO BEGINNING SUCH CONSTRUCTION. THE DEVELOPER SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING SITE EROSION CONTROL AT ALL TIMES.
2. EROSION IS TO BE CONTROLLED AT ALL TIMES ALTHOUGH SPECIFIC MEASURES SHOWN ARE TO BE IMPLEMENTED AT A MINIMUM BETWEEN OCTOBER 15TH AND APRIL 15TH. BETWEEN OCTOBER 15TH AND APRIL 15TH HAY BALES, FILER BERMS, SILT FENCES OR OTHER MEANS SHALL BE EMPLOYED TO PREVENT SEDIMENT FROM LEAVING THE SITE OR ENTERING ANY WATERCOURSE.
3. RUNOFF FROM THE CONSTRUCTION SITE MUST NOT BE ALLOWED TO FLOW OVER ANY FILL SLOPES.
4. RUNOFF SHALL BE DIRECTED TOWARDS THE NEAREST CATCH BASIN WITH TEMPORARY EARTHEN BERMS.
5. SILT BARRIERS SHALL BE CONSTRUCTED ALONG THE BOTTOM OF ALL GRADED SLOPES.
6. CATCH BASINS SHALL BE ENCIRCLED BY A SILT BARRIER ON ALL FOUR SIDES. USE GRAVEL FILLED SANDBAGS OR STRAW BALE INLET BARRIER. PROVIDE FILTER FABRIC UNDER INLET GRATE.
7. ON ALL FINISH GRADED SLOPES, ON- AND OFF-SITE, EXPOSED DURING CONSTRUCTION ACTIVITIES, IF NOT PERMANENTLY LANDSCAPED PER PLAN, SHALL BE PROTECTED BY MULCHING AND/OR PLANTING OF THE FOLLOWING COASTAL SCRUB - HYDROSEED MIX PER TABLE 4 OF THE REVEGETATION PLAN.

SEED TYPE	SEED APPLICATION RATE
CALIFORNIA SAGEBRUSH	2 LB/ACRE
COYOTE BRUSH	2 LB/ACRE
STICKY MONKEY FLOWER	2 LB/ACRE
MUGWORT	2 LB/ACRE
CALIFORNIA POWORT	1 LB/ACRE
COMMON YARROW	1 LB/ACRE
DEERWEED	4 LB/ACRE
CALIFORNIA POPPY	8 LB/ACRE
BLUE WILD RYE	13 LB/ACRE
CALIFORNIA BROME	12 LB/ACRE
MIX	46 LB/ACRE

ONCE SLOPES ARE SEEDED AND RAKED, COVER THEM WITH TWO INCHES (2") OF STRAW. IF AVAILABLE, USE NATIVE BUNCH GRASS STRAW (PREFERABLY BROMUS CARINATUS, IF NOT AVAILABLE, USE COMMERCIALLY AVAILABLE TYPES (C.G. WHEAT, OAT, BARLEY, ETC.) EXPOSED SOIL ON SLOPES GREATER THAN 20:1 SHALL BE SEEDED, COVERED WITH 2 INCHES OF STRAW, AND A NORTH AMERICAN GREEN S150 EROSION CONTROL BLANKET, OR APPROVED EQUAL. THE EROSION CONTROL BLANKET SHALL BE STAKED IN PLACE.

FERTILIZER & MICROBIAL INOCULANTS REQUIRED FOR THIS SEED MIX PER REVEGETATION PLAN ARE BIOSOL MIX 1-2-1 & TURBO START AT AN APPLICATION RATE TO BE DETERMINED AFTER SOIL TESTING.

SEEDING MAY BE OMITTED FOR AREAS THAT ARE TO RECEIVE PERMANENT LANDSCAPING PROVIDED SAID LANDSCAPING IS IN PLACE PRIOR TO OCTOBER 15TH.

8. UNNECESSARY GRADING AND DISTURBING OF SOIL SHALL BE AVOIDED.
9. DURING CONSTRUCTION, NO TURBID WATER SHALL BE PERMITTED TO ENTER THE DRAINS OR STORM DRAIN SYSTEM. USE OF SILT AND GREASE TRAPS, FILTER BERMS, HAY BALES OR SILT FENCES SHALL BE USED TO PREVENT SUCH DISCHARGE.
10. ALL EXCAVATED MATERIAL NOT SUITABLE FOR FILL OR REUSE SHALL BE REMOVED TO AN APPROVED DISPOSAL SITE OR DISPOSED OF ON-SITE IN A MANNER THAT WILL NOT CAUSE EROSION.
11. ANY MATERIAL STOCKPILED ON-SITE SHALL BE COVERED WITH PLASTIC, ESPECIALLY DURING THE WINTER MONTHS OF DURING PERIODS OF RAIN.
12. IT IS THE DEVELOPER'S RESPONSIBILITY TO SEE THAT ADDITIONAL MEASURES, NECESSARY TO CONTROL SITE EROSION AND PREVENT SEDIMENT TRANSPORT OFF-SITE ARE IMPLEMENTED.
13. 48 HOUR NOTICE SHALL BE GIVEN TO ENVIRONMENTAL PLANNING AT 454-3168 PRIOR TO COMMENCING WORK, AND UPON COMPLETION OF GRADING AND EROSION CONTROL. FAILURE TO COMPLY WILL RESULT IN ISSUANCE OF A STOP WORK ORDER.

WINTER GRADING OPERATIONS (ORD. 16.22.090)

A. NO LAND CLEARING OPERATIONS GREATER THAN ONE ACRE PER YEAR PER SITE OR GRADING OPERATIONS GREATER THAN 100 CUBIC YARDS MAY TAKE PLACE BETWEEN OCTOBER 15 AND APRIL 15, UNLESS AUTHORIZED BY THE PLANNING DIRECTOR AND FOUND TO BE CONSISTENT WITH THE PURPOSES OF THIS CHAPTER. WHEN CONSTRUCTION WILL BE DELAYED DUE TO THE LIMITATION ON WINTER OPERATIONS, THE DATE FOR EXPIRATION OF THE PERMIT SHALL BE EXTENDED BY THAT AMOUNT OF TIME THAT WORK IS DELAYED BY THIS CHAPTER.

B. WHEN WINTER OPERATIONS ARE PERMITTED, THE FOLLOWING MEASURES SHALL BE TAKEN TO PREVENT ACCELERATED EROSION. ADDITIONAL MEASURES MAY BE REQUIRED:

1. BETWEEN OCTOBER 15 AND APRIL 15, DISTURBED SURFACES NOT INVOLVED IN THE IMMEDIATE OPERATIONS SHALL BE PROTECTED BY MULCHING AND/OR OTHER EFFECTIVE MEANS OF SOIL PROTECTION AS REQUIRED BY THE PLANNING DIRECTOR.
2. ALL ROADS AND DRIVEWAYS SHALL HAVE DRAINAGE FACILITIES SUFFICIENT TO PREVENT EROSION ON OR ADJACENT TO THE ROADWAY OR ON DOWNHILL PROPERTIES. EROSION-PROOF SURFACING MAY BE REQUIRED BY THE PLANNING DIRECTOR IN AREAS OF HIGH EROSION HAZARD.
3. RUNOFF FROM A SITE SHALL BE DETAINED OR FILTERED BY BERMS, VEGETATED FILTER STRIPS, AND/OR CATCH BASINS TO PREVENT THE ESCAPE OF SEDIMENT FROM THE SITE. THESE DRAINAGE CONTROLS SHALL BE MAINTAINED BY THE PERMITTEE AND/OR PROPERTY OWNER AS NECESSARY TO ACHIEVE THEIR PURPOSE THROUGHOUT THE LIFE OF THE PROJECT.
4. EROSION CONTROL MEASURES SHALL BE IN PLACE AT THE END OF EACH DAY'S WORK.
5. THE PLANNING DIRECTOR SHALL STOP OPERATIONS DURING PERIODS OF INCLEMENT WEATHER IF HE DETERMINES THAT EROSION PROBLEMS ARE NOT BEING CONTROLLED ADEQUATELY. (ORD. 3982, 6/2/80: 3337, 11/23/82)

DISCLAIMER

THE DATA SET FORTH ON THIS SHEET IS THE PROPERTY OF BOWMAN & WILLIAMS CONSULTING CIVIL ENGINEERS. IT IS AN INSTRUMENT OF SERVICE AND MAY NOT BE REPRODUCED, ALTERED, OR USED WITHOUT THE CONSENT OF THE ENGINEER. THE PROPER ELECTRONIC TRANSFER OF DATA SHALL BE THE USER'S RESPONSIBILITY WITHOUT LIABILITY TO THE ENGINEER. UNAUTHORIZED USE IS PROHIBITED.

REGISTERED PROFESSIONAL ENGINEER JOEL FRANCIS VEGA No. 53588 Exp. 6-30-11 CIVIL STATE OF CALIFORNIA

APRIL 27, 2010 REV. DESIGN PER COUNTY COMMENTS

⚠ APRIL 6, 2010 REVISED PER BIOTIC COMMENTS.

APN 103-121-70, 34, & 37

REVISED
APRIL 1, 2010 REV. DESIGN PER GEOTECH. ENGR. COMMENTS
FEBRUARY 6, 2009 REV. PER COUNTY COMMENTS
SEPTEMBER 11, 2008 REV. PER COUNTY COMMENTS

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 429-3580
REGISTERED CIVIL ENGINEER NO. 53588

EROSION CONTROL PLAN

PREPARED FOR PETE PEARSON
101 BENEDICT AVE
SITUATE IN
SANTA CRUZ, CALIFORNIA

SCALE AS SHOWN	DRAWN TPC	JOB NO. 23870-1	SHEET
DATE JANUARY 29, 2008	CHECKED JFR	INDEX SEC.4 T11S R1 W	C4.0
DESIGN TPC/JFR	DWG NAME 23870-01	FILE NO. 23870	OF 9

EXHIBIT A

Riparian Exception Findings

1. That there are special circumstances or conditions affecting the property:

The project site drains a small portion of the third emergent marine terrace that lies between Rodeo Gulch Creek and Arana Gulch in Santa Cruz County. The stream is ephemeral and flows toward the south-southwest. The ravine is between 20-30 feet deep near its head at Benedict Avenue, deepening progressively on the downstream end. The side slopes are steep, ranging from vertical, in the scarps formed by the recent slope failures, to about 70-80 percent in the area of the proposed project. The County of Santa Cruz Planning Department previously authorized the cutting of approximately 93 eucalyptus trees within the project area that had either fallen or were in danger of falling due to the severe bank erosion problem. As a result, slopes in the ravine are currently devoid of most vegetation. However, the eucalyptus stumps that remain have since sprouted and are providing some slope protection.

A fill prism was placed on the southeast side of the ravine in the 1960s. It appears that the entire fill has incrementally failed and slid into the ravine over the past 35 plus years, as the materials exposed in the scarps are native soils and sediments. The erosion and formation of small landslides on the slopes behind the homes along Cabrillo Avenue has been exacerbated by the disposal of residential surface and roof drainage (along with yard cuttings, soils and some junk) into the ravine on the project site.

The project site would be cleared and grubbed of all vegetation (e.g., eucalyptus trees), be graded and filled to provide 2:1 slopes, and revegetated with native riparian species to reduce the potential for erosion within the gully. Riparian habitat values would be greatly improved following project implementation.

2. That the exception is necessary for the proper design and function of some permitted or existing activity on the property:

The project area currently functions as a drainage for the surrounding developed areas. The proposed project would not alter the use of the project site. The Riparian Exception is necessary to protect the riparian corridor from erosion that is continuing to threaten the adjacent properties. The drainage and revegetation efforts proposed would promote improved water quality and habitat value.

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:

The project is necessary to protect property along the channel from slope failure and would also help to improve water quality both onsite and in downstream areas. Although the project is not required to detain storm water onsite, it would detain some storm water onsite. Even the minimal amount of detention on site would benefit downstream properties.

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 proposed project is located outside of the Coastal Zone.

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 improvements proposed by the project include removing exotic vegetation (i.e., eucalyptus trees), grading and re-contouring the slopes to achieve a 2:1 slope ratio, construction of drainage improvements to include gabion weir structures, and an extensive revegetation effort to reduce the potential for erosion (see Table 1), thereby increasing the protection of the riparian area from the status quo. The Riparian Exception would be consistent with the General Plan.

Grading Findings

Section 16.20.080 (c) of the County Code states that an application for a grading, dredging or diking approval shall be denied if the Planning Director or Planning Commission makes any of the following findings:

(i) That the design of the proposed site is not consistent with the applicable general and specific plans adopted pursuant to Chapters 13.01 and 13.03 of the Santa Cruz County Code.

The project is consistent with Chapter 13.01. The project proposes to restore a riparian area by stabilizing slopes and controlling drainage, and the project does not propose any new structures. The project also maintains the character of the parcel. Therefore the project is not in conflict with the Development Standards for "RA" Zone District as listed in Section 13.10.321 of the County Code as well as the General Plan Designations of R-S.

Also, the site is not located within the Coastal Zone and therefore Chapter 13.03 does not apply.

(ii) That the proposed grading plan for the development contemplated does not comply with the requirements of the Santa Cruz County Code.

The grading plans meet the requirements of the County Grading Ordinance (Chapter 16.20) and the Erosion Control Ordinance (Chapter 16.22). The fills slopes will have slopes of 2:1 or flatter and the project has been designed by a civil engineer with the input from a geotechnical engineer.

(iii) If the project is for the creation of a building site, that adequate sewage facilities and water supplies cannot be provided.

The grading associated with this project is not for the creation of a building site.

(iv) If the project as proposed will cause excessive and unnecessary disturbance of the site particularly as defined in Section 16.10.050.

The project disturbance limits only incorporate that needed to stabilize the slope behind the homes on Cabrillo Avenue and the slope along Benedict Avenue. The grading design incorporates the steepest slopes allowed by County Code. Moreover, Section 16.10.050 requires projects to be constructed in areas where there is not a geologic hazard and also in compliance with recommendations of an engineering geology report as well as a geotechnical report if those reports have been required by the Planning Department. A geotechnical report has been prepared for this project with input from an engineering geologist. The primary geotechnical issues on the site are slope instability and erosion – both of which will be addressed through the proposed project. The report did not identify a hazard such as a fault, floodplain or an area of liquefaction. The design of the project has included other recommendations of the soils report.

Conditions of Approval

Exhibit A: Sheets C1.0, C1.1, C3.1, C3.2 by Bowman & Williams dated May 3, 2010
Sheets C1.2, C2.0, C2.1. C3.0, C4.0 by Bowman & Williams dated April 27, 2010

I. This permit authorizes the re-contouring, installation of drainage improvements, and revegetation of approximately 600 feet of an unnamed ephemeral drainage. This approval does not confer legal status on any existing structure(s) or existing use(s) on the subject property that are not specifically authorized by this permit. 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.

1. Any outstanding balance due to the Planning Department must be paid prior to making a Grading Permit application. Applications for Grading Permits will not be accepted or processed while there is an outstanding balance due.

C. Submit proof that these conditions have been recorded in the official records of the County of Santa Cruz (Office of the County Recorder) within 30 days from the effective date of this permit.

II. Prior to issuance of a Grading Permit the applicant/owner shall:

A. Submit final grading, drainage and erosion control 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. Any changes from the approved Exhibit "A" for this development permit on the plans submitted for the Grading Permit must be clearly called out and labeled by standard architectural methods to indicate such changes. Any changes that are not properly called out and labeled will not be authorized by any Grading Permit that is issued for the proposed development. The final plans shall include the following additional information:

1. Grading and drainage plans.

2. An erosion control plan that shows locations and details of erosion, sediment and temporary drainage measures to be installed during construction from October 15th through April 15th. The erosion control plan shall be a phased plan that indicates how measures will be installed and changed as the project changes. The plan shall also indicate how erosion and sediment will be controlled in the event that the grading is not

EXHIBIT C

completed prior to October 15th.

3. Detail(s) on how runoff from the proposed v-ditch along lots 103 through 107 will tie into the existing 12 inch downdrain.

4. Provide detail(s) on how the proposed 30 inch outlet pipes from control structure A and B will make the 90 degree bends as shown on the plans.

5. A note stating that after initial clearing of vegetation, an archaeological spot check shall be conducted to determine if any archaeological resources exist in the construction area.

6. A note stating that during construction a 12 foot wide access shall be maintained to allow for ingress and egress of emergency vehicles and residents on Benedict Avenue.

B. Submit two copies of the approved Discretionary Permit with the Conditions of Approval attached. The Conditions of Approval shall be recorded prior to submittal, if applicable.

C. Meet all requirements of and pay Zone 5 drainage fees to the County Department of Public Works, Stormwater Management. Drainage fees will be assessed on the net increase in impervious area.

D. Submit 3 copies of a soils report prepared and stamped by a licensed Geotechnical Engineer.

E. Submit a final revegetation and monitoring plan for the new stabilized slopes and drainage channel, that includes the following features:

- A wooded corridor along the new channel using native plant species within this planting zone. Due to the ephemeral nature of the drainage willow plantings proposed within the area would be experimental.

- Vegetation on the new stabilized slopes outside the riparian corridor with a mosaic of native trees and shrubs to create a riparian buffer area.

- The revegetation and monitoring plan would be subject to review by CDFG prior to commencement of construction activities as part of their issuance of a 1602 Streambed Alteration Agreement.

- Use of locally native planting stock to maximize survival.

- Temporary irrigation for installed plantings and periodic maintenance such that container stock plantings of upland trees and shrubs achieve a minimum 80% survival rate after 5 years. Due to the ephemeral nature of the drainage, willow cuttings and in-stream wetland plantings (i.e., spreading rush) within

the new drainage would be experimental and not subject to plant survival requirements.

F. Record a maintenance agreement that identifies the party(ies) responsible for maintenance as well as detailed maintenance requirements. Provide 2 copies of the recorded maintenance agreement to the Planning Department.

G. Provide a final Stormwater Management Report that is signed and stamped by the engineer.

H. Insert a copy of these Conditions of Approval into the project plans.

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

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

B. All inspections required by the building permit shall be completed to the satisfaction of the County Building Official.

C. The project must comply with all recommendations of the approved soils reports.

D. 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. In order to ensure that the mitigation measures VI A-F below, are communicated to the various parties responsible for constructing the project, prior to any disturbance on the property the applicant shall convene a pre-construction meeting on the site. The following parties shall attend: the project applicant, the grading contractor supervisor, Santa Cruz County Environmental Planning staff, the project biologist, the project civil engineer and the project soils engineer.

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 approved 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.

VI. Mitigation Monitoring Program

The mitigation measures listed under this heading have been incorporated into the Conditions of Approval for this project in order to mitigate or avoid significant effects on the environment. As required by Section 21081.6 of the California Public Resources Code, a monitoring and reporting program for the mitigations is hereby adopted as a condition of approval for this project. This monitoring program is specifically described following each mitigation measure listed below. The purpose of this monitoring is to ensure compliance with the environmental mitigations during project implementation and operation. Failure to comply with the conditions of approval, including the terms of the adopted monitoring

program, may result in permit revocation pursuant to Section 18.10.462 of the Santa Cruz County Code.

A. Mitigation Measure: Biological Resources

Monitoring Program BIO-1: The project applicant shall secure all necessary regulatory agency permits (ACOE, CDFG, and RWQCB) prior to construction. Prepare and implement a final revegetation and monitoring plan for the new stabilized slopes and drainage channel, that includes the following features:

- Create a wooded corridor along the new channel. Utilize native plant species within this planting zone. Due to the ephemeral nature of the drainage willow plantings within the area will be experimental.
- Vegetate the new stabilized slopes outside the riparian corridor with a mosaic of native trees and shrubs to create a riparian buffer area.
- The final revegetation and monitoring plan shall be subject to review by County Planning and CDFG prior to commencement of construction activities as part of their issuance of a 1602 Streambed Alteration Agreement.
- Utilize locally native planting stock to maximize survival.
- Provide temporary irrigation to installed plantings and periodic maintenance such that container stock plantings of upland trees and shrubs achieve a minimum 80% survival rate after 5 years (please see the Revegetation and Monitoring Plan). Due to the ephemeral nature of the drainage, willow cuttings and in-stream wetland plantings (i.e., spreading rush) within the new drainage will be experimental and not subject to plant survival requirements.

Monitoring Program BIO-2: The project applicant shall implement riparian corridor protection measures to minimize impacts to downstream waters and resources located adjacent to the work area, including:

- Install plastic mesh fencing at the perimeter of the work area that abuts downstream waters and riparian corridor to prevent impacts to the adjacent riparian corridor and injury to nearby native trees (if present). Protective fencing shall be in place prior to ground disturbances and removed once all construction is complete. During construction, no grading, construction or other work shall occur outside the designated limits of work.
- No excess soil, chemicals, debris, equipment or other materials shall be dumped or stored outside the designated limits of work.

Monitoring Program BIO-3: If possible, schedule construction to occur between August 1 and December 31 of any given year to avoid nesting birds. If this is not practical, then the project applicant shall hire a qualified biologist to conduct preconstruction surveys for nesting birds. The surveys shall be conducted no more than 30 days prior to construction. If nesting birds are observed within or adjacent to

the project area, the following protective measures shall be implemented:

- A buffer zone with highly visible tape or fencing shall be established around the active bird nest and no construction shall take place within the buffer zone until the biologist confirms that all young have fledged the nest.
- For raptors, the buffer zone shall be approximately 250 feet, and adjusted according to the topography and visual sight line that may affect the nesting birds.
- For other resident and migrant bird species, the buffer zone shall be at least 50 feet around the nest. The biologist shall monitor the nest, and advise the applicant when all young have fledged the nest. The biologist shall prepare a report of nest survey results, nest monitoring (if any), and the dates when the nesting was completed, a report suitable for the applicant to submit to County Planning Department and CDFG.

B. Mitigation Measure: Cultural Resources

Monitoring Program CUL-1: An archaeological spot check shall be conducted following the clearing of vegetation, which will improve soil visibility. In addition, pursuant to Section 16.40.040 of the Santa Cruz County Code, if archeological resources are uncovered during construction, the responsible persons shall immediately cease and desist from all further site excavation and comply with the notification procedures given in County Code Chapter 16.40.040.

C. Mitigation Measure: Noise

Monitoring Program NOI-1: In order to minimize impacts associated with short-term construction noise, the County Planning Department shall ensure that the following noise control measures are incorporated into the final construction design plans for the proposed project:

1. Construction that involves motorized equipment shall be limited to Monday through Friday from 7:30 AM to 4:30 PM to avoid the times of day and the days of the week when noise effects would cause the greatest annoyance to residents.
2. Exceptions to the specified construction hours will be allowed only for construction emergencies and approved by County Planning; and
3. Signs will be posted that are clearly visible to users on Benedict Road and Cabrillo Avenue that provide the phone number for the public to call to register complaints about construction-related noise problems. A single "disturbance coordinator" shall be assigned to log in and respond to all calls. All verified problems shall be resolved within 24 hours of registering the complaint.

D. Mitigation Measure Traffic

Monitoring Program TRA-1: During partial closure, a 12-foot wide access shall be maintained to allow for the ingress and egress of emergency vehicles and residents down Benedict Avenue.

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 three years from the effective date listed below unless a grading permit (or permits) is obtained for the work described in the development permit (does not include demolition, temporary power pole or other site preparation permits, or accessory structures unless these are the primary subject of the development permit). Failure to exercise the grading permit and to complete all of the construction under the grading permit, resulting in the expiration of the grading permit, will void the development permit, unless there are special circumstances as determined by the Planning Director.

Approval Date: _____

Effective Date: _____

Expiration Date: _____

Claudia Slater	Kent Edler
Principal Planner	Senior Civil Engineer

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

Exhibit D

Mitigated Negative Declaration
(CEQA Determination)

County of Santa Cruz

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123
KATHLEEN MOLLOY PREVISICH, PLANNING DIRECTOR

NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION

May 21, 2010

NOTICE IS HEREBY GIVEN that the County of Santa Cruz is proposing to adopt a Mitigated Negative Declaration in accordance with the California Environmental Quality Act for the following project. The proposed Mitigated Negative Declaration can be reviewed on the Internet at http://www.sccoplanning.com, and at the County of Santa Cruz Planning Department Records Room, 701 Ocean Street, 4th Floor, Santa Cruz, California 95060. Comments on the proposed Mitigated Negative Declaration must be sent to Todd Sexauer at the address listed above, and should reference Application No. 08-0106.

Owner/Applicant: Pete and Haruyo Pearson **Application No.:** 08-0106

Zone District: Residential Agriculture and Public Facility **Staff Planner:** Todd Sexauer

The project site is located in an unnamed ephemeral drainage located approximately 125 feet southwest of the intersection of Benedict Avenue and Cabrillo Avenue between Benedict Avenue and Cabrillo Avenue in the unincorporated community of Live Oak in Santa Cruz County.

The project proposes to re-contour, install drainage improvements, and revegetate approximately 600 feet of an unnamed ephemeral drainage that drains a large portion of the Santa Cruz Gardens subdivision. The project is designed to repair severe bed and bank erosion, prevent future erosion, provide detention, and establish native riparian vegetation along the impacted drainage corridor. Several gabion drop structures and a drainage system would be constructed within the drainage corridor to allow for backfilling, re-contouring, and storm water detention that would enable the establishment of native riparian vegetation along the currently eroded ravine. Two gabion energy dissipaters would also be constructed at the downstream end of the project area to reduce the velocity of storm water flows in an effort to eliminate downstream erosion.

Written comments on the proposed Mitigated Negative Declaration must be received no later than **June 21, 2010** at 5:00 p.m. (a 30-day public review period). For additional information, please contact Matt Johnston, Environmental Coordinator at (831) 454-3201 or by e-mail at pln458@co-santa-cruz.ca.us.

The project will be considered at a public hearing by the Planning Commission. The time, date and location have not been set. When scheduling does occur, these items will be included in all public hearing notices for the project.

COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123
KATHLEEN MOLLOY PREVISICH, PLANNING DIRECTOR

NOTICE OF ENVIRONMENTAL REVIEW PERIOD

SANTA CRUZ COUNTY

APPLICANT: **Pete and Haruyo Pearson**

APPLICATION NO.: **08-0106**

PARCEL NUMBER (APN): **102-121-33, -34, -37, and -70**

The Environmental Coordinator has reviewed the Initial Study for your application and made the following preliminary determination:

XX Negative Declaration
(Your project will not have a significant impact on the environment.)

XX Mitigations will be attached to the Negative Declaration.

_____ No mitigations will be attached.

_____ Environmental Impact Report
(Your project may have a significant effect on the environment. An EIR must be prepared to address the potential impacts.)

As part of the environmental review process required by the California Environmental Quality Act (CEQA), this is your opportunity to respond to the preliminary determination before it is finalized. Please contact Matt Johnston, Environmental Coordinator at (831) 454-3201, if you wish to comment on the preliminary determination. Written comments will be received until 5:00 p.m. on the last day of the review period.

Review Period Ends: **June 25, 2010**

Todd Sexauer, staff planner

Phone: **(831) 454-3511**

Date: **May 24, 2010**

County of Santa Cruz

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123
KATHLEEN MOLLOY PREVISICH, PLANNING DIRECTOR
www.sccoplanning.com

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) ENVIRONMENTAL REVIEW INITIAL STUDY

Date: May 17, 2010 **Application Number:** 08-0106

Staff Planner: Todd Sexauer

I. OVERVIEW AND ENVIRONMENTAL DETERMINATION

APPLICANT: Pete and Haruyo Pearson **APN(s):** 102-121-33, 34, 37, and 70

OWNER: Pete and Haruyo Pearson **SUPERVISORAL DISTRICT:** 1

PROJECT LOCATION:

The project site is located in an unnamed ephemeral drainage located approximately 125 feet southwest of the intersection of Benedict Avenue and Cabrillo Avenue between Benedict Avenue and Cabrillo Avenue in the unincorporated community of Live Oak in Santa Cruz County.

SUMMARY PROJECT DESCRIPTION:

The project proposes to re-contour, install drainage improvements, and revegetate approximately 600 feet of an unnamed ephemeral drainage that drains a large portion of the Santa Cruz Gardens subdivision. The project is designed to repair severe bed and bank erosion, prevent future erosion, provide some detention, and establish native riparian vegetation along the impacted drainage corridor. Several gabion drop structures would be constructed within the drainage corridor to allow for backfilling, re-contouring, and storm water detention that would enable the establishment of native riparian vegetation along the currently eroded drainage. A gabion energy dissipater would also be constructed at the downstream end of the project area to reduce the velocity of storm water flows in an effort to eliminate downstream erosion.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED: All of the following potential environmental impacts are evaluated in this Initial Study. Categories that are marked have been analyzed in greater detail based on project specific information.

- ☒ Geology/Soils
- ☒ Hydrology/Water Supply/Water Quality
- ☒ Biological Resources
- ☐ Agriculture and Forestry Resources
- ☐ Mineral Resources
- ☒ Noise
- ☒ Air Quality
- ☐ Greenhouse Gas Emissions
- ☐ Public Services
- ☐ Recreation

- ☐ Visual Resources & Aesthetics
- ☒ Cultural Resources
- ☐ Hazards & Hazardous Materials
- ☒ Transportation/Traffic
- ☒ Utilities & Service Systems
- ☐ Land Use and Planning
- ☐ Population and Housing
- ☐ Mandatory Findings of Significance

DISCRETIONARY APPROVAL(S) BEING CONSIDERED:

- ☐ General Plan Amendment
- ☐ Land Division
- ☐ Rezoning
- ☐ Development Permit
- ☐ Coastal Development Permit
- ☒ Grading Permit
- ☒ Riparian Exception
- ☐ Other:

NON-LOCAL APPROVALS

Other agencies that must issue permits or authorizations:

1. California Department of Fish and Game – Section 1602 Streambed Alteration Agreement
2. U.S. Army Corps of Engineers – Section 404 Clean Water Act Permit
3. Regional Water Quality Control Board, Section 401 Water Quality Certification
4. State Water Resources Control Board – National Pollution Discharge Elimination System Permit.

DETERMINATION: (To be completed by the lead agency)
On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed

adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Matthew Johnston
Deputy Environmental Coordinator

Date

For Claudia Slater
Environmental Coordinator

II. BACKGROUND INFORMATION

EXISTING SITE CONDITIONS

Parcel Size: *102-121-33 (7.08 acres); 102-121-34 (0.161 acre); 102-121-37 (0.614 acre); 102-121-70 (2.891 acres)*
Existing Land Use: *102-121-33 (Elementary School); 102-121-34, 37 (Vacant); 102-121-70 (Single-family Residence)*
Vegetation: *Eucalyptus stumps and ruderal vegetation*
Slope in area affected by project: ☐ 0 - 30% ☒ 31 – 100%
Nearby Watercourse: *Arana Gulch*
Distance To: *≈ 4,500 feet*

ENVIRONMENTAL RESOURCES AND CONSTRAINTS

Water Supply Watershed: *None Mapped*
Groundwater Recharge: *None Mapped*
Timber or Mineral: *None Mapped*
Agricultural Resource: *None Mapped*
Biologically Sensitive Habitat: *No*
Fire Hazard: *None Mapped*
Floodplain: *None Mapped*
Erosion: *High Erosion Potential*
Landslide: *None Mapped*
Liquefaction: *Negligible Potential*
Fault Zone: *None Mapped*
Scenic Corridor: *None Mapped*
Historic: *None Mapped*
Archaeology: *None Mapped*
Noise Constraint: *None Mapped*
Electric Power Lines: *Yes*
Solar Access: *Not Applicable*
Solar Orientation: *Not Applicable*
Hazardous Materials: *None*
Other:

SERVICES

Fire Protection: *Central FPD*
School District: *Soquel Union Elementary & Santa Cruz High School District*
Sewage Disposal: *Not Applicable*
Drainage District: *Zone 5*
Project Access: *Benedict Avenue*
Water Supply: *Not Applicable*

PLANNING POLICIES

Zone District: *Residential Agriculture and Public Facility*
Special Designation: *None*
General Plan: *Suburban Residential*
Urban Services Line: ☐ Inside ☒ Outside
Coastal Zone: ☐ Inside ☒ Outside

ENVIRONMENTAL SETTING AND SURROUNDING LAND USES:

The project site is located in an unnamed ephemeral drainage located approximately 125 feet southwest of the intersection of Benedict Avenue and Cabrillo Avenue between Benedict Avenue and Cabrillo Avenue in the unincorporated community of Live Oak in Santa Cruz County (Figure 1).

The project site is bounded by single-family residential uses to the south and southeast, an elementary school to the north and northwest, and riparian open space to the west that is dominated by eucalyptus groves.

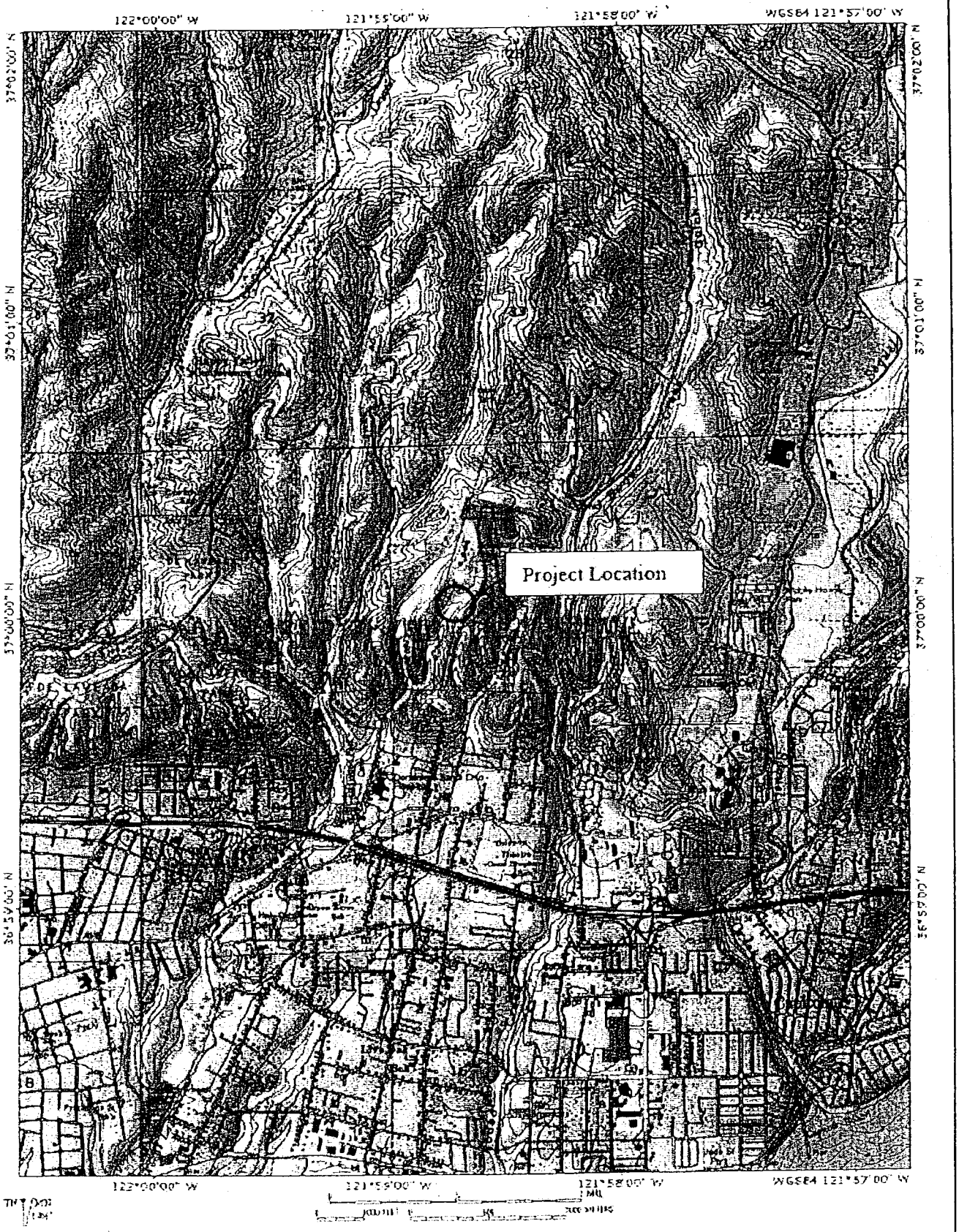


Figure 1. Location of Project Site on USGS Topographic Map

The project site drains a small portion of the third emergent marine terrace that lies between Rodeo Gulch Creek and Arana Gulch in Santa Cruz County. The stream is ephemeral and flows toward the south-southwest. The ravine is between 20-30 feet deep near its head at Benedict Avenue, deepening progressively on the downstream end. The side slopes are steep, ranging from vertical, in the scarps formed by the recent slope failures, to about 70-80 percent in the area of the proposed project. The County of Santa Cruz Planning Department previously authorized the cutting of approximately 93 eucalyptus trees within the project area that had either fallen or were in danger of falling due to the severe bank erosion problem. As a result, slopes in the ravine are currently devoid of most vegetation. However, the eucalyptus stumps that remain have since sprouted and are providing some slope protection.

The County of Santa Cruz Planning Department issued a Riparian Exception to remove up to 93 hazardous eucalyptus trees on October 10, 2008. The Riparian Exception specified that the stumps and leaf litter were to be left in place to prevent erosion until a permanent revegetation and erosion control plan is approved as part of the current proposal. The removal of the 93 hazardous trees qualified for a Statutory Exemption under CEQA for Emergency Projects (Section 15269(c)). Several mature eucalyptus trees had fallen and others were threatening the adjacent homes; therefore, it was determined to be an emergency occurrence involving a clear and imminent danger demanding immediate attention.

An extensive fill prism is present on the west side of the ravine. The outboard portion of that fill prism adjacent to Benedict Avenue is clearly non-engineered fill. Several small debris slide scars are present on the face of the fill slope. The slide deposits are distributed across the slopes below the scars and in the bottom of the ravine. In December 2005, the head scarp of a recent landslide exposed a thick section of old poorly consolidated, non-engineered fill, portions of which are at least 15 feet thick.

A fill prism was placed on the southeast side of the ravine in the 1960s. It appears that the entire fill has incrementally failed and slid into the ravine over the past 35 plus years, as the materials exposed in the scarps are native soils and sediments. The erosion and formation of small landslides on the slopes behind the homes along Cabrillo Avenue has been exacerbated by the disposal residential surface and roof drainage (along with yard cuttings, soils and some junk) into the ravine on the project site.

PROJECT BACKGROUND:

The majority of the drainage from the Santa Cruz Gardens subdivision drains to the head of a ravine on the subject property via a 24-inch culvert. The street and roof drainage for approximately 40 homes in the Santa Cruz Gardens subdivision and most of the drainage from the Santa Cruz Gardens Elementary School is conducted into the ravine. Prior to construction of the subdivision, it is estimated that the tributary drainage area that flowed into the ravine was approximately five acres. The construction of the subdivision altered the tributary drainage area to approximately 17 acres. This three-fold increase in drainage area has resulted in an increase in the average discharge as well as an increase in the peak runoff, thus causing accelerated erosion in the ravine. This erosion has caused the failure of slopes behind several residences along Cabrillo

Avenue as well as causing many large eucalyptus trees, that have since been removed, to fall over.

The drainage and erosion problems were the subject of a lawsuit involving the applicant, several property owners in the Santa Cruz Gardens subdivision, and the County of Santa Cruz. The purpose of the project proposed is to rectify drainage and accelerated erosion on the subject properties. The project would also provide for storm water detention and for slope stabilization behind the residences along Cabrillo Avenue.

DETAILED PROJECT DESCRIPTION:

The project proposes to re-contour, install drainage improvements, and revegetate approximately 600 feet of an unnamed ephemeral drainage that drains a large portion of the Santa Cruz Gardens subdivision (Figure 2). The project is designed to repair severe bed and bank erosion by re-contouring the banks and installing gabion weirs and overflow drainage pipes to detain storm water, prevent future erosion, and establish native riparian vegetation along the impacted bed and banks. The County of Santa Cruz Planning Department previously authorized the cutting of approximately 93 eucalyptus trees within the project area that were in danger of falling due to the severe bank erosion problem.

Under this proposal, five gabion check dams and two gabion apron energy dissipaters would be constructed within the drainage corridor to allow for backfilling, re-contouring and storm water detention that would enable the establishment of native riparian vegetation along the currently eroded drainage channel. The gabion energy dissipaters would also be constructed to eliminate downstream erosion. The proposed drainage system has been designed to only allow 10-year storm event runoff along the surface of the drainage. The flow velocity along the surface drainage would be reduced from 9.2 feet per second (ft/sec) in the swale (pre-improvement) to 3.5 ft/sec at the check dams (post-improvement). In the event that a greater storm event occurs, a control structure with a regulating weir would route excess runoff through a 24-inch diameter High-Density Polyethylene (HDPE) underground pipe to the downstream energy dissipater (See Attachment 4).

The two gabion riprap apron energy dissipaters with gabion check dams would be constructed approximately 100 feet apart to dissipate runoff at the outlet. The first energy dissipater would handle up to a 10-year storm event. Excess runoff over a 10-year would be routed down to the second energy dissipater. The second gabion apron energy dissipater would be sized to handle both high and low flow events and to further reduce the peak flow velocity from 21.9 ft/sec to 3.9 ft/sec for a 100-year storm event at the outfall (See Attachment 4).

A draft revegetation and monitoring plan is also being proposed (see Attachment 6) to ensure that project site is revegetated with appropriate native species that would ultimately provide slope stability, improved water quality, improved wildlife habitat, and improved aesthetic values. Table 1 below provides a complete plant palette that identifies species proposed for use in the revegetation effort, and Figure 3 provides the conceptual planting plan.

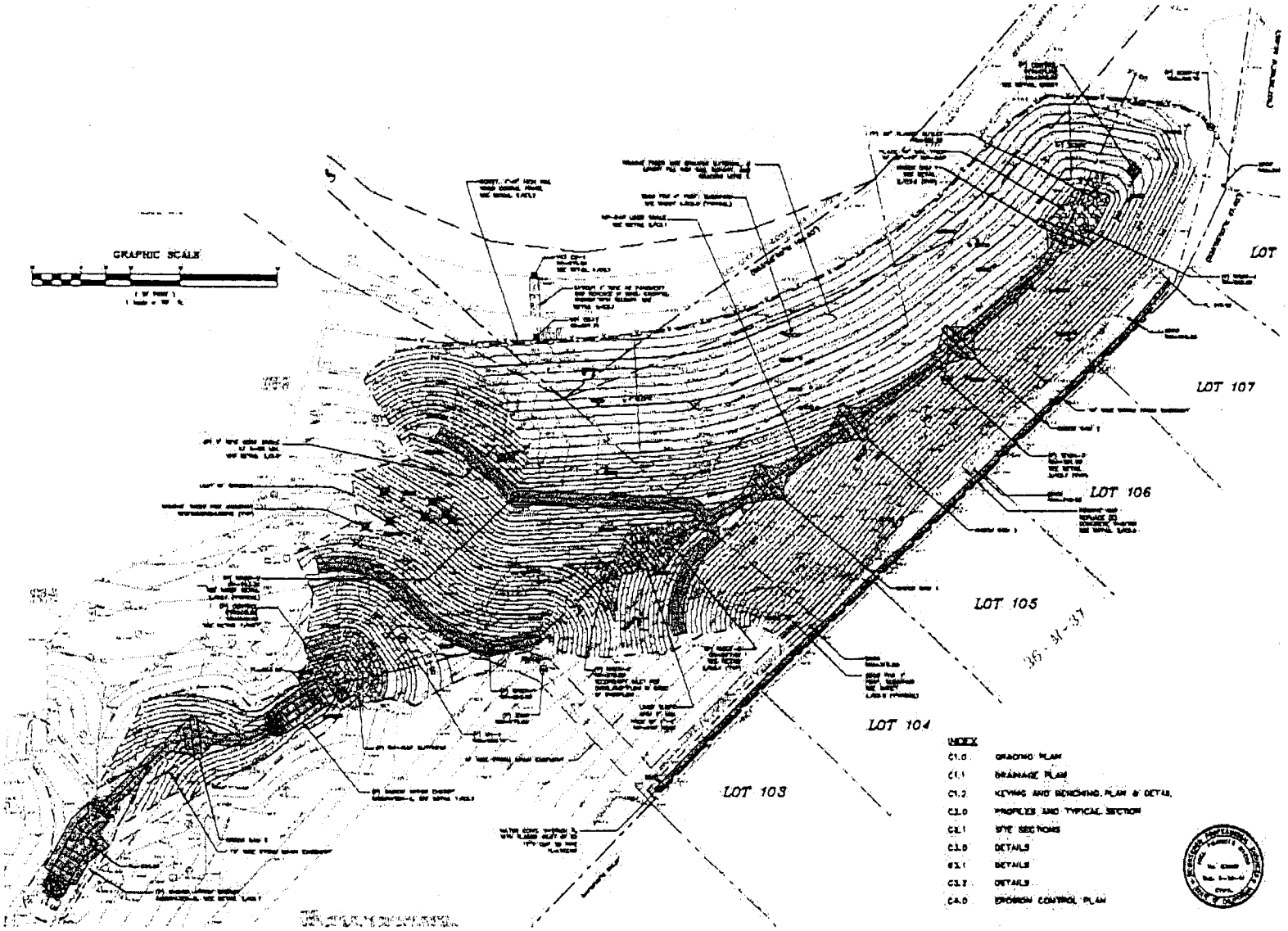
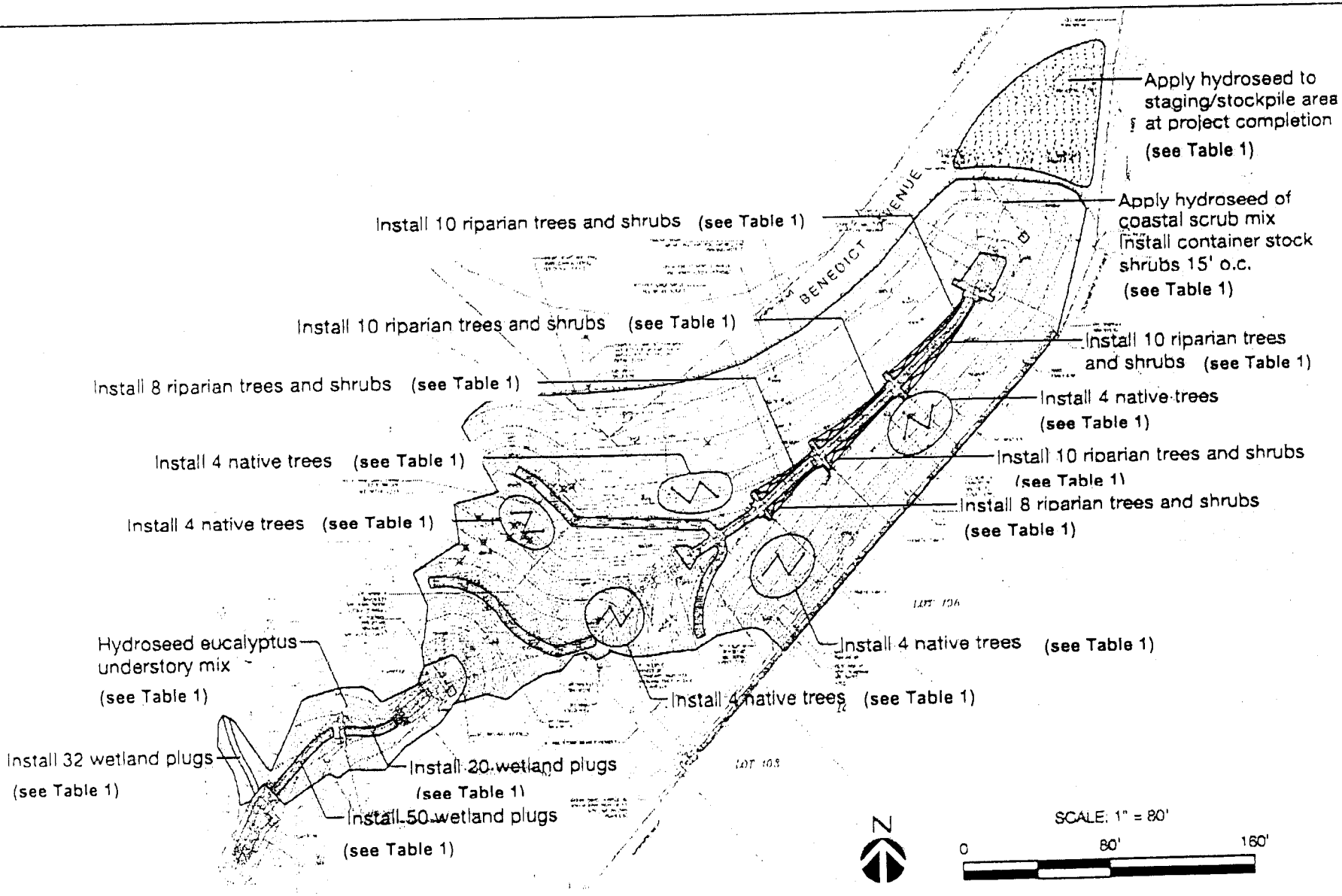


Figure 2. Grading Plan (Bowman & Williams, May 2010)

Table 1 – Revegetation Plant Palette

Common Name	Scientific Name	Spacing	Size	Approx. Amount
RIPARIAN WOODLAND				
Red Willow	*Salix laevigata*	12'	Pole cutting	18
Coast Live Oak	*Quercus agrifolia*	12'	Tree pot	10
Pacific Madrone	*Arbutus menziesii*	12'	Tree pot	10
Coyote Brush	*Baccharis pilularis*	6'	1 gallon	18
Total				**56**
COASTAL SCRUB – HYDROSEED (APPROX 0.75 ACRE)				
California Sagebrush	*Artemisia californica*	-	Seed	2 lbs/acre PLS
Coyote Brush	*Baccharis pilularis*	-	Seed	2 lbs/acre PLS
Sticky Monkey Flower	*Mimulus aurantiacus*	-	Seed	2 lbs/acre PLS
Mugwort	*Artemisia douglasiana*	-	Seed	2 lbs/acre PLS
California Figwort	*Scrophularia californica*	-	Seed	1 lbs/acre PLS
Common Yarrow	*Achillea millefolium*	-	Seed	1 lbs/acre PLS
Deerweed	*Lotus scoparius*	-	Seed	4 lbs/acre PLS
California Poppy	*Eschscholzia californica*	-	Seed	8 lbs/acre PLS
Blue Wild Rye	*Elymus glaucus*	-	Seed	12 lbs/acre PLS
California Brome	*Bromus carinatus*	-	Seed	12 lbs/acre PLS
Biosol Mix 7-2-3	-	-	Fertilizer	Tbd[1]
Turbo Start	-	-	Microbial inoculants	Tbd[1]
COASTAL SCRUB – CONTAINER STOCK				
California Sagebrush	*Artemisia californica*	15'	1 gallon	50
Coyote Brush	*Baccharis pilularis*	15'	1 gallon	59
Black Sage	*Salvia mellifera*	15'	1 gallon	23
California Lilac	*Ceonothus trysiflorus*	15'	1 gallon	15
Total				**147**
NATIVE TREE GROVES (6 GROVES OF 4 TREES EACH)				
California Buckeye	*Aesculus californica*	15'	Tree pot	4
California Wax Myrtle	*Myrica californica*	15'	Tree pot	8
Scrub Oak	*Quercus berberidifolia*	15'	Tree pot	4
Tanbark Oak	*Lithocarpus densiflorus*	15'	Tree pot	4
Total				**20**
IN STREAM WETLAND (EXPERIMENTAL)				
Spreading Rush	*Juncus patens*	1'	Dee pot	102
Total				**102**
EUCALYPTUS UNDERSTORY – HYDROSEED (APPROX. 0.25 ACRE)				
Meadow Barley	*Hordeum brachyantherum*	-	Seed	12 lbs/acre PLS
Creeping Wild Rye "Rio"	*Leymus triticoides*	-	Seed	4 lbs/acre PLS
Red Fescue "molate"	*Festuca rubra*	-	Seed	4 lbs/acre PLS
Biosol Mix 7-2-3	-	-	Fertilizer	Tbd[1]
Turbo Start	-	-	Microbial inoculants	Tbd[1]
STAGING/SOIL STOCKPILE AREA – HYDROSEED (APPROX. 0.25 ACRE)				
Common Yarrow	*Achillea millefolium*	-	Seed	1 lbs/acre PLS
Deerweed	*Lotus scoparius*	-	Seed	4 lbs/acre PLS
California Poppy	*Eschscholzia californica*	-	Seed	8 lbs/acre PLS
Blue Wild Rye	*Elymus glaucus*	-	Seed	12 lbs/acre PLS
California Brome	*Bromus carinatus*	-	Seed	12 lbs/acre PLS
Biosol Mix 7-2-3		-	Fertilizer	Tbd[1]

1 – Amount to be determined after soil testing
Source: Biotic Resources Group, 2010, see Attachment 6.



Biotic Resources Group
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Conceptual Planting Plan

Figure 3

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

III. ENVIRONMENTAL REVIEW CHECKLIST

A. GEOLOGY AND SOILS

Would the project:

1.	Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	A. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
	B. Strong seismic ground shaking?	☐	☐	☒	☐
	C. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
	D. Landslides?	☐	☐	☒	☐

Discussion (A through D): The project site is located outside of the limits of the State Alquist-Priolo Special Studies Zone, and approximately 7.8 miles southwest of the San Andreas Fault zone. The U.S. Geological Survey (2003) indicated that there is a 62 percent chance of at least one magnitude 6.7 or greater earthquake striking the San Francisco Bay region between 2003 and 2032. Therefore, the site will likely be subjected to a moderate to severe earthquake in the future that will cause strong ground shaking. The October 17, 1989 Loma Prieta earthquake (magnitude 7.1) is considered to have been associated with the San Andreas Fault system. That event was the second largest earthquake in central California history. Improvements to this parcel could be subjected to the effects of seismically induced ground shaking during the life of the improvements. There is no indication that landsliding would be a significant hazard at this site following the proposed site improvements. In addition, seismic related ruptures are not anticipated. No significant impacts are anticipated.

2.	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and	☐	☐	☒	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Discussion: Geologic review of historic aerial photographs indicates that the channel downstream of the repair area was eroding prior to construction of the Santa Cruz Gardens subdivision (Attachment 1). The photographs also indicate that there were failures along the sides of the ravine prior to the subdivision. Even without the increased waters, which are now diverted into the ravine system, it would not be possible to prevent all such events in the future. The vast majority of the side slope failures that have been occurring downstream of the project area have been caused by storm water discharge on the upper portions of the slope, and not by toe cutting at the base of the ravine. Therefore, even if no water were permitted to flow down this ravine, side slope failures would continue to occur. The anticipated reduction in flow velocity (and hence channel erosion) projected from the proposed repairs should help to reduce the limited number of small bank failures that have occurred along the downstream reaches of the ravine. Following project implementation, there should be no future failures of the side banks due to erosion, and corrective measures implemented along the crest of the new fills would also limit the potential for slope failures due to crest saturation. The elimination of this past failure mechanism would result in substantially less sediment loads in the ravine, which are then washed further downstream to be deposited in the flatter areas of the watershed, or result in turbidity of the downstream waters. Therefore, the proposed project would not subject people or improvements to damage from soil instability as a result of on- or off-site landslide, lateral spreading, liquefaction or structural collapse. Impacts from project construction would result in less than significant impacts.

3.	Develop land with a slope exceeding 30%?	☐	☐	☒	☐

Discussion: The majority of the project site is located on slopes greater than 30 percent, but there are no structures, roads or other development being proposed by the project with the exception of several gabion drop structures and an energy dissipater. The proposed drop structures are being proposed within the bottom of the ravine to slow down velocities of water during large storm events. They would also detain a small amount of water. As stated above, following project implementation there should be no future failures of the side banks due to erosion, and corrective measures implemented along the crest of the new fills would also limit the potential for slope failures due to crest saturation. The elimination of this past failure mechanism would result in substantially less sediment loads in the ravine, which are then washed further downstream to be deposited in the flatter areas of the watershed, or result in turbidity of the downstream waters. A less than significant impact is anticipated from the encroachment.

4.	Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Discussion: Some potential for erosion exists during the construction phase of the project, however, standard erosion controls are a required condition of the project that would reduce this potential. Prior to approval of a grading permit, the project must have an approved Erosion Control Plan, which will specify detailed erosion and sedimentation control measures as required by Section 16.22.060 of the County of Santa Cruz Code. In addition, the project as designed would reduce the erosion in the drainage by stabilizing the slopes, improving drainage, and establishing native riparian vegetation. The plan would include provisions for disturbed areas to be planted with native vegetation and to be maintained to minimize surface erosion.

5.	Be located on expansive soil, as defined in Section 1802.3.2 of the California Building Code (2007), creating substantial risks to life or property?	☐	☐	☒	☐

Discussion: The geotechnical report for the project did not identify any elevated risk associated with expansive soils (Attachment 2).

6.	Place sewage disposal systems in areas dependent upon soils incapable of adequately supporting the use of septic tanks, leach fields, or alternative waste water disposal systems where sewers are not available?	☐	☐	☐	☒

Discussion: The proposed project would not affect a sewage disposal system. No impact would occur from project implementation.

7.	Result in coastal cliff erosion?	☐	☐	☐	☒

Discussion: The proposed project is not located in the vicinity of a coastal cliff or bluff; and therefore, would not contribute to coastal cliff erosion. Therefore, no impact is anticipated.

B. HYDROLOGY, WATER SUPPLY, AND WATER QUALITY

Would the project:

1.	Place development within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒

Discussion: According to the Federal Emergency Management Agency (FEMA) National Flood Insurance Rate Map, dated March 2, 2006, no portion of the project site lies within a 100-year flood hazard area. Therefore, no impact is anticipated.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
2. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒

Discussion: According to the FEMA National Flood Insurance Rate Map, dated March 2, 2006, no portion of the project site lies within a 100-year flood hazard area. Therefore, no impact is anticipated.

3. Be inundated by a seiche, tsunami, or mudflow?	☐	☐	☐	☒

Discussion: The project site is approximately 2.5 miles inland from the Pacific Ocean and is located approximately 280 feet above sea level. Additionally, the site is not located in a tsunami inundation area on the County of Santa Cruz Tsunami Inundation Areas map. Therefore, no impact is anticipated.

4. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒

Discussion: The project site is not mapped as a primary groundwater recharge area. Although there would be a temporary increase in the amount of water used for soil conditioning during construction, no adverse impact on groundwater supply or recharge would occur. No impact would occur as a result of the proposed project.

5. Substantially degrade a public or private water supply? (Including the contribution of urban contaminants, nutrient enrichments, or other agricultural chemicals or seawater intrusion).	☐	☒	☐	☐

Discussion: The project would not discharge runoff either directly or indirectly into a public or private water supply. No commercial or industrial activities are proposed that would contribute contaminants. Potential siltation from the proposed project would be addressed through implementation of erosion control measures as required by Section 16.22.060 of the County of Santa Cruz Code. In addition, under C-2, the project applicant shall implement riparian corridor protection measures to minimize impacts to downstream waters and resources located adjacent to the work area. Therefore,

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

impacts would be considered less than significant.

6. Degrade septic system functioning? ☐ ☐ ☐ ☒

Discussion: The proposed project would not degrade septic systems that are functioning in the project vicinity. No impact to septic systems would occur as a result of the proposed project.

7. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding, on- or off-site? ☐ ☐ ☒ ☐

Discussion: The proposed project has the potential to result in short-term erosion and siltation during the construction phase of the project. Although a Storm Water Pollution Prevention Plan would not be required because the project area is less than one acre in size, an Erosion Control Plan will be required that is in compliance with Section 16.20.060 (c), "An erosion control plan and erosion prevention measures for all surfaces exposed or expected to be exposed during grading activities, in accordance with the requirements of the Erosion control Ordinance (Chapter 16.22) shall accompany every proposed grading plan." The existing drainage pattern in the project area would be altered by the placement of several gabion drop structures within the stream channel and through re-contouring of the project area ravine. The proposed drainage and grading work is designed to provide for limited storm water detention and revegetation with native riparian vegetation for slope, bank and bed stability. The proposed project is not expected to increase flooding and is intended to reduce erosion and offsite siltation by reducing the exit velocity of the collected storm waters from the Santa Cruz Gardens subdivision. Therefore, a less than significant impact is anticipated from project implementation.

8. Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems, or provide substantial additional sources of polluted runoff? ☐ ☐ ☐ ☒

Discussion: No additional runoff would be generated by the proposed project. The project would offer some level of detention during storm events. See the discussion provided under B-7.

9. Expose people or structures to a significant risk of loss, injury or death ☐ ☐ ☐ ☒

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
involving flooding, including flooding as a result of the failure of a levee or dam?				

Discussion: The proposed project would not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. The project proposes to re-contour, install drainage improvements, and revegetate approximately 600 feet of an unnamed ephemeral drainage. Therefore, no impact is anticipated.

10.	Otherwise substantially degrade water quality?	☐	☐	☒	☐

Discussion: The proposed project would not substantially degrade water quality. The project proposes to re-contour, install drainage improvements, and revegetate approximately 600 feet of an unnamed ephemeral drainage. See discussion under B-4 for a complete discussion of short-term construction impacts. Therefore, the proposed project would result in a less than significant impact to water quality.

C. BIOLOGICAL RESOURCES

Would the project:

1.	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game, or U.S. Fish and Wildlife Service?	☐	☒	☐	☐

Discussion: A Biotic Report was prepared for this project by Biotic Resources Group, dated March 15, 2010 (Attachment 5). This report has been reviewed and accepted by the Planning Department Environmental Section. No special status species have been identified on the subject property in either the Biotic Report or during site visits by Planning Department staff.

Special Status Plant Species: Given the habitats present, as well as the eroded, ruderal condition of the project area and the long-term presence of densely-growing eucalyptus trees, the potential occurrence of special status plant species is considered to be very low. Although a population of Santa Cruz tarplant (*Holocarpha macradenia*) is known to inhabit the coastal terrace west of the project area (Santa Cruz Gardens #12 – located approximately 0.5 mile south of the project site), the proposed project area does not provide suitable habitat for this species. No special status plant species were detected, nor are expected within the project site (Biotic Resources Group, 2010).

Special Status Wildlife Species: Raptors may nest in the downstream portion of the intact eucalyptus forest, but not in the upstream area where the trees have been

removed. See C-3 for a complete discussion and required mitigation measures to reduce potential impacts to raptors to a less than significant level.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
2.	Have a substantial adverse effect on any riparian habitat or sensitive natural community identified in local or regional plans, policies, regulations (e.g., wetland, native grassland, special forests, intertidal zone, etc.) or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐

Discussion: The area along the drainage is considered a riparian corridor due to the presence of an active drainage channel that ultimately flows into Arana Gulch approximately 4,000 feet downstream of the project area. According to County Code (Section 16.30), the riparian corridor along intermittent channels extends 30 feet outward from the bank-full flow line or edge of riparian vegetation, whichever is greater. Because the proposed project does not support riparian vegetation, the County-defined riparian corridor would be located 30 feet outward from the ordinary high water mark.

California Department of Fish and Game (CDFG) is a trustee agency that has jurisdiction under Section 1600 of the CDFG Code. Under Sections 1600-1603 of the CDFG Code, the CDFG regulates all diversions, obstructions, or changes to the natural flow of a bed, channel or bank that typically extends to the top of bank or the edge of riparian habitat if such habitat extends beyond top of bank (outer drip line), whichever is greater. A large portion of the project is located within the jurisdiction of the CDFG (see Figure 4 and Table 2).

Water quality in California is governed by the Porter-Cologne Water Quality Control Act and certification authority under Section 401 of the Clean Water Act, as administered by the Regional Water Quality Control Board (RWQCB). The Section 401 water quality certification program allows the state to ensure that activities requiring a federal permit or license comply with state water quality standards. Water quality certification must be based on a finding that the proposed discharge will comply with water quality standards that are in the RWQCB's basin plans. The Porter-Cologne Act requires any person discharging waste or proposing to discharge waste in any region that could affect the quality of the waters of the state to file a report of waste discharge. The RWQCB issues a permit or waiver that includes implementing water quality control plans that take into account the beneficial uses to be protected. Waters of the state subject to RWQCB regulation extend to the top of bank, as well as isolated water/wetland features and saline waters. The RWQCB interprets waste to include fill placed into water bodies. A portion of the proposed project is located within the jurisdictional area of the RWQCB, as some work would occur within the drainage.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Table 2
Jurisdictional Acreages by Agency

Agency	Permit Required	Permit Type	Jurisdictional Acreage	Project Impact
ACOE	Yes	404 Nationwide Permit	1,209 sq. ft. (0.03 acre) (other waters)	1,209 sq. ft. (0.03 acre) (other waters) 9.9 cu. Yds. fill
RWQCB	Yes	401 Water Quality Cert.	1.2 acres[1]	1.2 acres[1]
CDFG	Yes	1602 Streambed Alteration Agreement	1.2 acres[1]	1.2 acres[1]

Note: 1 – Project area is located below top-of-bank; analysis assumes top of bank roughly corresponds to Benedict Avenue to the west and the backyards of residences along Cabrillo Avenue to the east.

Source: Biotic Resources Group, 2010, see Attachment 5.

The U.S. Army Corps of Engineers (ACOE) regulates activities within waters of the United States pursuant to congressional acts: Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act (1977, as amended). Section 10 of the Rivers and Harbors Act requires a permit for any work in, over, or under navigable waters of the United States. Navigable waters are defined as those waters subject to the ebb and flow of the tide to the Mean High Water mark (tidal areas) or below the Ordinary High Water mark (freshwater areas). A small portion of proposed project is located within the jurisdictional area of the ACOE (see Figure 4 and Table 2), as fill would be placed within the limits of the drainage's Ordinary High Water Mark (OHWM). The project area supports approximately 1,209 square feet (0.03 acre) of Waters of the U.S. (pending confirmation from the ACOE).

Although the project would impact a riparian corridor that is under the jurisdiction of the ACOE, CDFG, RWQCB and the County, impacts are considered to be beneficial due to the heavily degraded nature of the project site, proposal to stabilize the site and revegetate with native species.

The project applicant would be required to secure all necessary regulatory agency permits (ACOE, CDFG, and RWQCB) prior to construction. As part of the project proposal, the applicant would also prepare and implement a final revegetation and monitoring plan for the new stabilized slopes and drainage channel, that includes the following features:

- A wooded corridor along the new channel using native plant species within this planting zone. Due to the ephemeral nature of the drainage willow plantings proposed within the area would be experimental.
- Vegetation on the new stabilized slopes outside the riparian corridor with a mosaic of native trees and shrubs to create a riparian buffer area.
- The revegetation and monitoring plan would be subject to review by CDFG prior to commencement of construction activities as part of their issuance of a 1602 Streambed Alteration Agreement.
- Use of locally native planting stock to maximize survival.
- Temporary irrigation for installed plantings and periodic maintenance such that

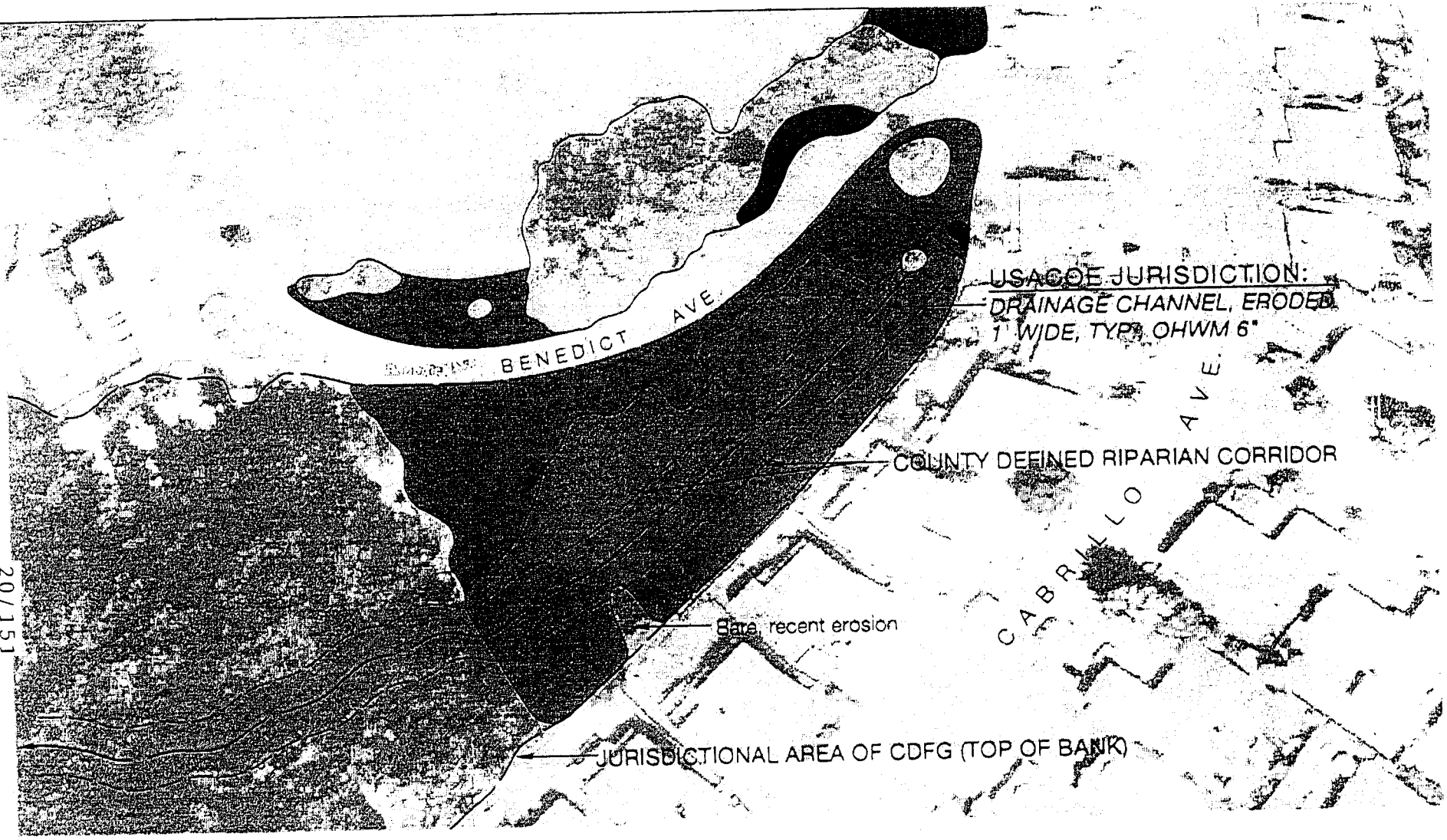
Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

container stock plantings of upland trees and shrubs achieve a minimum 80% survival rate after 5 years. Due to the ephemeral nature of the drainage, willow cuttings and in-stream wetland plantings (i.e., spreading rush) within the new drainage would be experimental and not subject to plant survival requirements.

The project applicant shall implement riparian corridor protection measures to minimize impacts to downstream waters and resources located adjacent to the work area, including:

- Installation of plastic mesh fencing at the perimeter of the work area that abuts downstream waters and riparian corridor to prevent impacts to the adjacent riparian corridor. Protective fencing shall be in place prior to ground disturbances and removed once all construction is complete. During construction, no grading, construction or other work shall occur outside the designated limits of work.
- No excess soil, chemicals, debris, equipment or other materials shall be dumped or stored outside the designated limits of work.

With the implementation of the above mitigation measure, impacts would be considered less than significant.



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Jurisdictional Areas

Figure 4

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
3. Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native or migratory wildlife nursery sites?	☐	☒	☐	☐

Discussion: The proposed project does not involve any activities that would interfere with the movements or migrations of fish or wildlife, or impede use of a known wildlife nursery site. The vegetation within the project area is dominated by blue gum (*Eucalyptus globules*) trees, which are non-native to California. Eucalyptus trees on the majority of the site have been previously cut. The understory vegetation within the eucalyptus tree grove is limited due to the dense shade and thick cover of leavers and bark peels. Although eucalyptus trees are locally important as they provide potential wintering habitat for monarch butterflies (*Danaus plexippus*), none were observed at the project site during site surveys. The eucalyptus trees on the project site also provide potential roosting and nesting habitat for migratory birds protected under the Migratory Bird Treaty Act and raptors such as red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*) and great horned owl (*Bubo virginianus*). No nesting birds were observed during site surveys. The project also proposes to revegetate the project area with native riparian vegetation following tree removal, re-contouring of the slopes, and construction of the drainage improvements. The establishment of native riparian vegetation in place of non-native eucalyptus woodland would result in improved habitat and a greater opportunity for use by native resident or migratory wildlife. The following avoidance and mitigation measures would reduce impacts to nesting birds to a less than significant level.

In order to avoid impacting nesting birds, schedule construction to occur between August 1 and October 15 (December 31 with winter a grading approval) of any given year to avoid nesting birds. If this is not practical, then the project applicant shall hire a qualified biologist to conduct preconstruction surveys for nesting birds. The surveys shall be conducted no more than 30 days prior to construction. If nesting birds are observed within or adjacent to the project area, the following protective measures shall be implemented:

- A buffer zone with highly visible tape or fencing shall be established around the active bird nest and no construction shall take place within the buffer zone until the biologist confirms that all young have fledged the nest.
- For raptors, the buffer zone shall be approximately 250 feet, and adjusted according to the topography and visual sight line that may affect the nesting birds.
- For other resident and migrant bird species, the buffer zone shall be at least 50 feet around the nest. The biologist shall monitor the nest, and advise the applicant when all young have fledged the nest. The biologist shall prepare a

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

report of nest survey results, nest monitoring (if any), and the dates when the nesting was completed, a report suitable for the applicant to submit to County Planning Department and CDFG.

With the implementation of the above mitigation measures, impacts would be considered less than significant.

4.	Produce nighttime lighting that would substantially illuminate wildlife habitats?	☐	☐	☐	☒

Discussion: The project does not propose or involve any nighttime lighting. No impact is anticipated from project implementation.

5.	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒

Discussion: No jurisdictional wetlands were identified within the project area (see Figure 4 and Table 2). Although impacts would occur to waters of the U.S., no impacts would occur to jurisdictional wetlands as defined by Section 404 of the Clean Water Act and the U.S. Army Corps of Engineers Wetlands Delineation Manual. Subsection 4 (Man-Induced Wetlands) of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual states, "if hydrophytic vegetation is being-maintained only because of man-induced wetland hydrology that would no longer exist if the activity (e.g. irrigation) were to be terminated, the area should not be considered a wetland (Environmental Laboratory 1987)."

6.	Conflict with any local policies or ordinances protecting biological resources (such as the Sensitive Habitat Ordinance, Riparian and Wetland Protection Ordinance, and the Significant Tree Protection Ordinance)?	☐	☐	☒	☐

Discussion:

The proposed project has the potential to conflict with Chapter 16.30 of the County of Santa Cruz County Code, know as the Riparian Corridor and Wetlands Protection Ordinance. For this reason, careful consideration has been given to the proposed project design and revegetation effort.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

According to Section 16.30.030, the project area is considered a Riparian Corridor due to the following:

- Lands extending 30 feet (measured horizontally) out from each side of an intermittent stream. Distance shall be measured from the mean rainy season (bankfull) flowline;
- Lands within an arroyo located within the Urban Services Line, or the Rural Services Line.

Section 16.30.040 of the County Code states, "No person shall undertake any development activities other than those allowed through exemptions and exceptions as defined below within the following areas:

(a) Riparian corridors.

(b) Areas within the Urban Services Line or Rural Services Line which are within a buffer zone as measured from the top of the arroyo. All projects located on properties abutting an arroyo shall be subject to review by the Planning Director.

A Riparian Exception would be required for the proposed project.

Riparian Exception

Under Chapter 16.30.060 (d) of the County Code, specific findings must be made in order to allow a Riparian Exception. These findings in relation to the grading, drainage improvements, and revegetation as specified in Chapter 16.32 of the County Code are presented below:

1. That there are special circumstances or conditions affecting the property:

   The project site drains a small portion of the third emergent marine terrace that lies between Rodeo Gulch Creek and Arana Gulch in Santa Cruz County. The stream is ephemeral and flows toward the south-southwest. The ravine is between 20-30 feet deep near its head at Benedict Avenue, deepening progressively on the downstream end. The side slopes are steep, ranging from vertical, in the scarps formed by the recent slope failures, to about 70-80 percent in the area of the proposed project. The County of Santa Cruz Planning Department previously authorized the cutting of approximately 93 eucalyptus trees within the project area that had either fallen or were in danger of falling due to the severe bank erosion problem. As a result, slopes in the ravine are currently devoid of most vegetation. However, the eucalyptus stumps that remain have since sprouted and are providing some slope protection.

   A fill prism was placed on the southeast side of the ravine in the 1960s. It appears that the entire fill has incrementally failed and slid into the ravine over the past 35 plus years, as the materials exposed in the scarps are native soils and sediments. The erosion and formation of small landslides on the slopes behind the homes along Cabrillo Avenue has been exacerbated by the disposal of residential surface and roof drainage (along with yard cuttings, soils and some junk) into the ravine on the project site.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

The project site would be cleared and grubbed of all vegetation (e.g., eucalyptus trees), be graded and filled to provide 2:1 slopes, and revegetated with native riparian species to reduce the potential for erosion within the gully. Riparian habitat values would be greatly improved following project implementation.

2. That the exception is necessary for the proper design and function of some permitted or existing activity on the property:

   The project area currently functions as a drainage for the surrounding developed areas. The proposed project would not alter the use of the project site. The Riparian Exception is necessary to protect the riparian corridor from erosion that is continuing to threaten the adjacent properties. The drainage and revegetation efforts proposed would promote improved water quality and habitat value.

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:

   The project is necessary to protect property along the channel from slope failure and would also help to improve water quality both onsite and in downstream areas. Although the project is not required to detain storm water onsite, it would detain some storm water onsite. Even the minimal amount of detention on site would benefit downstream properties.

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 proposed project is located outside of the Coastal Zone.

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 improvements proposed by the project include removing exotic vegetation (i.e., eucalyptus trees), grading and re-contouring the slopes to achieve a 2:1 slope ratio, construction of drainage improvements to include gabion weir structures, and an extensive revegetation effort to reduce the potential for erosion (see Table 1), thereby increasing the protection of the riparian area from the status quo. The Riparian Exception would be consistent with the General Plan.

The proposed project does not conflict with any regulations adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, the impact would be considered less than significant.

7.	Conflict with the provisions of an adopted Habitat Conservation Plan,	☐	☐	☐	☒

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Discussion: The proposed project would not conflict with the provisions of any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, no impact would occur.

D. AGRICULTURE AND FOREST RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

1. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒

Discussion: Although a small portion of the project site contains Watsonville Loam, 2 to 15 percent slopes, a Farmland of Statewide Importance, the project site does not contain any lands designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency (FMMP 2008). In addition, the project site does not contain Farmland of Local Importance. The majority of the project area is mapped as Nisene-Aptos Complex, 30 to 50 percent slopes. This soil type is not mapped as an agricultural soil. Therefore, no Prime Farmland, Unique Farmland, Farmland of Statewide or Farmland of Local Importance would be converted to a non-agricultural use. No impact would occur from project implementation.

2. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

Discussion: Although a portion of the project site is zoned Residential Agriculture, no agricultural uses occur within the project area and no Prime Farmland, Unique Farmland, or Farmland of Statewide Importance have been mapped by the FMMP (see

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

discussion D-1). Additionally, the project site's land is not under a Williamson Act Contract. Therefore, the proposed project would not conflict with existing zoning for agricultural use, or a Williamson Act Contract. No impact is anticipated.

3.	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒

Discussion: Neither the project site nor the adjacent lands are designated as Timber Resource. Therefore, the project would not affect this resource or access to the harvest of this resource in the future. Although a portion of the project site contains a mature eucalyptus grove, eucalyptus trees are not considered to be viable for commercial harvest. Therefore, no impact would occur from project implementation.

4.	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒

Discussion: No forest land occurs on the project site or in the immediate vicinity other than an area of eucalyptus trees. The project proposes to revegetate the project area with native upland and riparian species following site re-contouring and the installation of drainage improvements. Therefore, no impact resulting from the loss of forest land is anticipated.

5.	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Discussion: The project site and surrounding area within a radius of 0.75 mile does not contain any lands designated as Prime Farmland, Unique Farmland, Farmland of Statewide Importance or Farmland of Local Importance as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency (FMMP 2008). Therefore, no Prime Farmland, Unique Farmland, Farmland of Statewide, or Farmland of Local Importance would be converted to a non-agricultural use. In addition, the project site contains no forest land, and no forest land occurs within one mile of the proposed project site. Therefore, no impacts are anticipated.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

E. MINERAL RESOURCES

Would the project:

1.	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒

Discussion: The site does not contain any known mineral resources that would be of value to the region and the residents of the state. Therefore, no impact is anticipated from project implementation.

2.	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Discussion: The project site is zoned Residential Agriculture and Public Facility, which are not considered to be an Extractive Use Zone (M-3) nor do they have a Land Use Designation with a Quarry Designation Overlay (Q) (County of Santa Cruz 1994). Therefore, no potentially significant loss of availability of locally important mineral resource recovery (extraction) site delineated on a local general plan, specific plan or other land use plan would occur as a result of this project. No impact is anticipated.

F. VISUAL RESOURCES AND AESTHETICS

Would the project:

1.	Have an adverse effect on a scenic vista?	☐	☐	☐	☒

Discussion: The project would not directly impact any public scenic resources, as designated in the County's General Plan (1994), or obstruct any public views of these visual resources. No impact is anticipated.

2.	Substantially damage scenic resources, within a designated scenic corridor or public view shed area including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒

Discussion: The project site is not located along a County designated scenic road, public viewshed area, scenic corridor, within a designated scenic resource area, or within a state scenic highway. Therefore, no impact is anticipated.

3.	Substantially degrade the existing visual character or quality of the site and its surroundings, including	☐	☐	☒	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

substantial change in topography or ground surface relief features, and/or development on a ridgeline?

Discussion: The project proposes approximately 24,000 cubic yards of grading that would occur during re-contouring and re-compaction of the slopes and construction of the drainage improvements. The grading would include approximately 14,915 cubic yards of fill, approximately 360 cubic yards of excavation, and 9,187 cubic yards of fill for keying and benching. The project is intended to reestablish slopes at a 2:1 ratio, eliminate erosion from the project area, and reestablish native riparian vegetation within the drainage corridor. As a result, the visual character would be improved following establishment of native vegetation. Therefore, project-related impacts to visual character would be less than significant.

4.	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Discussion: The project does not propose or involve any nighttime lighting. Therefore, the proposed project would not affect day or nighttime views in the project area. No impacts are anticipated.

G. CULTURAL RESOURCES

Would the project:

1.	Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?	☐	☐	☐	☒

Discussion: One existing structure, a single-family residence, occurs on parcel APN 102-121-70 within the project area. However, the existing structure on the property is not designated as a historic resource on any federal, state or local inventory and would not be impacted by the proposed project. No impact is anticipated.

2.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?	☐	☒	☐	☐

Discussion: Prior to surface reconnaissance of the subject area by Dr. Robert Cartier of Archaeological Resource Management, a study of maps and records at the Northwest Information Center of the California Historical Resources Information System was conducted. This research into the records at the Information Center was done to determine if any known archaeological resources were reported in or around the subject area. According to the cultural resource evaluation, dated April 1, 2010 (Attachment 7), there is no evidence of pre-historic cultural resources recorded within

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

the project area or within a one-half mile radius of the project area. However, soil visibility was limited by terrain and vegetation. Therefore, the following mitigation measure shall be implemented to reduce potential impacts to archaeological resources to a less than significant level. An archaeological spot check shall be conducted following the clearing of vegetation, which will improve soil visibility. In addition, pursuant to Section 16.40.040 of the Santa Cruz County Code, if archeological resources are uncovered during construction, the responsible persons shall immediately cease and desist from all further site excavation and comply with the notification procedures given in County Code Chapter 16.40.040.

3.	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

Discussion: No human remains are known or expected to occur within the project study area. However, the following condition pursuant to Section 16.40.040 of the Santa Cruz County Code would be implemented: If at any time during site preparation, excavation, or other ground disturbance associated with this project, human remains are discovered, the responsible persons is to immediately cease and desist from all further site excavation and notify the sheriff-coroner and the Planning Director. If the coroner determines that the remains are not of recent origin, a full archeological report is to be prepared and representatives of the local Native California Indian group are to be contacted. Disturbance is not to resume until the significance of the archeological resource is determined and appropriate mitigations to preserve the resource on the site are established. Impacts from project implementation would be less than significant.

4.	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒

Discussion: A database search of the University of California Museum of Paleontology Specimen Search was conducted on December 14, 2009. No paleontological resources are known to occur within the project area. No impacts to unique paleontological resources are anticipated (http://ucmpdb.berkeley.edu/).

H. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

1.	Create a significant hazard to the public or the environment as a result of the routine transport, use or disposal of hazardous materials?	☐	☐	☐	☒

Discussion: This project proposes erosion control through slope re-contouring, drainage improvements, and revegetation. The transport, storage, use and disposal of hazardous materials are not being proposed by this project. Therefore, no significant hazard to the public would occur as a result of the proposed project.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
2. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒

Discussion: This project proposes erosion control through slope re-contouring, drainage improvements, and revegetation. No foreseeable upset and accident conditions involving the release of hazardous materials are anticipated in connection with the proposed project. Therefore, no impact to the environment would occur as a result of the project implementation.

3. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐

Discussion: The proposed project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substance, or waste. However, during site clearing and grubbing, grading, and drainage construction, heavy diesel equipment would be used for six-month period. No adverse impacts to the adjacent Santa Cruz Gardens Elementary School site are anticipated during project construction. Therefore, impacts would be considered less than significant.

4. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒

Discussion: The project site is not included on the October 29, 2009 list of hazardous sites in Santa Cruz County compiled pursuant to the specified code. No impact is anticipated.

5. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

Discussion: The project site is located approximately 11 miles northwest of the

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Watsonville Municipal Airport; therefore, no safety hazard for people residing or working in the project area would result. According to the Draft Environmental Impact Report prepared for the Watsonville Municipal Airport Master Plan 2001-2020, airport operations outlined under the master plan would be consistent with the County of Santa Cruz General Plan (City of Watsonville 2002). As a result, no adverse impacts are anticipated.

6.	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

Discussion: No private airstrip is located in the project area. No impact would occur. In addition, see discussion H-5.

7.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒

Discussion: The proposed project would not impair the implementation or interfere with an adopted emergency response plan or emergency evacuation plan. No impact would occur from project implementation.

8.	Expose people to electro-magnetic fields associated with electrical transmission lines?	☐	☐	☐	☒

Discussion: This project proposes erosion control through slope re-contouring, drainage improvements, and revegetation. Therefore, the proposed project would not expose people to electro-magnetic fields associated with transmission lines. No impact would occur.

9.	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

Discussion: The project proposes only to re-contour the eroded bed and bank, construct drainage improvements, and revegetate with native species. Therefore, the proposed project would not result in a potential fire hazard. No impact is anticipated.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

I. TRANSPORTATION/TRAFFIC

Would the project:

1.	Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐

Discussion: The proposed project does not involve the addition of any new dwelling units or commercial or industrial development that would generate additional traffic trips. Therefore, the project would not result in a permanent increase in traffic. Project construction is expected to last approximately 6 months. The proposed project would generate a small amount of temporary construction trips (approximately 10 to 15 trips per day) on nearby roads and intersections during site construction. However, given the small number of temporary trips created by the project during construction, this increase would be considered less than significant. Further, it is not expected that the increase would result in the Level of Service at any nearby intersections to drop below Level of Service D. As a result, implementation of the proposed project would result in impacts that are less than significant.

2.	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒

Discussion: The proposed project would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks. Therefore, no impact would occur.

3.	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒

Discussion: The project proposes only to re-contour the eroded bed and bank, construct drainage improvements, and revegetate with native species. Therefore, the proposed project would not result in increased hazards or incompatible uses. No impact is anticipated.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
4. Result in inadequate emergency access?	☐	☒	☐	☐

Discussion: Construction staging would occur at the northern end of APN 102-121-37 where the parcel is relatively level. Partial closure of Benedict Avenue, a private roadway serving two residences, may be required during clearing and grubbing, grading, and installation of the proposed drainage improvements. The following mitigation measure will be required. During partial closure, a 12-foot wide access shall be maintained to allow for the ingress and egress of emergency vehicles and residents down Benedict Avenue. With implementation of the above mitigation measure, the partial closure of the Benedict Avenue for short durations of time during construction would be reduced to a less than significant impact.

5. Cause an increase in parking demand which cannot be accommodated by existing parking facilities?	☐	☐	☐	☒

Discussion: The proposed project would not involve the addition of new dwelling units or structures that would result in an increase in demand for parking facilities. Therefore, no impact is anticipated.

6. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☒	☐

Discussion: The proposed project would generate a small amount of temporary construction trips (approximately 10 to 15 trips per day) on nearby roads and intersections during site construction. Project construction is expected to last approximately 6 months. However, given the small number of temporary trips created by the project, this increase would be considered less than significant and would not create hazards to motorists, bicyclists, or pedestrians.

7. Exceed, either individually (the project alone) or cumulatively (the project combined with other development), a level of service standard established by the County General Plan for designated intersections, roads or highways?	☐	☐	☒	☐

Discussion: See response I-1 above.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

J. NOISE

Would the project result in:

1. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒

Discussion: The project proposes only to re-contour the eroded bed and bank, construct drainage improvements, and revegetate with native species. Therefore, the proposed project would not result in a permanent increase in ambient noise levels. No impact is anticipated.

2. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐

Discussion: The proposed project may generate a small amount of temporary groundborne vibration during site construction. However, given the short duration (6 months) of grading by the project, this impact would be considered less than significant.

3. Exposure of persons to or generation of noise levels in excess of standards established in the General Plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐

Discussion: Noise generated during construction would temporarily increase the ambient noise levels for adjoining areas. In order to minimize impacts associated with short-term construction noise, the County Planning Department shall ensure that the following noise control measures are incorporated into the final construction design plans for the proposed project:

(a) Construction that involves motorized equipment shall be limited to Monday through Friday from 7:30 AM to 4:30 PM to avoid the times of day and the days of the week when noise effects would cause the greatest annoyance to residents.

(b) Exceptions to the specified construction hours will be allowed only for construction emergencies and approved by County Planning; and

(c) Signs will be posted that are clearly visible to users on Benedict Road and Cabrillo Avenue that provide the phone number for the public to call to register complaints about construction-related noise problems. A single "disturbance coordinator" shall be assigned to log in and respond to all calls. All verified problems shall be resolved within 24 hours of registering the complaint.

Implementing these mitigation measures will reduce potential significant construction-

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
related noise impacts to a less than significant level.				
4. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐

Discussion: See J-3 above.

5. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion: The project site is located approximately 11 miles northwest of the Watsonville Municipal Airport. No other public or private airport is located in the project vicinity. In addition, the proposed project would not introduce sensitive receptors into the project area. The project proposes only to re-contour the eroded bed and bank, construct drainage improvements, and revegetate with native species. Therefore, no impact is anticipated.

6. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion: See J-5 above for a complete discussion.

K. AIR QUALITY

Where available, the significance criteria established by the Monterey Bay Unified Air Pollution Control District (MBUAPCD) may be relied upon to make the following determinations. Would the project:

1. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐

Discussion: The North Central Coast Air Basin does not meet state standards for ozone and particulate matter (PM_{10}). Therefore, the regional pollutants of concern that would be emitted by the project are ozone precursors (Volatile Organic Compounds [VOCs], nitrogen oxides [NO_x]), and dust.

Construction activities (e.g., excavation, grading, on-site vehicles) that directly generate 82 pounds per day or more of PM_{10} would result in a significant impact on

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

local air quality if located nearby and upwind of sensitive receptors. Although project construction may result in a short-term, localized decrease in air quality due to generation of dust, the implementation of standard best management practices would reduce PM_{10} levels well below 82 pounds per day. The following mitigation measures will reduce construction-related emissions to a less than significant level.

- All active construction areas shall be watered at least twice daily. Frequency will be based on the type of operation, soil, and wind exposure.
- All grading activities will be prohibited during periods of high wind (over 15 mph).
- Chemical soil stabilizers shall be applied to inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).
- Non-toxic binders (e.g., latex acrylic copolymer) shall be applied to exposed areas after cut and fill operations and to hydro-seed areas.
- Haul trucks shall maintain at least 2'0" of freeboard.
- All trucks hauling dirt, sand, or loose materials shall be covered.
- Vegetative ground cover shall be installed in disturbed areas as soon as possible.
- Inactive storage piles shall be covered.
- Wheel washers shall be installed at the entrance to construction-sites for all exiting trucks.
- Streets shall be swept if visible soil material is carried out from the construction-site.
- A publicly visible sign shall be posted that specifies the telephone number and person to contact regarding dust complaints. This person shall respond to complaints and take corrective action within 48 hours. The phone number of the Monterey Bay Unified Air Pollution Control District shall be visible to ensure compliance with Rule 402 (Nuisance).
- Limit the amount of area under construction at any one time (MBUAPCD 2008).

The construction project would use typical construction equipment such as dump trucks, bulldozers, compactors and front-end loaders, which temporarily emit precursors of ozone [i.e., VOCs or (NO_x)]. However, they are accommodated in the emission inventories of state- and federally-required air plans and would not have a significant impact on the attainment and maintenance of ozone Ambient Air Quality Standards.

2.	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐

Discussion: The project would not conflict with or obstruct implementation of the regional air quality plan. See K-1 above.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
3.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐

Discussion: See K-1 above for a complete discussion.

4.	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐

Discussion: There would be a short-term air quality impact from emissions generated during site preparation (including soil stabilization efforts) and drainage facilities construction. Dust from grading and emissions from heavy equipment would incrementally increase emissions over the short-term. However, this impact would be considered less than significant (See J-1 for a complete discussion).

5.	Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

Discussion: The project would not to create objectionable odors. No impacts are anticipated.

L. GREENHOUSE GAS EMISSIONS

Would the project:

1.	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐

Discussion: The proposed project, like all development, would be responsible for an incremental increase in green house gas emissions by usage of fossil fuels during the site grading and construction. At this time, Santa Cruz County is in the process of developing a Climate Action Plan (CAP) intended to establish specific emission reduction goals and necessary actions to reduce greenhouse gas levels to pre-1990 levels as required under AB 32 legislation. Until the CAP is completed, there are no specific standards or criteria to apply to this project. All project construction equipment would be required to comply with the Regional Air Quality Control Board emissions requirements for construction equipment. As a result, impacts associated with the temporary increase in green house gas emissions are expected to be less than significant.

2.	Conflict with an applicable plan, policy or regulation adopted for the purpose	☐	☐	☐	☒

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
of reducing the emissions of greenhouse gases?				

Discussion: See the discussion under L-1 above. No impacts are anticipated.

M. PUBLIC SERVICES

Would the project:

1.	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
	a. Fire protection?	☐	☐	☐	☒
	b. Police protection?	☐	☐	☐	☒
	c. Schools?	☐	☐	☐	☒
	d. Parks or other recreational activities?	☐	☐	☐	☒
	e. Other public facilities; including the maintenance of roads?	☐	☐	☐	☒

Discussion (a through e): The proposed project would not contribute to the need for additional public services. The project proposes only to re-contour the eroded bed and bank, construct drainage improvements, and revegetate with native species. Therefore, no impact is anticipated.

N. RECREATION

Would the project:

1.	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur	☐	☐	☐	☒

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

or be accelerated?

Discussion: The proposed project would have no impact on the use of existing neighborhood and regional parks or other recreational facilities.

2.	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Discussion: The project proposes only to re-contour the eroded bed and bank, construct drainage improvements, and revegetate with native species. Therefore, no additional impact to the environment is anticipated.

O. UTILITIES AND SERVICE SYSTEMS
Would the project:

1.	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☒	☐	☐

Discussion: The project proposes to construct new drainage facilities within the project area. However, the proposed project has been designed to accommodate the existing drainage from the Santa Cruz Gardens estates in an effort to reduce bed and bank erosion. Therefore, no additional significant impacts are anticipated from project construction. Mitigation measures specified in this Initial Study would reduce significant impacts to a less than significant level.

2.	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒

Discussion: The proposed project would not require the construction of new water or wastewater treatment facilities or the expansion of existing facilities. No impact would occur.

3.	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒

Discussion: No wastewater would be generated by the proposed project. Therefore,

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

no impact would occur.

4.	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐

Discussion: The proposed project would require the use of temporary irrigation to establish the native riparian revegetation effort proposed by the project. However, this would only be temporary. Therefore, the proposed project would not contribute to the need for increased water supplies. The impact would be considered less than significant.

5.	Result in determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒

Discussion: The proposed project would not increase demand for sewer or wastewater treatment facilities. Therefore, no impact would occur from project implementation.

6.	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒

Discussion: Other than during clearing and grubbing activities, the proposed project would not generate a significant amount of refuse that would result in a cumulative reduction to landfill capacity. No significant impact is anticipated.

7.	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Discussion: The proposed project would comply with all federal, state, and local statutes and regulations related to solid waste. No impact is anticipated.

P. LAND USE AND PLANNING

Would the project:

1.	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project	☐	☐	☒	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

(including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Discussion:

A Riparian Exception would be required for the re-contouring, installation of drainage improvements, and the revegetation of approximately 600 feet of an unnamed ephemeral drainage.

Under Chapter 16.30.060 (d) of the County Code, specific findings must be made in order to allow a Riparian Exception. These findings in relation to the grading, drainage improvements, and revegetation as specified in Chapter 16.32 of the County Code are presented below:

1. That there are special circumstances or conditions affecting the property:

   The project site drains a small portion of the third emergent marine terrace that lies between Rodeo Gulch Creek and Arana Gulch in Santa Cruz County. The stream is ephemeral and flows toward the south-southwest. The ravine is between 20-30 feet deep near its head at Benedict Avenue, deepening progressively on the downstream end. The side slopes are steep, ranging from vertical, in the scarps formed by the recent slope failures, to about 70-80 percent in the area of the proposed project. The County of Santa Cruz Planning Department previously authorized the cutting of approximately 93 eucalyptus trees within the project area that had either fallen or were in danger of falling due to the severe bank erosion problem. As a result, slopes in the ravine are currently devoid of most vegetation. However, the eucalyptus stumps that remain have since sprouted and are providing some slope protection.

   A fill prism was placed on the southeast side of the ravine in the 1960s. It appears that the entire fill has incrementally failed and slid into the ravine over the past 35 plus years, as the materials exposed in the scarps are native soils and sediments. The erosion and formation of small landslides on the slopes behind the homes along Cabrillo Avenue has been exacerbated by the disposal of residential surface and roof drainage (along with yard cuttings, soils and some junk) into the ravine on the project site.

   The project site would be cleared and grubbed of all vegetation (e.g., eucalyptus trees), be graded and filled to provide 2:1 slopes, and revegetated with native riparian species to reduce the potential for erosion within the gully. Riparian habitat values would be greatly improved following project implementation.

2. That the exception is necessary for the proper design and function of some permitted or existing activity on the property:

   The project area currently functions as a drainage for the surrounding developed areas. The proposed project would not alter the use of the project

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

site. The Riparian Exception is necessary to protect the riparian corridor from erosion that is continuing to threaten the adjacent properties. The drainage and revegetation efforts proposed would promote improved water quality and habitat value.

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:

   The project is necessary to protect property along the channel from slope failure and would also help to improve water quality both onsite and in downstream areas. Although the project is not required to detain storm water onsite, it would detain some storm water onsite. Even the minimal amount of detention on site would benefit downstream properties.

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 proposed project is located outside of the Coastal Zone.

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 improvements proposed by the project include removing exotic vegetation (i.e., eucalyptus trees), grading and re-contouring the slopes to achieve a 2:1 slope ratio, construction of drainage improvements to include gabion weir structures, and an extensive revegetation effort to reduce the potential for erosion (see Table 1), thereby increasing the protection of the riparian area from the status quo. The Riparian Exception would be consistent with the General Plan.

The proposed project would also be consistent with Policies 5.1.12 and 5.1.14 of the County of Santa Cruz General Plan. Policy 5.1.12 requires, "...restoration of any area of the subject property which is an identified degraded sensitive habitat, with the magnitude of restoration to be commensurate with the scope of the project. Such conditions may include erosion control measures, removal of non-native or invasive species, planting with characteristic native species, diversion of polluting run-off, water impoundment, and other appropriate means. The object of habitat restoration activities shall be to enhance the functional capacity and biological productivity of the habitat(s) and whenever feasible, to restore them to a condition which can be sustained by natural occurrences, such as tidal flushing of lagoons."

Policy 5.1.14 "Encourages the removal of invasive species and their replacement with characteristic native plants, except where such invasive species provide significant habitat value and where removal of such species would severely degrade the existing habitat."

Therefore, the proposed project does not conflict with any regulations adopted for the

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

purpose of avoiding or mitigating an environmental effect.

2.	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Discussion: No adopted Habitat Conservation Plan (HCP) or natural community conservation plan (NCCP) occurs within the project area. Therefore, the proposed project would not conflict with any adopted HCP or NCCP. No impact would occur from project implementation.

3.	Physically divide an established community?	☐	☐	☐	☒

Discussion: The project will not include any element that would physically divide an established community.

Q. POPULATION AND HOUSING

Would the project:

1.	Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒

Discussion: The proposed project would not induce substantial population growth in an area because the project does not propose any physical or regulatory change that would remove a restriction to or encourage population growth in an area including, but not limited to the following: new or extended infrastructure or public facilities; new commercial or industrial facilities; large-scale residential development; accelerated conversion of homes to commercial or multi-family use; or regulatory changes including General Plan amendments, specific plan amendments, zone reclassifications, sewer or water annexations; or Local Agency Formation Commission annexation actions.

2.	Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion: The proposed project would not displace any existing housing since the site is currently undeveloped.

3.	Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Discussion: The proposed project would not displace a substantial number of people since the site is currently undeveloped.

R. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
1. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐

Discussion: The potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory were considered in the response to each question in Section III of this Initial Study. Resources that have been evaluated as significant would be potentially impacted by the project, particularly hydrology and water quality, biological resources, noise, air quality, cultural resources, transportation/traffic, and utilities and service systems. However, mitigation has been included that clearly reduces these effects to a level below significance. This mitigation is outlined in Section III of this Environmental Initial Study and contained in the Mitigation Monitoring and Reporting Program (Attachment 8). As a result of this evaluation, there is no substantial evidence that, after mitigation, significant effects associated with this project would result. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
2. Does the project have impacts that are individually limited, but cumulatively considerable? ("cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐

Discussion: In addition to project specific impacts, this evaluation considered the project's potential for incremental effects that are cumulatively considerable. There is no substantial evidence that there are cumulatively considerable effects associated with this project. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
3. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Discussion: In the evaluation of environmental impacts in this Initial Study, the potential for adverse direct or indirect impacts to human beings were considered in the response to specific questions in Section III. As a result of this evaluation, there were determined to be potentially significant effects to human beings related to the following: hydrology and water quality, biological resources, noise, air quality, cultural resources, transportation/traffic, and utilities and service systems. However, mitigation has been included that clearly reduces these effects to a level below significance. This mitigation is outlined in Section III of this Environmental Initial Study and contained in the Mitigation Monitoring and Reporting Program (Attachment 8). As a result of this evaluation, there is no substantial evidence that, after mitigation, there are adverse effects to human beings associated with this project. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

IV. TECHNICAL REVIEW CHECKLIST

	REQUIRED	DATE COMPLETED
Agricultural Policy Advisory Commission (APAC) Review	Yes ☐ No ☒	N/A
Archaeological Review	Yes ☒ No ☐	April 1, 2010
Biotic Report/Assessment	Yes ☒ No ☐	May 7, 2010
Geologic Hazards Assessment (GHA)	Yes ☐ No ☒	N/A
Geologic Report	Yes ☒ No ☐	May 16, 2008
Geotechnical (Soils) Report	Yes ☒ No ☐	May 15, 2007
Riparian Pre-Site	Yes ☐ No ☒	N/A
Septic Lot Check	Yes ☐ No ☒	N/A
Other: Revegetation and Monitoring Plan	Yes ☒ No ☐	May 7, 2010

V. REFERENCES USED IN THE COMPLETION OF THIS ENVIRONMENTAL REVIEW INITIAL STUDY

City of Watsonville 2002
Draft Environmental Impact Report for the Watsonville Municipal Airport Master Plan. Prepared by Denise Duffy and Associates, August 2002.

County of Santa Cruz 1994
1994 General Plan and Local Coastal Program for the County of Santa Cruz, California. Adopted by the Board of Supervisors on May 24, 1994, and certified by the California Coastal Commission on December 15, 1994.

Environmental Laboratory. 1987
Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-I, US Army Engineer Waterways Experiment Station, Vicksburg, Miss.

FMMP 2008
Santa Cruz County Important Farmland 2006 Farmland Mapping and Monitoring Program Map. California Department of Conservation, Division of Land Resource Protection, May 2008.

NRCS 1980
County of Santa Cruz GIS Layer Number = 87/ Soil type boundaries were provided by Natural Resource Conservation Service (NRCS)(formerly Soil Conservation Service). The NRCS files had been created by digitizing their soil survey maps. The resulting maps were checked for quality and accuracy by the NRCS.

VI. ATTACHMENTS

1. *Geologic Report,*, prepared by G. E. Weber, dated May 16, 2008.
2. *Proposed Slide Mitigation Report,* prepared by GeoForensics, Inc., dated May 15, 2007.
3. Geotechnical Review of Civil Plans, prepared by GeoForensics, Inc., dated May 6, 2010.
4. *Storm Water Management Report*, Prepared for Pete Pearson, 101 Benedict Avenue, Santa Cruz, CA. APN No. 102-121-70, B&W File No. 23870, prepared by Bowman & Williams Consulting Civil Engineers, dated April 27, 2010.
5. *Biotic Report*, prepared by Biotic Resources Group, dated May 7, 2010.
6. *Revegetation and Monitoring Plan for 101 Benedict Avenue, Soquel, California,* prepared by Biotic Resources Group, dated May 7, 2010.
7. *Cultural Resources Evaluation of the Property at 101 Benedict Avenue in the County of Santa Cruz*, prepared by Archaeological Resource Management, dated April 1, 2010.
8. *Mitigation Monitoring and Reporting Program*

G.E. WEBER GEOLOGIC CONSULTANT
129 Jewell Street, Santa Cruz, CA 95060
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History of Natural and Man-Made Changes in a Small Ravine on the Pearson Property, Santa Cruz Gardens Area Santa Cruz County, California

Introduction

This letter report has been prepared to provide additional geologic information regarding the geologic conditions on the Pearson property at the site of the proposed repair. It is in response to requests for additional data from the County Planning Department. Specifically, I am providing information on the following topics requested in Kent Edler's letter of April 10, 2008:

Page 1, Erosion and Hydrology; 1. Extent of Erosion
Page 2, Assessment of Historic Grading; 4. Southeast Hillslope & 5. Northwest Hillslope

My reconstruction of the erosional history (and the urbanization) of this area is based primarily on the interpretation of stereo-pair aerial photographs taken over the past 60 plus years. All photographs are available for viewing at the Map Room housed in the Science Library at UCSC. Historical information has also been obtained from, 1) a variety of documents generated by the original lawsuit, including reports and declarations; 2) documents available through the Santa Cruz County Department of Public Works and Planning Department; 3) basic geomorphology and engineering geology textbooks, published geologic and topographic maps; and 4) field work conducted over the past four years.

Geographic and Geologic Setting

The geologic setting of the area is relatively simple. Nearly flat lying, moderately consolidated sandstones and siltstones of the Pliocene Purisima Formation comprise "bedrock." These are overlain by a thin layer of stream and marine terrace deposits. Although fill was placed on some of the lots along Cabrillo Avenue (southeast of the ravine) there is no evidence that fill still lies on top of the terrace deposits on these properties along Cabrillo Avenue. Non-engineered fill is clearly present along Benedict Road on the northwest side of the ravine.

The ravine in question drains a small portion of the third emergent marine terrace that lies between Rodeo Gulch Creek and Arana Gulch in Santa Cruz County. The stream is intermittent and flows toward the South-Southwest. The ravine is between 20 - 30 feet deep near its head at Benedict Avenue, deepening progressively as one goes down stream. The side slopes are steep, ranging from vertical, in the scarps formed by the recent slope failures, to about 70-80% in the area of the proposed repair. Slopes in the ravine are densely forested by a mature grove of eucalyptus trees, along with a variety of shrubs, trees and grasses. Downed trees are jack-strawed across the bottom of the drainage in the proposed repair area, which in combination with landslide deposits completely obscure the channel. During field work it became clear that the trees and landslide deposits had bridged the channel and the stream was flowing at depth below the surface that I was standing on.

Despite the heavy vegetative cover, it is apparent that there has been accelerated erosional deepening of the channel in the ravine. Along the northwest side of the ravine mature eucalyptus trees have had the soil eroded out from under their root systems, and many trees have fallen - apparently as a result of under-cutting by the creek.

ATTACHMENT 1

An extensive fill prism is present on the west side of the ravine. It was largely placed during the grading of Benedict Avenue; although some was probably side cast into the area during the grading for the playing field of the elementary school. The outboard portion of that fill prism adjacent to Benedict Avenue is clearly non-engineered fill. Several small debris slide scars are present on the face of the fill slope. The slide deposits are distributed across the slopes below the scars and in the bottom of the creek. In December of 2005 the head scarp of a recent landslide exposed a thick section of old, poorly consolidated, non-engineered fill, portions of which are at least 15 feet thick.

A fill prism was placed on the southeast side of the ravine in the 1960's during the construction of homes along Cabrillo Avenue. It appears that this entire fill has incrementally failed and slid into the ravine over the past 35 + years, as the materials exposed in the scarps are native soils and sediments. The erosion and formation of small landslides on the slopes behind these homes along Cabrillo Avenue has been exacerbated by the disposal by the home owners of much of their surface and roof drainage (along with yard cuttings, soils and some junk) into the ravine on the Pearson property.

Hydrologic Changes

During construction of Santa Cruz Gardens the drainage basin for the ravine in question was drastically changed. It is clear from both aerial photographs and the subdivision maps that the drainage basin was greatly enlarged. The street and roof drainage for approximately 40 homes in the Santa Cruz Gardens subdivision and most of the drainage from the Elementary School is conducted into the head of the ravine on the Pearson property through a 24 inch culvert. This resulted in a great increase in average discharge and increased the peak runoff. It is this increase in the volume and velocity of stream flow during storms that has deepened the stream channel, undermined trees and cut away the toe of the fill slope, which in turn has triggered the landslides.

Preliminary calculations by Dr. James Schaaf (Schaaf and Wheeler, Consulting Civil Engineers) indicate the following:

1) Drainage area has increased from 5 acres to 17 acres, approximately a three fold increase.

2) Taking into consideration the increase in drainage area and the effects of urbanization on stream flow the flow of the stream has changes as follows: 1) on the average, flow in the ravine has increased by a factor of 13 due to these changes; 2) the potential for erosion has increased by a factor of 86. This, however, does not tell the whole story. For example during the 1994 - 95 rainy season, a high rainfall year, the volume of flow was 20 times greater than it would have been under natural conditions; and the potential for erosion was 500 times greater than it would have been under normal conditions.

Note: Any errors that might exist in the above calculations by Dr, Schaaf are unquestionably due to my misunderstanding of Dr. Schaaf's comments during our phone conversation.

Comment on resolution of aerial photography and vegetation

The County's letter of 4-10-08 requests an aerial photo examination to observe the baseline erosion and the change in erosion rate after the diversion of the stream from its original location. Having looked at all of the available aerial photos I can state with certainty that this can only be done in a roughly "qualitative manner". There is no way that it can be done in a "quantitative fashion."

ATTACHMENT 1

First: The photographic grain and the scale of the aerial photos makes it impossible to resolve features less than about 5 - 8 feet across except under very favorable lighting conditions.

Second: Even if the grain and scale were better the area of interest lies in the middle of a deep ravine that is surrounded by trees. Prior to about 1965-70 the uppermost portion of the ravine was visible on the aerial photographs. After that time the area is simply not visible. Consequently, the area of interest is not visible on any of the photos taken during the time that the majority of the erosion and landsliding took place. A combination of the tree canopy and the shadow cast by the trees essentially covers the entire area of interest. The erosional channel itself is never really visible in any of the photos in an area of interest.

RESPONSE TO:
Erosion and Hydrology; 1. Extent of Erosion

Review of Aerial Photographs

In this discussion of the changes in the area I will use these terms:

"Ravine" - refers to for the small drainage that lies between the homes on Cabrillo Avenue and the Pearson home. It is the site of the proposed repair.
"Repair area" - The area slated for repair.
"Stream terrace" - refers to a narrow terrace on the southeast side of the ravine below the area where the repair will take place.
"Benedict fill" - the fill along Benedict Road on the northwest side of the ravine.
"Cabrillo fill" - fill behind the homes on Cabrillo Avenue.

October 5, 1943: Scale 1: 20,000 Photo #'s CJA 1B 06, 07

The present day location of the Santa Cruz Gardens subdivision and the Elementary School is an elevated marine terrace consisting of open grassland. Most of the ravine is vegetated with a relatively dense cover of trees obscuring the channel. Tree cover is not present in the uppermost portion of the ravine on the present day Pearson property. The ravine is grass covered and there is no indication of a stream channel in the area of the proposed repair. At the southwest end of the ravine (well below the area of present landslide activity) a low narrow stream terrace is clearly visible in the ravine. The stream is incised into this surface about 20 feet. A narrow road is visible on the terrace on the southeast side of the ravine. This road is present today and is in remarkably good shape over most of its length. Trees obscure the channel and the road in most of the area of present day landsliding. It appears that the road extends to the top of the ravine. A dark shadow on the photograph lies along the east side of the ravine near the base of the slope. This is either a cut for the road or a steep slope at the base of the slope. It is impossible to determine if the shadow is a small channel eroded into the existing valley floor. In the upper portion of the ravine (above the area of present landsliding) there appears to be no indication of incision into the floor of the ravine.

Examination of other stream valleys and ravines in the general vicinity reveals that all of them show evidence of a higher valley floor (stream terrace) that has been incised by the present day streams. The reason for this can only be speculated on, but is probably the result of a combination of sea level changes during the last Pleistocene glaciation and slow continental uplift.

ATTACHMENT 1

The slopes on both sides of the ravine show evidence of previous slope instability. Small scoop-shaped scars on the hill slopes are probably the result of shallow debris slides, debris flows, and slumps that formed in the marine terrace deposits. There is no indication of "slump blocks" only slide scars in the "repair area." There are no homes or other roads present in the area.

April 25, 1948: Scale 1: 20,000 Photo #'s CDF 5-3 14, 15

Essentially identical conditions when compared to the 1943 photos. No obvious signs of recent landsliding. Road visible along southeast side of ravine, and appears to extend to the top of the terrace. No sign of gullying or incision in the ravine above the tree line.

June 2, 1956: Scale: ≈ 1: 10,000 Photo #'s CJA-2R 82, 83

Area remains undeveloped. Open grassland. No changes in the ravine.

First Summary:

> ***The only man-made changes to this area over the previous 13+ years are a road graded on the stream terrace, that extends up to the top of the marine terrace; the planting of the eucalyptus trees and the effects of grazing. Changes in geomorphic processes operating in the area have been minimal.***
>
> ***Shallow landsliding appears to be an ongoing process on the slopes on both sides of the ravine; and the ephemeral stream has been incising its channel into its former valley floor creating a stream terrace. It is probable that the incision of the channel into the floor of the valley has been migrating upstream, thereby extending the area of incision up canyon. The channel floor lies over 20 feet below the road on the stream terrace.***

June 24, 1963: Scale: ≈ 1: 10,000 Photo #'s CJA-1DD 110, 111

The Santa Cruz Gardens subdivision is under construction. The Southern portion of the tract appears to be almost complete, and all of the major roads are completed. However, six of the homes along the northwest side of Cabrillo Avenue that back onto the ravine are not yet under construction. South of Benedict Lane, the first home 443 Cabrillo Ave is present, but 403, 347, 343, 339, 335, and 331 have not yet been built. Construction and grading for the elementary school has not yet commenced. Grading of the area where the six homes are to be built appears to be either complete or nearly complete. During grading a large number of trees were removed from the original stand that filled the upper portion of the ravine. In addition a large amount of fill has been pushed into the drainage. It is impossible to tell how thick the fill is or whether it was adequately engineered. The graded home sites consist of two benches separated by a small vertical step, with the step facing northwest - toward the ravine. The fill placed in the ravine forms a slope that reaches the bottom of the ravine; and that fill has moved the centerline of the stream to the northwest - away from the properties on Cabrillo Avenue toward what will eventually be Benedict Lane.

A strange shadow is present at the base of the southeast side of the ravine directly behind 343, 339, and 335 Cabrillo Avenue. The size of the shadow (when compared to the shadows cast by the existing homes) appears to be a vertical face on the order of 8 feet high at the base of the fill slope. I do not know what this feature represents, but it may be a near vertical cut at the base of the fill along a road in the bottom of the ravine. It is possible that it is a road perhaps graded to allow equipment access for the fill placement.

ATTACHMENT 1

There is no development on the northwest side of the ravine. However there appears to be a narrow bench along the northwest side, which may be an old road. The uppermost part of the ravine (the area now filled during the construction of the school) shows no indication of an incised channel.

There appear to be no recent landslides in the ravine. However, it appears that a significant amount of sediment has entered the ravine and has been moved down channel (perhaps by the ephemeral stream and/or by grading). This has unquestionably altered the gradient of the stream.

Second Summary:

> ***The first major alteration to the ravine occurs during the initial grading. A double bench is cut into the top of the slope and the Cabrillo fill is placed in the ravine. This partially fills the drainage and diverts the stream to the northwest. This changes dramatically the nature of the drainage. The drainage is partially filled with earth materials and probably organic material and debris. The floor of the ravine is raised in its upper reaches creating an area of steeper slope (knick point) The knick point will increase the velocity of flow which in turn will accelerate erosion in the fill, and the movement of the knick point upstream.***

June 13, 1968: Scale: ≈ 1: 13,000 Photo #'s GSVBZK 2-58, 2-59

The Santa Cruz Garden's subdivision is almost complete. However, the six homes noted above, that lie southeast of the ravine have not yet been built. Santa Cruz Gardens Elementary School has been built and the grading of the playing fields is completed, along with the construction of the "outfall" for the runoff from the subdivision. The graded benches (future home sites) are not vegetated, but the step between the benches and the fill slope appear to be heavily rilled. Benedict Lane has not yet been graded into the hillside northwest of the ravine. The shadow that looks like a vertical cut along the base of the fill slope is still evident.

The stream in the head of the ravine (which is now receiving greatly increased runoff through the 24 inch culvert) appears to be incised. (This is what one would expect.) Areas of light colored tonal pattern in the bottom of the ravine suggest that sediment is being eroded into the ravine, probably from the "Cabrillo fill" and elsewhere in the subdivision. Almost certainly some of the sediment is derived from the grading done for the school; and some may be the result of incision by the stream. There is enough resolution in the photographs to suggest that there is a large vertical step in the stream channel (probably 10 feet ±) at about the downstream edge of what will be the repair area.

A possible recent landslide scar may lie behind 327 Cabrillo Avenue, and a small landslide scar may be present on the northwest side of the ravine on the edge of the school playing field.

April 11, 1973: Scale: 1: 15,846 Photo #'s 7-4, 7-5

Western portion of subdivision is complete. Benedict Lane has been graded. The Pearson home has not yet been built. Construction of Benedict lane has created a large fill prism at the head of the ravine and along the outer edge (southeast) of the road. It appears that a small slide mass has originated in this fill prism near the head of the ravine.

High reflectivity in the center of the ravine suggests erosion and or deposition has recently occurred in the drainage. It is impossible to determine anything regarding the depth of an

ATTACHMENT 1

erosional channel. A strange sinuous shape lies above the base of the fill on the southeast slope behind 343, 339, and 335 Cabrillo Avenue. It is impossible to determine exactly what it is. However, it appears to be a near vertical cut or wall that is probably part of a road/trail or perhaps a retaining structure.

The home at 325 Cabrillo Avenue appears to have a recent slide scar in the back yard.

Third Summary:

> ***The homes along Cabrillo Avenue are now completed. Benedict Lane has been graded, and it appears that the inner (northwest) portion of the road is on cut, while the outside (southeast) portion clearly is a fill prism. Based on my examination of the main scarp of the December 2005 landslide, the fill is composed of a variety of earth materials and contains abundant construction debris, organic material and trash. Clearly this fill has not been adequately engineered. It is unstable and will eventually be affected by landsliding. The fill has buried eucalyptus trees and raised the floor of the stream valley, assuring that the slopes will be undercut by the stream.***

October 14, 1975: Scale: 1: 12,000 Photo #'s 1-36, 1-37

No major changes in the area; similar to 1973. Vegetation is now exceedingly thick and the tree canopy completely obscures the ravine. A small landslide has formed either in the Benedict Lane fill or the slide has originated on the school property - can't tell for certain. This slide is directly across from 339 Cabrillo Avenue. Photos are difficult to interpret because of shadows created by a low sun angle.

April 11, 1980: Scale: greater than ≈ 1:40,000 Photo #'s 179-55, 179-56

Scale is too small to be very useful. However, the photos show that the Pearson house has been built. They presence of a light tonal pattern along the northwest side of Benedict Lane suggests that additional fill has recently been place along Benedict Lane and it appears that the fill prism has been significantly widened. The floor of the ravine is not visible.

April 12, 1985: Scale: ~ 1:40,000 Photo #'s WAC-85 CA 13-140, 13- 141

Good sun angle. Both at the Pearson home and along Benedict Lane the light tonal density indicates that recent grading has occurred - along the road and at the home site. The fill prism appears to be at least twice as wide as the road bed of Benedict Lane. Numerous trees have been cut at the home site and along the road over the past 3 years.

June 16, 1989: Scale: 1: 35,000 Photo #'s WAC 89 CA 36-154, 36-155

Fill prism again appears to be at least twice as wide as Benedict Lane on the average, and in some places considerably wider. Trees completely obscure the ravine.

October 18, 1989: Scale: 1:12,000 Photo #'s AV 3662 1-6, 1-7

Clearly, the fill prism is twice as wide as the road bed of Benedict Lane. Few if any changes have occurred between 1985 - 1989. Trees completely obscure the ravine.

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May 14, 1990: Scale: 1: 15,840 Photo #'s WAC SANTA CRUZ - 90 9-141, 9-142

Color photos, with good sun angle and scale. Parking area is wide - approximately 2 ½ times road width at a maximum. It appears that a small debris avalanche or slide chute is present on the Pearson property near the parking area, and a small slide may have occurred off of the home site southwest of the Pearson property on Benedict lane. Recent landslides appear to have occurred behind homes along Cabrillo Avenue. No evidence of recent dumping of fill. The center of the ravine is once again completely obscured by the tree canopy.

Fourth Summary:

> ***The fill prism along Benedict Lane has not changed significantly in the past 5 years (since about 1985). This suggests that the amount of fill placed since 1985 was relatively minor. The floor of the ravine is completely obscured.***

June 22, 1994: Scale: 1: 15,840 Big Creek Lumber 13-4, 13-5

It appears there is a small change in the parking area, and that a bit more fill has been added to Benedict Lane. Light tonal area in the bottom of the ravine indicates that sediment and debris has moved into the center of the ravine from either behind the homes along Cabrillo Avenue, or perhaps from the Benedict Lane area. One tree has been cut down near the Benedict Lane parking area. Debris may have slid into ravine from an area near Pearson's swimming pool - it's difficult to tell. Possibly a couple of debris avalanche scars are present at the northeast end of the parking area along Benedict Lane.

September 20, 1997: Scale: 1: 24,000 Photo #'s WAC-97CA 14-257, 14-258

Very little change, if any, except for the tree canopy, which obscures more and more of the area. No indication of an addition of large amounts of fill to the Benedict lane fill prism.

June 26 & 27, 2003: AMBAG 316-03, 316 -04 & 206 -02, 206-03

Large scale color photographs with excellent resolution. Fill prism is essentially unchanged. Any additions of fill between 1998 and 2003 were minor.

Summation:

The area was originally open grass land with a eucalyptus grove in the ravine. The ravine had experienced down-cutting or incision prior to the development of Santa Cruz Gardens but not in the uppermost reaches. The incision was probably in response to a combination of sea-level fluctuations and tectonic uplift. Land-use changes associated with grazing, burning of the coastal grass lands by the Indians, logging, etc. may also have contributed to the erosion. It is impossible to sort these out and it is irrelevant to the proposed repair. A farm road (dirt trail) existed in the ravine built partially on the remnant of the old valley floor (the stream terrace). There is clear evidence that the east side of the ravine had experienced small shallow debris slides in the past.

The construction of homes along Cabrillo Avenue and the construction of Santa Cruz Gardens in general altered the hydrology. The homes along Cabrillo Avenue were built on a fill prism that was built out into the ravine, displacing the stream to the west and raising the floor of the ravine. This was followed by the construction of the elementary school and the construction of Benedict

ATTACHMENT 1

Avenue, which resulted in fill being placed on the west side of the ravine and apparently some additional filling of the ravine. This was followed by accelerated erosion from the stream which deepened the ravine, eroded away the toe of the fill prism and apparently triggered the landslides that have resulted in vertical slopes behind the homes along Cabrillo Avenue. As early as 1973 - 75 it appears that small landslides were occurring on the east side of the ravine. In the early 1990's there is evidence of additional landslide activity behind homes on the east side of the drainage. In a similar fashion small landslides have occurred on the west side of the ravine.

Although we can reconstruct the history of changes in the area that resulted in the landsliding in to the ravine it is far more difficult to estimate the size of erosional changes in the ravine. Based on what I can glean from the aerial photos and approximately 8 field visits to the ravine to collect information I would propose the following scenario for the erosional history.

Before Construction of Santa Cruz Gardens

The ravine was experiencing a long period (thousands of years) of erosion to the following. First, sea-level has been essentially stable following its rise to its present position within the past 4,000 - 5,000 years. This stable sea-level when combined with slow uplift of the Santa Cruz Mountains (about 1 foot per thousand years) resulted in the stream down-cutting into the valley floor. As the down-cutting continued the "knick point" associated with the down-cutting migrated slowly upstream. However, the terrace with the road is almost certainly older. Prior to the 1960's there is no evidence that the upper portion of the "ravine" (including part of the repair area) had an incised stream channel. Well below the "repair area" there may be a small channel incised into the present valley floor. There was probably a knick point (area of steeper slope) associated with this channel that was slowly migrating upstream.

Post Construction

Over a period of 15 + years construction in and above the head of the ravine completely changed the nature of the ravine. The "repair area" was partly covered with fill and the channel was pushed to the northwest. In addition fill was pushed into the drainage from the northwest. This resulted in a raising of the stream bed, which combined with increased discharge, accelerated the erosion of the fill - and probably some native materials.

My field examination reveals that the channel had eroded down between 6 and perhaps 12 feet in the repair area. However, most of this was in poorly engineered and simple dump fills. The stream also has clearly eroded down into the native materials in several areas, but these are areas where the stream was pushed strongly to the northwest - so it may largely reflect lateral erosion more than a simple deepening. The important aspect of the down-cutting is that it reduced the gradient and has pushed the "present day" stream toward an equilibrium (graded) condition. This suggests that the future erosional potential has been reduced by the down cutting. It's difficult to say much more about the erosional history or to predict the future erosion potential.

Without knowledge of the original condition of the ravine it is impossible to accurately determine how much erosion has occurred, much less where it occurred. Once we move downstream, away from the repair area, the effects of the subdivision caused hydrologic change appear to have been relatively minor. It appears that there may have been about 3 feet of incision of the stream into a "relatively flat old stream bed" in the lower portion of the ravine. This is several hundred yards below the repair area. There is no way of determining how much of this erosion is due to the hydrologic changes associated with the Santa Cruz Gardens subdivision and how much simply reflects the evolution of the channel over the past 5000 years

ATTACHMENT 1

RESPONSE TO:

Assessment of Historic Grading

4. Southeast Hillslope

Based on aerial photo interpretation it appears that the homes along Cabrillo Avenue are built on native materials. The obvious fill prism that was graded into the ravine appears to be restricted to the back yards and the area that originally lay northwest of the back fence. I suspect that the combination of the small northwest facing step and the fill were used by the developer to expand the properties to a size where they were developable.

This is supported by an inspection of the materials that lie above the Purisima Formation where they are exposed in the landslide scars behind the homes. Although the material is crudely bedded, the presence of pebble imbrication and fine grained interbeds indicates that the material exposed in the scars is of stream origin. As the uppermost portions of the deposits are not accessible, and cannot be examined in detail, it is possible that perhaps some fill material is present in this area. However, the amount must be exceedingly small. In addition if such deposits are present they have been placed on stable, well drained fluvial deposits hundreds of thousands of years old.

The aerial photos also show that there are no significant landslide deposits in the area where the homes were built. Small "scoop shaped" scars (associated with landslides) can be clearly seen on the aerial photographs from the 1940's and 50's at the top of the slope along the southwest side of the ravine. Although "scoop shaped" scars are present they represent the erosional scar produced by the slope process - not the slide deposit. The landsliding into the ravine consists almost entirely of small soil and debris avalanches and flows. These types of slides routinely occur in the less well consolidated terrace deposits, with the slide masses falling, tumbling sliding and flowing out into the ravine. Little if any slide material is left at the top of the slope. There is no indication that rotational block landslides were ever present in the area of the "Cabrillo fill." There is no evidence of slide deposits being present at the top of the terrace. Once again, during field inspection, the scarps associated with the most recent landslides clearly expose "in place" Purisima Formation in the lower half of the slopes, and terrace deposits overlying the Purisima Formation. This indicates that the slide masses associated with the scars visible on the aerial photos slid into the ravine and were subsequently eroded away.

The drainage ditch at the top of the slope was part of the original design and its purpose was undoubtedly the protection of the fill area from flow over the edge of the fill. The concept was good but the home owners defeated it by draining roof and yard runoff into drainage systems and then concentrating it on the fill slope, thereby contributing to its eventual failure.

In summation, all of the field data and the aerial photo interpretation indicate that the homes at the top of the southeast hillslope are not built on fill, but on native materials.

5. Northwest Hillslope

The fill along Benedict Avenue is clearly not an engineered fill. The fill contains large amounts of trash, building materials, wood, chunks of concrete, etc. It is not adequately compacted, and it apparently fails readily when saturated. The history of fill placement is clearly long and complex.

ATTACHMENT 4

Exactly who placed what, how much and when it was placed is open to question. It is probable that fill was dumped into the ravine during the construction of the school, construction of the road and the homes. The county letter states: **"Both permitted and unpermitted grading has occurred..."** In the repair area I saw no evidence of what I would call an engineered fill. If some of this fill was permitted, I'd be curious as to why it was permitted and who from the county inspected it.

Based on aerial photo interpretation and field work it is clear that the top of the fill must lie near the middle of the Benedict Avenue, since the cut on the northwest side of Benedict Avenue exposes native materials. The lower edge of the fill is more difficult to delineate but can be approximated over much of the area by a break in slope. In the area of the recent 2005 landslide a combination of fill and landslide debris extend to the center line of the drainage. These boundaries are shown on the Geoforensics Map of 5-15-07. Consequently, we have a reasonably accurate portrayal of the distribution of fill in the repair area that will have to be removed.

Summation:

A combination of aerial photo interpretation and field work indicates that although small landslide scars were present in the area of the "Cabrillo fill" there is no evidence that landslide deposits remain at the site. The homes are built on native materials and the vast majority, if not all of the original fill has failed, slid into the ravine and been removed (or at least partially removed) by erosion. My interpretation is that the exposure of **stream terrace deposits overlying Purisima Formation bedrock in the southeast wall of the ravine indicates makes it impossible for landslide deposits to underlie the existing homes and their back yards.**

The fill area on the northwest side of the ravine is composed of non-engineered fill. The distribution of the fill as indicated on the Geoforensics map is a reasonably accurate portrayal. The exact boundaries may be off by a few feet, but these variations will be easily detected during the initial stages of the proposed grading for the repair.

ATTACHMENT 1

GEOFORENSICS INC. Consulting Soil Engineering
561 Pilgrim Dr., Suite D, Foster City, California 94404 Phone: (650) 349-3369 Fax: (650) 571-1878

File: 203205
May 15, 2007

Fitzpatrick, Spini & Swanston
838 South Main Street, Suite E
Salinas, CA 93901

Attention: Charles Swanston

Subject: **McCartney, et al. V. Pearson, et al**
101 Benedict Avenue
Santa Cruz, California
PROPOSED SLIDE MITIGATION WORK

Dear Mr. Swanston:

This letter has been prepared to present our recommendations for providing long term stability to the overly steep creek banks which extend from the Pearson property up to the rear of the various plaintiffs properties.

Site Description and Observations

The subject site consists of a large irregularly shaped lot owned by the Pearsons at 101 Benedict Avenue in Santa Cruz. To the southeast of the Pearson lot, several smaller lots have been developed with single family residences which front on the 300 block of Cabrillo Avenue. An elementary school is located to the north of the Pearson property, while other developed residential lots are located to the northeast of the Pearson property.

The topography in the area consists of a deep drainage ravine which runs roughly northeast down to the southwest, subparallel to the common property lines between the plaintiffs' and Pearson properties. The natural side slopes of the ravine slope down from the back of the plaintiff lots on a gradient of approximately 1:1 (45 degrees). Opposing slopes to the northwest of the ravine axis are generally on the order of 1.25:1 or flatter.

The creek runs down through the axis of the ravine. The creek has downcut into the natural soils, resulting in generally low (4 to 8 foot tall) steep to near-vertical side banks directly along the creek axis. Along the axis of the ravine, there are several eucalyptus logs and branches within the flow line of the ravine. The logs are generally cut pieces of tree trunk, not simply fallen trees. The logs and branches extend along nearly 200 feet of the creek alignment before terminating just upstream of a waterfall (steep gradient change in the creek base).

ATTACHMENT 2

File: 203205
May 15, 2007

The upper reaches of the ravine/creek (on the Pearson property) have been filled with soil in the past to provide an access driveway to the main lot. A culvert which extends upstream beyond the limits of the property (and reportedly drains portions of the adjacent subdivision) outlets at the toe of the ravine fill near the northeastern end of the Pearson lot. The pipe consists of a 24 inch diameter concrete culvert.

The grading for the driveway continues along the northwestern side of the ravine, consisting of a conventional cut-fill section (cut into the hill on the upslope side, and fill on the downslope side of the driveway). The limits of the fill were generally observed to extend down the slope banks on the order of 20 to 50 feet from the crest of the fill (see Figure 3). The fill did not extend into the creek at any point, and was generally located at least 10 to 40 feet from the steep creek banks. The location of the toe of the fills was generally apparent as a change in vegetation, and by presence (or lack) of soil build up against tree trunks.

Sloughing is prevalent along the margins of the creek downstream of the waterfall where the near-vertical creek banks are over 10 feet tall. Landsliding is also prevalent both upstream, and downstream of the water fall (see Figure 3). Slide masses tend to be larger and more prolific along the steeper southeastern side slopes of the ravine, than they are on the slightly more gentle northwestern side of the ravine. The age of the slope failures appears to span many decades, with some of the failures on the order of only a couple of years old, while others are overgrown, and indicative of decades of inactivity.

The sliding generally results in most of the failed materials having been deposited along or in the creek. Much of the debris has been washed away over the years. Typically, the landslide scars indicate that the materials which have been liberated off the slope are less than 5 feet thick. This mass "shedding" of the outer face of the bank best describes the visual appearance of these slides. A deeper slide occurred in the winter of 2005/06 along the downslope side of the access road to your lot. This slide included old fill materials which had been placed along the downslope side of the roadway, but the failure does not yet extend up into the road. This slide appears to have been on the order of 5 to 10 feet thick.

Where the slides have occurred, there are good exposures of the native materials. The native materials have been evaluated by several geologists as part of the lawsuit. The geologists generally agree that the materials consist predominantly terrace deposits (lightly cemented sands, silts and gravels) with a small amount of fill at the edges of the buildings pads along the top of the southern ravine bank. Similar materials comprise the northern bank of the creek, but the fill deposits are significantly thicker (up to about 6 feet thick) along some portions of the roadway.

Along the common property line between the Plaintiffs' and Pearson lots, a concrete V-shaped ditch has been installed. The ditch drains from the northeast down to the southwest, where the ditch then discharges through a culvert down to the top of the top of the vertical creek bank. At that location, the dissipater on the end of the culvert has been broken off, and there has been a failure of the creek bank. At the time of our visits, some portions of the V-ditch were filled with debris.

ATTACHMENT 2

Several corrugated plastic pipes were observed to penetrate under the rear fences of the Plaintiffs' lots to drain into the V-ditch. Often the ends of the pipes are turned upward to drain over the edge of the concrete ditch. This results in water ponding inside the pipe. Corrugated plastic pipes were also observed to pass by the V-ditch, discharging onto the steep ravine banks. One such pipe was observed to extend out of the face of one of the newer slide scars.

Concrete or other materials have been used to bridge over the concrete V-ditch to provide access from the plaintiff properties into the Pearson lot. These bridges will tend to limit flows through the ditch, particularly when the ditch is filled with debris.

MITIGATION RECOMMENDATIONS

General

The ravine banks are excessively steep in their native state. These slopes should be expected to periodically fail as the exterior face of the slope becomes weathered by time and vegetative growth, and then become saturated by rainfall. Therefore, to repair the existing slide areas only, would be to address only those areas we believe to be currently most stable (although not adequately stable), while allowing the more weathered (less stable) areas to remain unaddressed. Therefore, to provide the best long term stability to the existing failed slopes, as well as the remaining overly steep ravine slopes, we propose to buttress all of the overly steep ravine slopes by the construction of a deep fill within the ravine.

The existing debris-strewn, eroded creek channel will be replaced by an extension of the existing culvert, which will within the new fill to daylight just beyond the base of the waterfall area in the existing creek. A rock rip-rap toe is proposed for the fill to permit the escape of underground water, stabilize the toe of the fill, and to avoid piping failures.

The proposed repair will not only stabilize the entire overly steep ravine slopes, but it will help to limit future sedimentation into the creek environment from continued back-cutting of the waterfall, and elimination of soils liberated in the slope failures.

Site Preparation

Prior to the placement of any fill within the ravine, the affected areas of the side slopes should be stripped of vegetation, existing organic debris, and existing fills. All organic materials, and any of the existing fill deemed to be unacceptable for use as new fill should be removed from the site. Topsoils may be stockpiled for future use on the finished fill. All concrete pieces, loose pipes, and other debris should also be hauled away.

Where trees are to be removed, the trunks will need to be removed as well. Holes created by removal of tree trunks may be repaired by placement of compacted fill as the main engineered fill is placed.

ATTACHMENT

Temporary slopes in the lightly cemented natural sandy bedrock materials should not exceed a vertical height of 8 feet. Higher cuts may be possible, but must be authorized in writing by our office. Temporary cut slopes in existing fills should not exceed 0.5:1.

Prior to the placement of any fill, an axial subdrain should be placed down the general alignment of the existing creek. The subdrain should consist of a minimum 6 inch diameter perforated PVC Schedule 80 pipe enveloped in Class 2 permeable filter rock. The use of 3/4 inch drain rock is not recommended for these systems due to the potential for piping failures to occur at breaches in the fabric. This axial drain may be connected later to the various bench drains to be constructed under the adjacent filled slopes.

During fill construction, it would be permissible to convey any small amounts of summertime creek water down through the subdrain pipe. However, during potential periods of rainfall, or if unacceptable to the permitting municipal authority, it may be necessary to provide a temporary by-pass prior to fill construction.

Rip-Rap Buttress

At the toe of the new slope, we recommend that a rock rip-rap buttress be constructed to create an armored surface to the toe of the slope to limit erosion and piping failures. The rip-rap buttress will start at, and around, the concrete energy dissipater for the storm drain outfall, and extend a minimum of 15 feet up the slope. The rip-rap buttress may have a finished surface gradient of up to 1.5:1.

The rip-rap should consist of a crushed, well graded rock mix, with particles ranging from 4 to 24 inches in nominal diameter. Under and behind the rip-rap, a 1 foot thick (minimum) layer of 3/4 to 1.5 inch drain rock should be placed to help cushion the underlying filter fabric from the rock rip-rap edges. Under and around the drain rock cushion, a layer of filter fabric should be placed over a 1 foot thick layer of Class 2 permeable filter rock. The filter rock may be placed directly against the native and compacted soils.

A perforated (filter fabric wrapped) collection pipe (SDR-35 or stronger) pipe should be installed within the filter rock layer to collect any water and convey it to drain into the energy dissipater, or other approved outlet location.

Fill Construction

Fill materials may consist of approved on-site soils which are free of organic materials, and rock fragments larger than 6 inches in nominal diameter. Import soils should also be clean, generally granular, having a PI of less than 15. All proposed import fill materials must be approved for import to the site by the project soils engineer.

ATTACHMENT 2

The new fills will need to be compacted onto benches cut into the native, unfailed "bedrock" materials, as verified by our office. Hard benches should be struck at vertical intervals no more than 20 feet vertically. A chimney drain extending a minimum of 5 feet up the back cut of these hard benches should be provided to collect any ground water attempting to enter into the underside of the fill. Due to the sandy nature of the site soils, we recommend that the collector subdrains consist of a perforated Schedule 80 pipe with a filter fabric sock, enveloped in Class 2 permeable filter rock.

Where fill thicknesses will exceed 25 feet, the lower portions of the fill must be compacted to a minimum of 95 percent of their maximum dry density (MDD) as determined by ASTM D-1557. Where fills are thinner than 25 feet, and in the upper 25 feet of a deeper fill, the soils need only be compacted to a minimum of 90 percent of their MDDs.

Permanent slopes are to be no steeper than 2:1 for soils, and 1.5:1 for rock rip rap materials. Upon completion of the fill construction, the exposed soil surfaces should be vegetated to limit erosion. Where fill, or denuded natural, slopes are steeper than 10:1 we recommend that an erosion control fabric be placed over the soil to limit erosion until vegetation can become well established. The erosion control fabric should extend a minimum of 3 feet beyond the axis of the crotch between fill slopes and native slopes.

Surface Drainage

The finished fill surface should slope back away from the crest of the downslope face in order to drain surface waters to a new catch basin located a minimum of 20 feet from the crest of the downstream fill face. This basin should have a perforated riser pipe to permit water to still access the catchbasin in the event that the entry grate is not adequately maintained. The catch basin should be located over a man-hole which will serve as the turning point/grade break in the storm drain system extension.

We anticipate that the alignment of the proposed drain line extension may be oriented down the center of the ravine. However, the alignment of the pipeline may be moved laterally towards either side of the ravine fill as desired.

The existing southern V-ditch collection system should be cleaned and repaired as necessary. The outfall pipe should be extended to discharge into the new energy dissipater at the toe of the new fill. All pipelines discharging into the V-ditch should be replaced with smooth-walled pipes which discharge at least sub-parallel to the flow in the axis of the V-ditch (rather than as they current drain perpendicular to the ditch).

An existing culvert for the access roadway to the Pearson residence should be replaced with a new pipeline which will convey the roadway water down into extended storm drain system within the ravine fill.

ATTACHMENT 4

File: 203205
May 15, 2007

LIMITATIONS

The information and recommendations contained in this letter have been prepared for the design and implementation of the agreed upon slide/slope repair which was the subject of the litigation. This report has been prepared for the exclusive use of the addressee, and the architects and engineers for aiding in the design and construction of the proposed repairs. It is the addressee's responsibility to provide this report to the appropriate design professionals, building officials, and contractors to ensure correct implementation of the recommendations.

The opinions, comments and conclusions presented in this report were based upon information derived from our field investigations. Conditions may vary from those observed and anticipated. Such variations may result in changes to our recommendations and possibly variations in project costs. Should any additional information become available, or should there be changes in the proposed scope of work as outlined above, then we should be supplied with that information so as to make any necessary changes to our opinions and recommendations. Such changes may require additional investigation or analyses, and hence additional costs may be incurred.

Our work has been conducted in general conformance with the standard of care in the field of geotechnical engineering currently in practice in the San Francisco Bay Area for projects of this nature and magnitude. We make no other warranty either expressed or implied. By utilizing the design recommendations within this report, the addressee acknowledges and accepts the risks and limitations of development at the site, as outlined within the report.

Should you have any questions please contact the undersigned.

Respectfully Submitted;
GeoForensics, Inc.,

Daniel F. Dyckman, PE, GE
Senior Geotechnical Engineer, GE 2145

cc: 4 to addressee;
1 to Bowman & Williams (attn: Joel Rice)

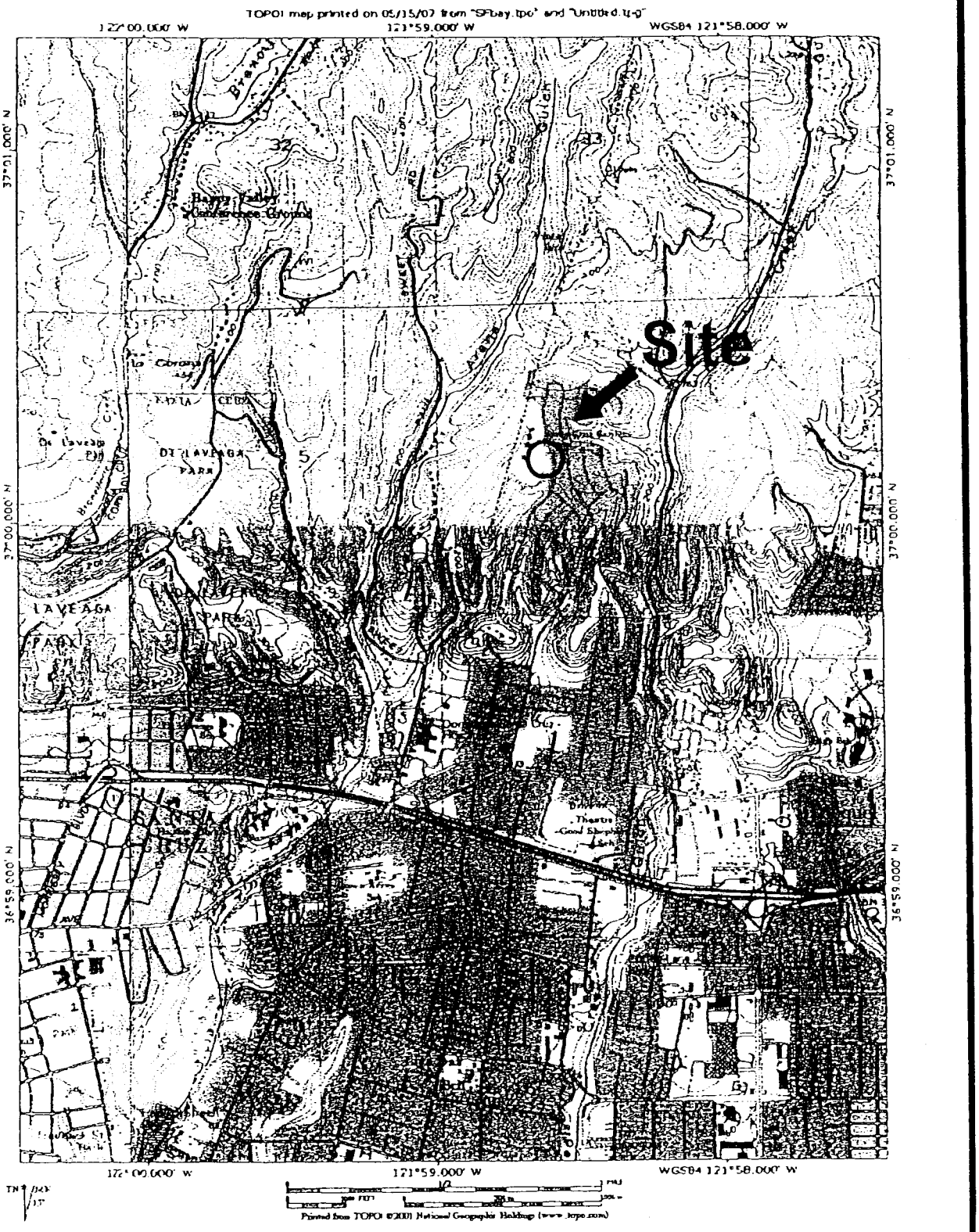
ATTACHMENT 2

64-92

GeoForensics Inc.
561-D Pilgrim Drive Foster City, CA 94404
Tel: (650) 349-3369 Fax: (650) 571-1878

Figure 1 - Site Location

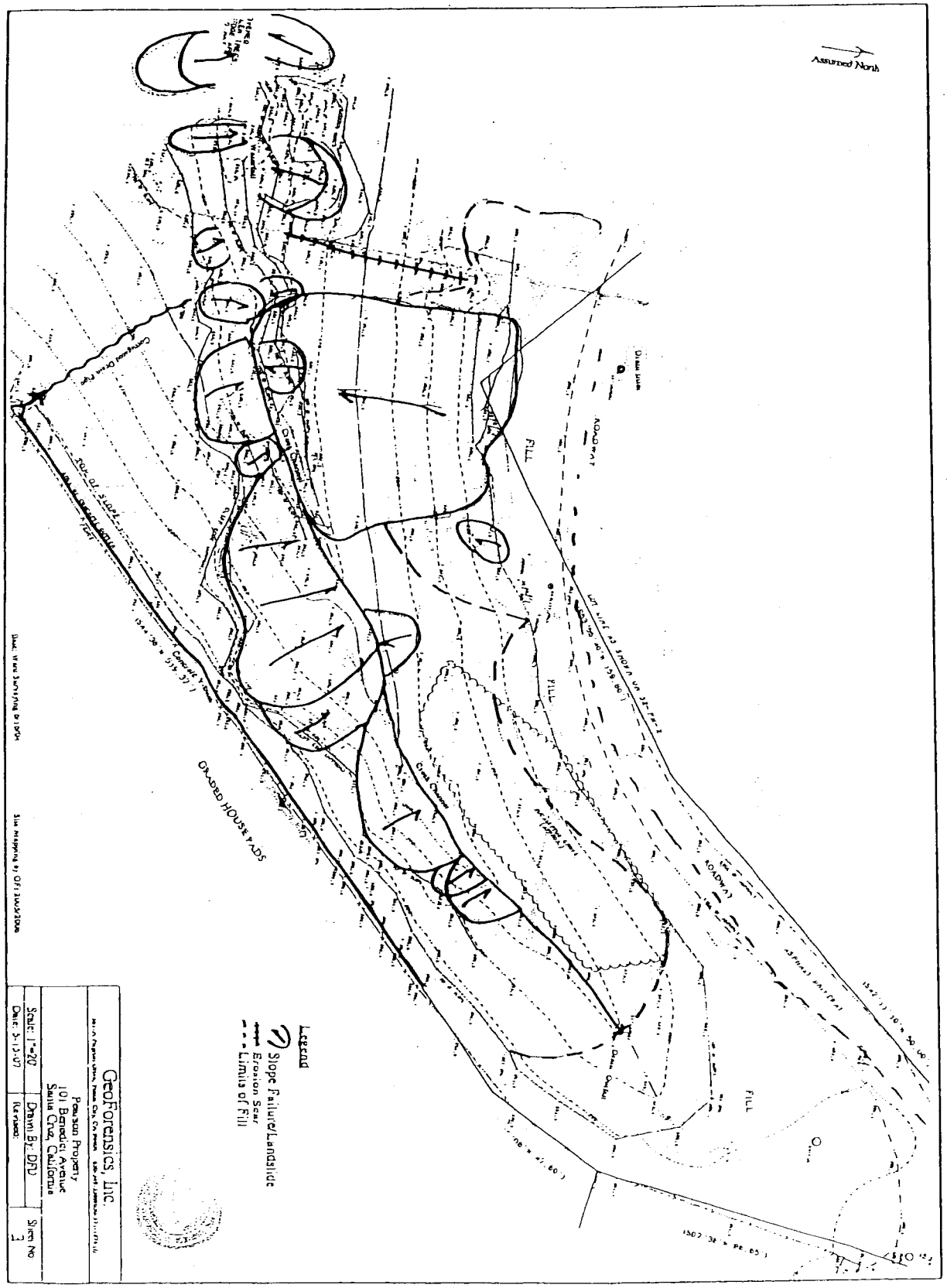
ATTACHMENT 2



GeoForensics Inc.
561-D Pilgrim Drive Foster City, CA 94404
Tel: (650) 349-3369 Fax: (650) 571-1878

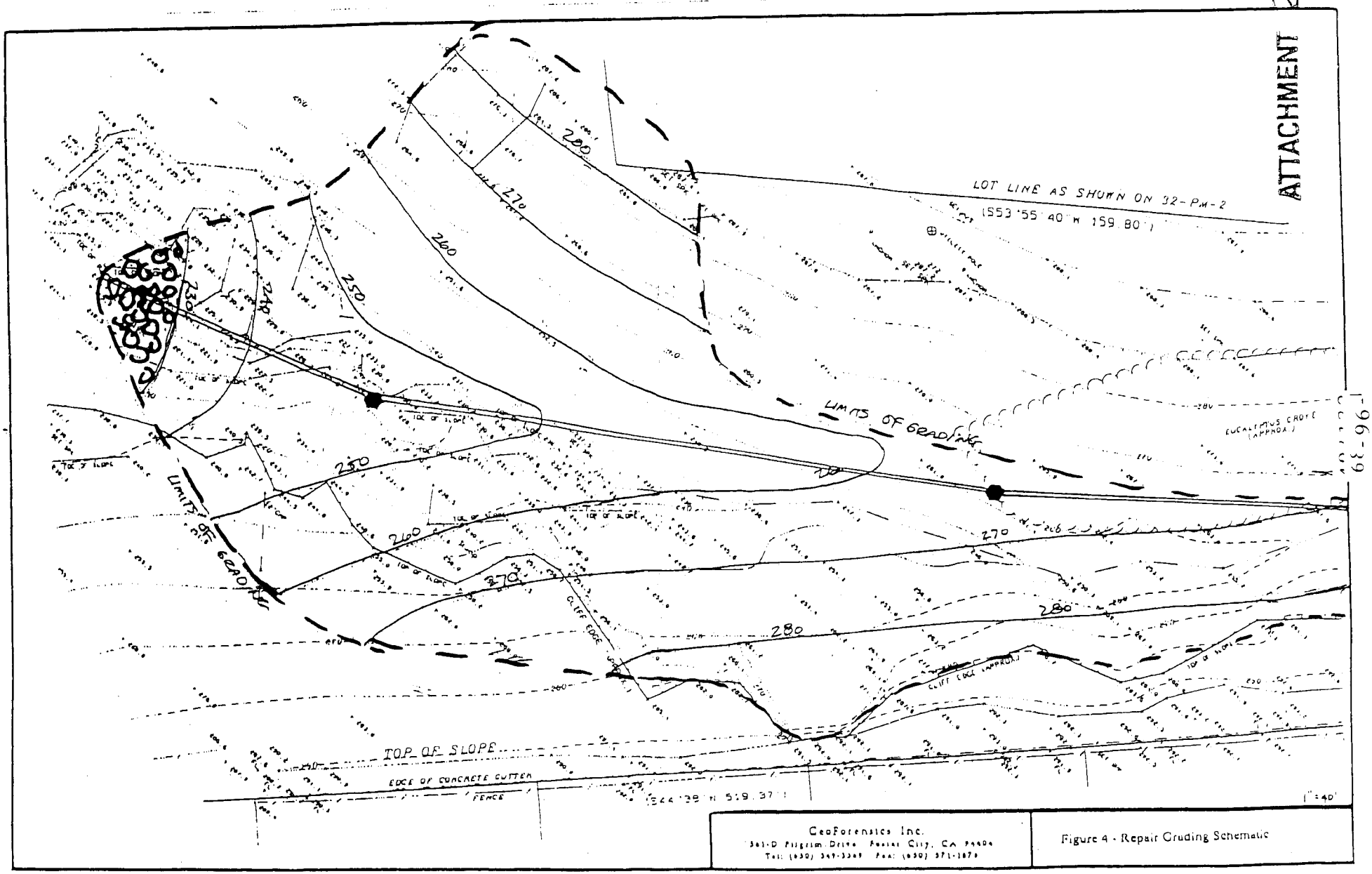
Figure 2 - Vicinity Topography

ATTACHMENT 2



ATTACHMENT 2

ATTACHMENT 2



CeoForensics Inc.
361-D Pilgrim Drive Foster City, CA 94404
Tel: (650) 349-3369 Fax: (650) 571-1878

Figure 4 - Repair Grading Schematic

1-96-39

GEOFORENSICS INC. Consulting Soil Engineering
561 Pilgrim Dr., Suite D, Foster City, California 94404 Phone: (650) 349-3369 Fax: (650) 571-1878

File: 203205
May 6, 2010

Mr. and Mrs. Pearson
101 Benedict Avenue
Santa Cruz, CA 95065

Subject: **Pearson Property**
101 Benedict Avenue
Santa Cruz, California
GEOTECHNICAL REVIEW OF CIVIL PLANS (#3)

Dear Mr. and Mrs. Pearson:

This letter has been prepared to document that we have reviewed the plans prepared for the construction of the drainage repair work proposed for the ravine at the subject site.

Plans Reviewed

We were provided 9 sheets of drawings to review. The plans were prepared by Bowman & Williams Consulting Civil Engineers, and are dated January 29, 2008 with the latest revision date indicated as May 2, 2010. These drawings are identified as sheets C1.0 through C1.2, C2.1, C3.0 through C3.2, and C4.0.

Plan Review Comments

We have reviewed the above-listed plans for their conformance with good geotechnical engineering practice, and the geotechnical recommendations and parameters provided in the following reports and letters our office has issued:

Proposed Slide Mitigation Work report (dated May, 15, 2007);
Geotechnical Review of Plans letter (dated January 27, 2008);
Geotechnical Response letter (dated May 22, 2008);
Review of Plans (#2) (dated October 1, 2008);
Response to County Environmental Review letter (dated December 15, 2009).

Based upon our review, we have the following comments which should be incorporated into the final plans. ***We note that many of these comments may be made as field changes, or as plan changes, but all should eventually be incorporated into the final project construction.***

Sheet C1.0 - Catch basin CB-3 on the downslope side of the driveway should not be constructed with a perforated pipe in the base (i.e. not like 4/C3.1), as this basin is at the crest of the fill slope. All water entering into this basin must be directed to the non-perforated storm drain line system.

ATTACHMENT 3

Sheet C1.0 - At the furthest downstream dissipater apron, the northern side gabion basket wall turns across the flow line of the secondary swale entering from the northwest. We recommend that the baskets be bent outward to allow the flows of water in this tributary to enter into the dissipater system.

Sheet C1.0 - The second dissipater from the base of the system is oriented to discharge to the southwest, which will aim the waters at the side banks of the creek system. We recommend that the dissipater be rotated clockwise to better aim the discharge at the check dam so as to minimize side bank erosion. This may also allow the main drain lines under the control structure to be better aligned with the underlying 6 inch subdrain system (see comments on Sheet C1.2).

Sheet C1.1 - The main storm drain alignment has been distorted from SDMH-4 down to the final outfall dissipater. If the dissipater at station 2+50 is moved and rotated to face the check dam at station 2+00 (see above comment), then the main storm drain line can be axially aligned with the subdrain, improving flow characteristics in the main drain system. Note that this re-alignment is not required by our office, and may remain as currently designed should the civil engineer have other reasons for not realigning the pipeline.

Sheet C1.2 - Due to the steep nature of the existing side banks on the southern side of the existing creek, it is unlikely that any additional benches can be achieved on this steep slope. However, please note that it is likely that our office will require additional subdrains to be placed against the steep slope where ever layers of highly permeable materials are exposed in the face of the slope. This will help prevent those layers from flowing into the fills, bypassing subdrains on benches which may be several feet lower.

Sheet C1.2 - The upper bench along the southern rim of the repair cannot pass over the circular failure area located at the property line between Lots 104 and 105.

Sheet C1.2 - Detail 1 should be revised to note that where a keyway is to have a horizontal drainage blanket, it should extend across the entire width of the key. The 5 foot minimum for bench drains is considered to be acceptable as drawn.

Sheet C3.0 - Detail 5 should be reconfigured such that the gravel on the downslope side of the lower gabion basket is extended to the base of the basket. This will permit any water seeping into the basket to drain effectively through the gravel and out onto the lined swale below, rather than force it to pond and percolate into the fills below.

Sheet C3.1 - Detail 1 – The perforated riser is not permitted to drain storm waters into the underlying fills. Instead, we recommend that a hole be provided in the base of the metal sheet to permit low flows to drain from behind the sheet. The pipe may be fitted with a small diameter pipe which turns up the upstream face of the metal sheet to limit the potential for debris blocking the hole.

Sheet C3.1 - Detail 2 – The CMP riser must not be perforated pipe, is must be solid pipe.

ATTACHMENT 3

Sheet C3.2 - Detail 2 – please note is comments above (Sheet C1.0) regarding the opening of the upstream entrance of the dissipater to accept flows from the northwestern side tributary stream.

In general, these plans appear to have been prepared in substantial conformance with the intents of our recommendations as expressed in the various geotechnical documents identified above, and good geotechnical engineering practice. The aforementioned comments/changes are significant, but can be accommodated as field changes or by subsequent plan revisions. It remains our opinion that the current set of plans are sufficiently conformant with our report that permits may be issued based solely upon these plans in their current configuration. Therefore, **it is our opinion that these plans may be submitted to the building department for permit without further review by our office.**

It is the addressee's responsibility to provide this letter to the proper building officials, design professionals, and contractors. Delays and additional expenses may result if the proper people are not notified of our comments.

Should you have any questions please contact the undersigned.

Respectfully Submitted;
GeoForensics, Inc.

Daniel F. Dyckman, PE, GE
Senior Geotechnical Engineer, GE 2145

Cc: 4 to addressee
Bowman and Williams (email)

ATTACHMENT 3

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
A CALIFORNIA CORPORATION
1011 CEDAR • PO BOX 1621 • SANTA CRUZ, CA 95061-1621
PHONE (831) 426-3560 FAX (831) 426-9182 www.bowmanandwilliams.com

STORM WATER MANAGEMENT REPORT

Prepared For
Pete Pearson

101 Benedict Ave
Santa Cruz, CA
APN No 102-121-70
B&W File No 23870

April 27, 2010

BASIS OF DESIGN:

1. County of Santa Cruz Design Criteria.
2. ASCE Manual of Engineering Practice No. 37
3. Erosion & Sediment Control Handbook, Goldman, Steven J.
4. Bowman & Williams Site Plan Drawings

ATTACHMENT 4

TABLE OF CONTENTS

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ATTACHMENT 4

1.0 INTRODUCTION

The project entails extension of an existing 24" diameter storm drain with the 24" and 30" diameter storm drain pipes beyond the construction of a fill to stabilize an eroded drainage.

2.0 METHOD OF ANALYSIS

- The Rational Formula (shown below) is used to estimate peak runoff rates.

$$Q = C_a C i_a i A$$

Where:

Q= Estimated Peak Runoff from site (cfs)
C_a= Antecedent Moisture Factor (Unitless)
C= Runoff Coefficient (Unitless)
i_a= Rainfall Intensity Adjustment Factor (Unitless)
i= Rainfall Intensity (in/hr)
A= Area of Site (Acres)

- Precipitation data/runoff coefficients are obtained from the Santa Cruz County Design Criteria Manual.

3.0 SYSTEM EVALUATION

- Included in this report are spreadsheets for the 10, 25 and 100 year return period showing the estimated peak runoff rates through the storm drain extension.

- The time of concentration (Tc) used to determine the allowable runoff rate is 10 minutes.

- The runoff values shown in the spreadsheets are calculated using the Rational Formula. For the drainage from the driveway, 'C' is calculated to be 0.7. For the overland flow into the creek, 'C' is calculated to be 0.3. Values for 'C' are found in The County of Santa Cruz Design Criteria, a copy of these values is attached in Appendix 'C' of this report.

- Antecedent Moisture factor (C_a) for the Rational formula is assumed 1.0 for 10-year event, 1.1 for the 25-year event, and 1.25 for 100-year event.

- The rainfall intensities (I) are taken from the IDF curve, which is attached in this report. These intensities are for the 10, 25 and 100 year event.

ATTACHMENT 4

4.0 SUMMARY

The table below shows a comparison of the outfall velocity found by analyzing the pre and post improvement.

SITE IMPROVEMENT DRAINAGE SUMMARY

	Pre Development	Post Development
10 Year Event Flow Rate (CFS)	26.5	
100 Year Event Flow Rate (CFS)	49.7	
10 Year Event Velocity @ Outfall (ft/sec)	18.7	3.1
100 Year Event Velocity @ Outfall	21.9	3.9
10 Year Event Velocity in Ravine (ft/sec)	9.2	3.5
100 Year Event Velocity in Ravine @ Outfall	11.0	3.5*

*** Post Development limits flow to 10 year event with check dams.**

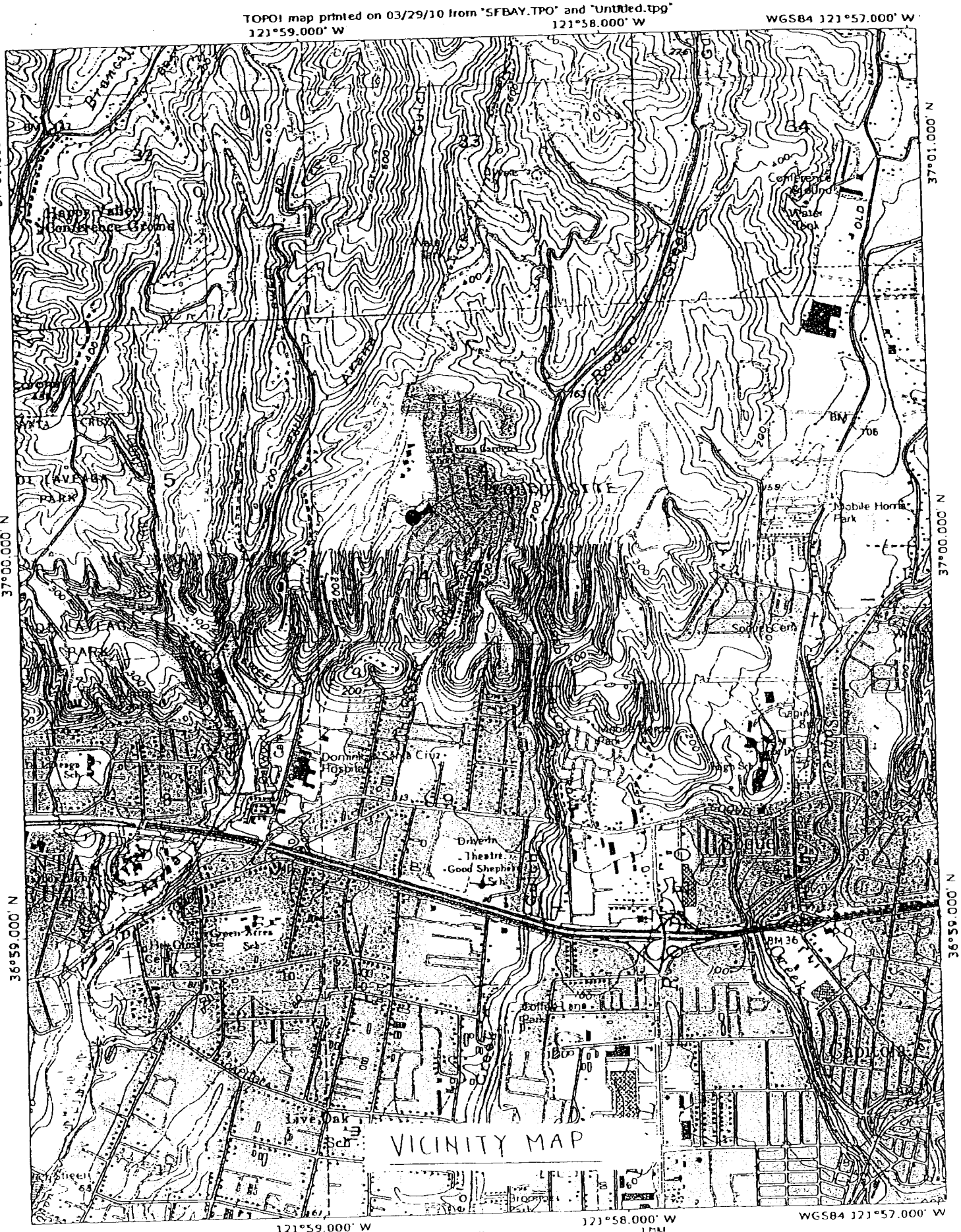
5.0 CONCLUSIONS

The net overland flow runoff from upstream was computed to be 49.7 cfs for the 100-year storm. For pipe size, we determined that 24" and 30" diameter HDPE pipes were sufficient enough to handle the peak runoff at the outfall.

The system is designed to only allow 10-year storm event runoff along the surface of the drainage. A 5 foot wide vegetated swale with erosion control blanket will handle this runoff along with five check dams. The flow velocity along the surface drainage will be reduced from 6.8 ft/s in the swale to 3.5 ft/s at the check dams. In the event that a greater storm event occurs, a control structure with a regulating weir will route excess runoff through underground piping to the downstream energy dissipater.

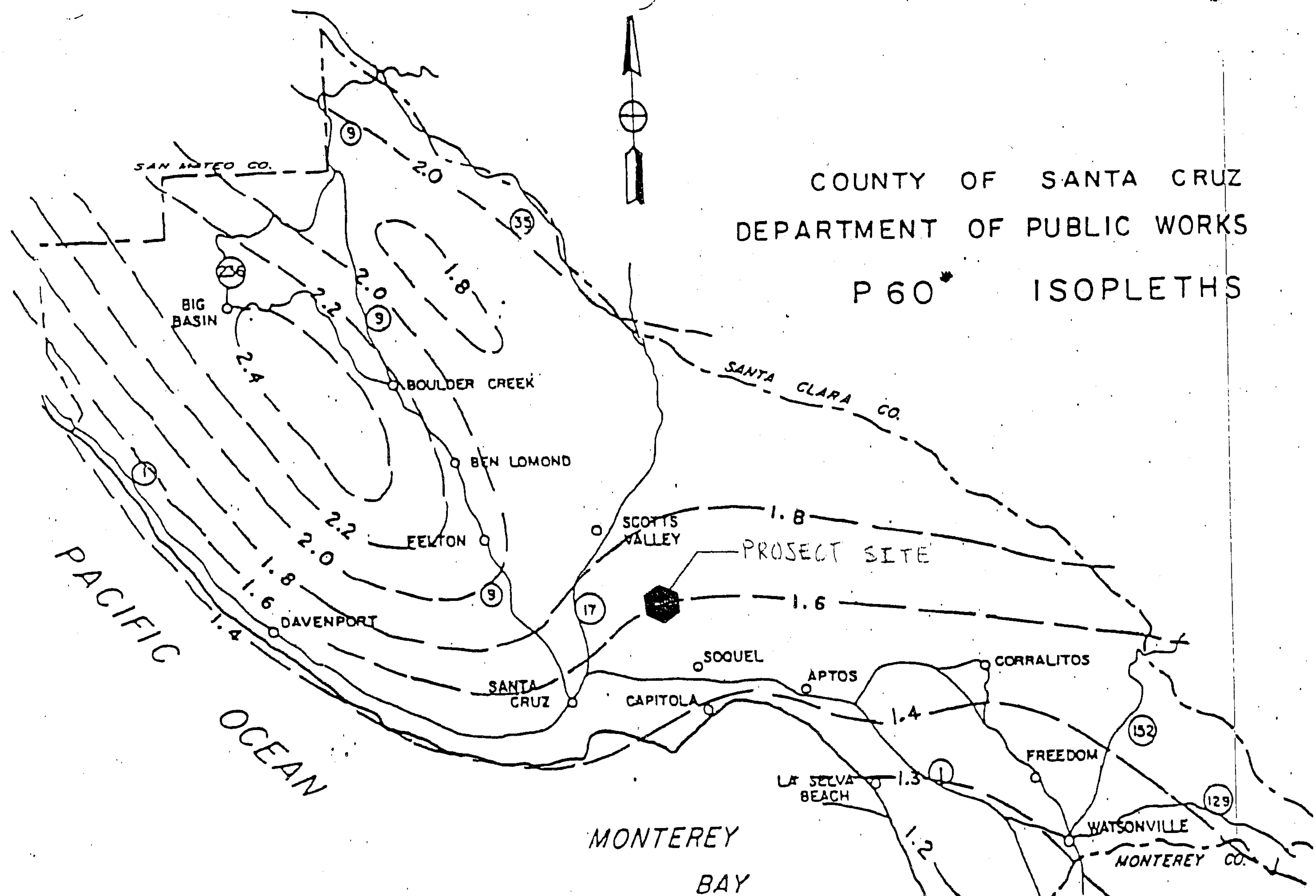
Two gabion riprap apron energy dissipaters with a gabion check dams shall be constructed to dissipate the runoff at the outlet. These two energy dissipaters are to be constructed about 100 ft apart. The first energy dissipater will handle up to a 10 year storm event. Excess runoff over 10-year event will be routed down to the second energy dissipater. The second gabion apron energy dissipater was sized to handle both high and low flow events and to further reduce the peak flow velocity from 21.9 fps to 3.9 fps for a 100-year storm event at the outfall.

ATTACHMENT 4



ATTACHMENT 4

COUNTY OF SANTA CRUZ
DEPARTMENT OF PUBLIC WORKS
P60* ISOPLETHS



*P60 DENOTES RAINFALL INTENSITY IN INCHES/HR FOR 60 MINUTE DURATION AND A 100 YEAR STORM SELECT PROPER INTENSITY DURATION CURVE FROM FIGURE SWM-3 AFTER DETERMINING P60 VALUE.

10 Yr. Return Period

((4.29112)*(1.1952)^P60_VALUE)/(DURATION^((0.60924)*(0.78522)^P60_VALUE))

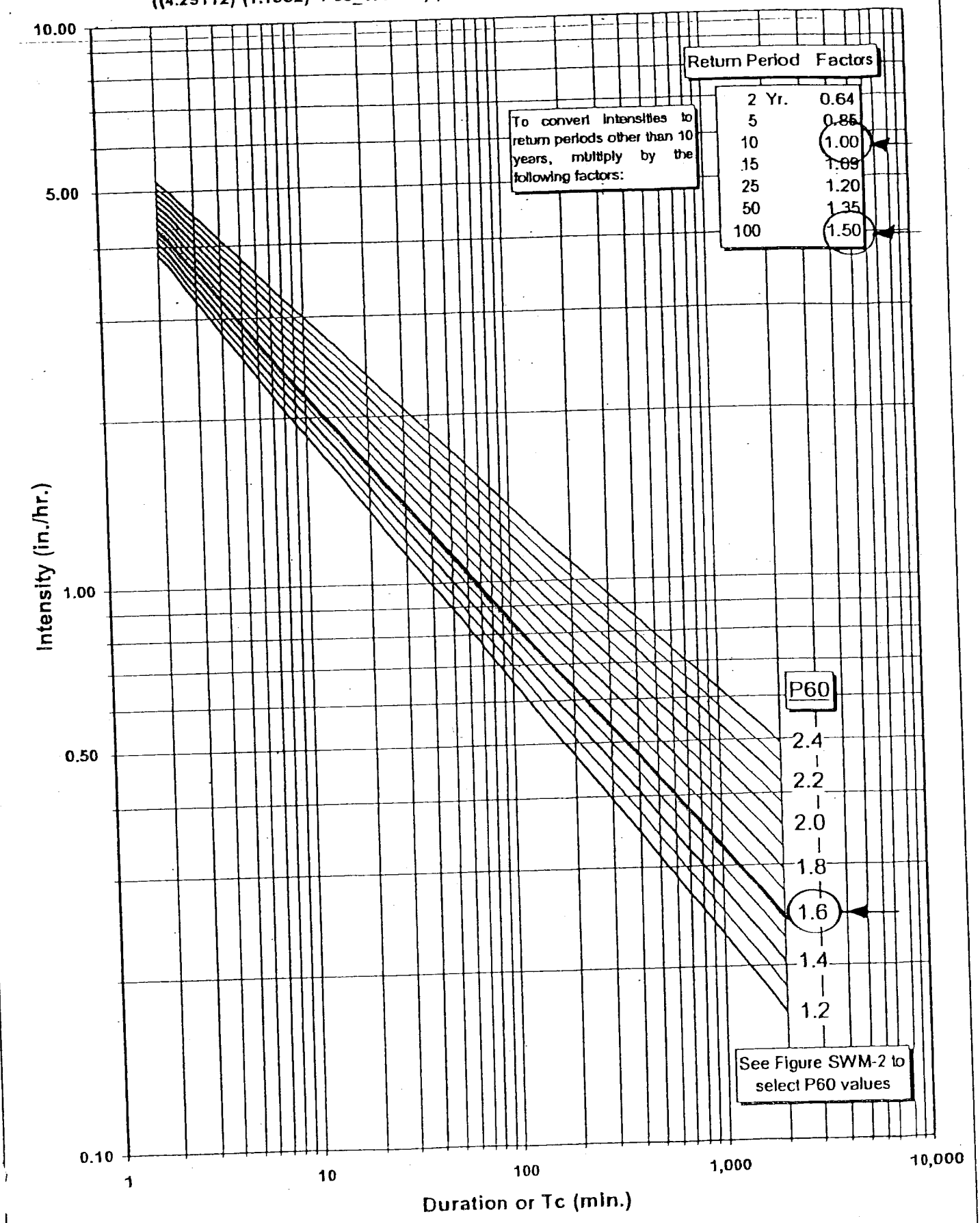


FIG. SWM-3

Rev. 11-05

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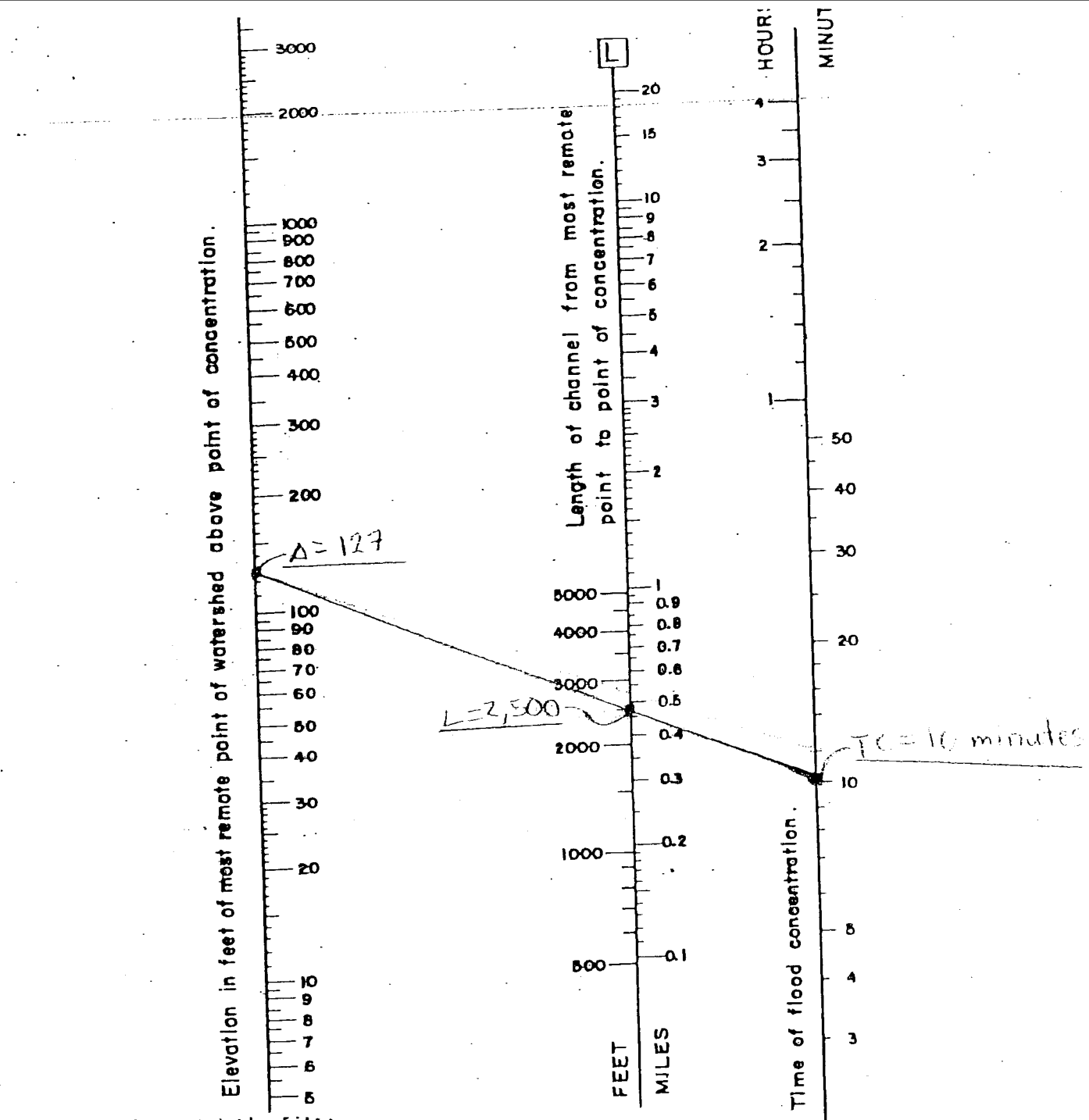
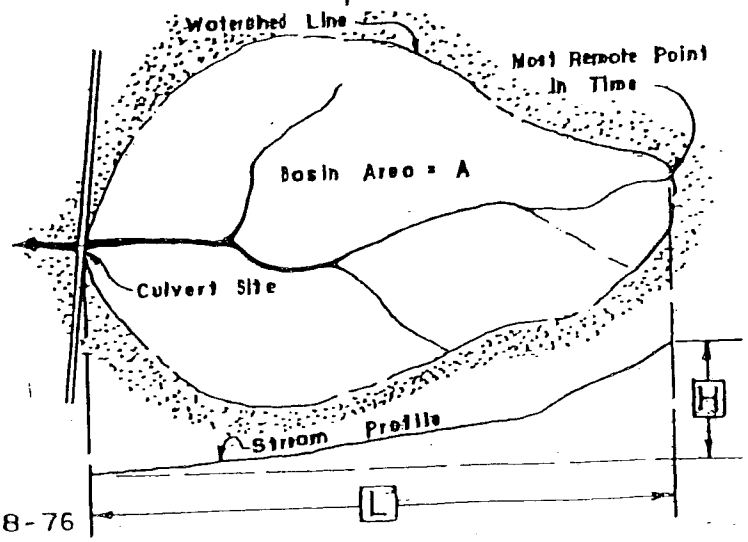




TIME of CONCENTRATION NOMOGRAPH for NATURAL WATERSHEDS (peor shaped basins)

FIG. SWM-4

ATTACHMENT 4

TYPE OF AREA	10- YEAR RUNOFF COEFFICIENTS
Rural, park, forested, agricultural	0.10 - (0.30) ←
Low residential (Single family dwellings)	0.45 - (0.60) ←
High residential (Multiple family dwellings)	0.65 - 0.75
Business and commercial	0.80
Industrial	0.70
Impervious	(0.90) ←

REQUIRED ANTECEDENT MOISTURE FACTORS
(Ca) FOR THE RATIONAL METHOD*

Recurrence Interval (Years)	Ca
2 to 10	(1.0) ←
25	1.1
50	1.2
100	(1.25) ←

Note: Application of antecedent moisture factors (Ca) should not result in an adjusted runoff coefficient (C) exceeding a value of 1.00

*APWA Publication "Practices in Detention of Stormwater Runoff"

Rev. 11-05

FIG. SWM-1

ATTACHMENT 4

Biotic Resources Group

Biotic Assessments ◆ Resource Management ◆ Permitting

Pearson Property Gully Stabilization Project
Santa Cruz County, CA

Biotic Report

Prepared for

Pete and Haruyo Pearson
101 Benedict Avenue
Soquel, CA 95065

Prepared by:

Biotic Resources Group
Kathleen Lyons, Plant Ecologist

With

Dana Bland & Associates
Dana Bland, Wildlife Biologist

May 7, 2010

2551 South Rodeo Gulch Road #17 ◆ Soquel, California 95073 ◆ (831) 476-4803 ◆ brg@cruzio.com

ATTACHMENT 5

INTRODUCTION

The Pearson Property Gully Stabilization Project is located in the Santa Cruz Gardens area of Santa Cruz County. The project area is located within an unnamed drainage that is west of Cabrillo Avenue and south of Benedict Avenue, as depicted on Figure 1.

The project area encompasses approximately 1.2 acres. The project includes the repair and stabilization of an eroded gully that originates at a culvert on Benedict Avenue and extends downstream for approximately 535 linear feet. The proposed project will allow surface flows, up to the 10-year storm event, to flow within a new channel for approximately 220 linear feet. Flow within the new channel will be regulated by four gabion check dams. Storm flows in excess of the 10-year event (i.e., flows over 24 cfs) will be directed into on underground drainage pipe that will extend from the inlet culvert downstream approximately 500 linear feet and daylight at a new rock-lined energy dissipater. Other project features include new hillside concrete-lined swales/V-ditches to collect surface runoff and direct flows to a series of drainage pipe inlets.

The project area supports a previously-cut eucalyptus tree grove, uncut eucalyptus grove, and weedy, ruderal vegetation. Bare, eroded slopes are also present. The entire 1.2 acre project area will be re-graded to stabilize the eroded slopes. Previously cut/re-sprouting eucalyptus trees, as well as other eucalyptus trees, will be removed to create stable slopes.

The Biotic Resources Group and Dana Bland & Associates assessed the biotic resources of the project site between January and March 2010. The focus of the assessment was to identify sensitive biotic resources within the project area and evaluate the proposed activities relative to such resources.

Specific tasks conducted for this study include:

- Characterize and map the major plant communities within the project area.
- Identify sensitive biotic resources, including habitats, plant or wildlife species of concern.
- Identify any jurisdictional wetlands or waters of the U.S. or waters of the State.
- Evaluate the potential effects of the proposed project activities on sensitive biotic resources and recommend measures to avoid or reduce such impacts.

Intended Use of this Report

The findings presented in this biological report are intended for the sole use of Peter Pearson, his consultants, and the County of Santa Cruz in evaluating the proposed project. The findings presented by the Biotic Resources Group in this report are for information purposes only; they are not intended to represent the interpretation of any State, Federal or County law or ordinance pertaining to permitting actions within sensitive habitat or endangered species. The interpretation of such laws and/or ordinances is the responsibility of the applicable governing body.

ATTACHMENT 5

EXISTING BIOTIC RESOURCES

METHODOLOGY

The biotic resources of the gully stabilization project area were assessed through literature review and field observations. Site observations were made on January 15, January 26, and March 1, 2010. Vegetation mapping of the project site was conducted from review of aerial photos, a topographic map, and field observations. The major plant communities within the project area, based on the classification system developed by *California Terrestrial Natural Communities (*California Department of Fish and Game, 2003 and 2007) and *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995) and as amended to reflect site conditions, were identified during the field surveys. Modifications to the classification system's nomenclature were made, as necessary, to accurately describe the site's resources. The plant communities were mapped onto the survey topographic map (Figure 2). The *Jepson Manual* (Hickman, 1993) and *An Annotated Checklist of the Vascular Plants of Santa Cruz County, California* (CNPS, 2005) were the principal taxonomic references used for the botanical work.

To assess the potential occurrence of special status biotic resources, two electronic databases were accessed to determine recorded occurrences of sensitive plant communities and sensitive species. Information was obtained from the California Native Plant Society's (CNPS) Electronic Inventory (2010), and California Department of Fish & Game (CDFG) RareFind database (CDFG, 2010) for the Laurel USGS quadrangle and surrounding quadrangles. The project is located within the southwest portion of Section 4, Township 11S, Range 1W, Mt. Diablo Meridian.

The extent of Waters of the U.S. and waters of the State was determined for the project area (pending confirmation by applicable agencies). A summary of the extent of jurisdictional waters is presented in this report.

This report summarizes the findings of the biotic assessment for the proposed project. The potential impacts of the proposed project (i.e., repair of eroded channel and related improvements) on sensitive resources are discussed below. Measures to reduce significant impacts to a level of less-than-significant are recommended, as applicable.

EXISTING BIOTIC RESOURCES

The Pearson Property Gully Stabilization Project area currently supports ruderal (weedy) vegetation, previously-cut (and re-sprouting) eucalyptus trees, an uncut eucalyptus tree grove, and non-native landscape tree groves. The distribution of plant community types within the project area is depicted on Figure 2. The eucalyptus tree grove within the project area is part of a larger eucalyptus grove that extends southward within the unnamed drainage and onto adjacent hillsides.

The project is located along an unnamed drainage. The drainage is not depicted as a blue-line stream on the Laurel USGS quadrangle; however, winter flows within the drainage ultimately reach Arana Gulch, a perennial waterway located approximately 4,500 linear feet southwest of the project.

The elevations within the project area range from 230 feet in the bottom of the drainage to 315 feet along Benedict Avenue. The majority of the project area has soil within the Nisene-Aptos complex, 30 to 50

ATTACHMENT 5

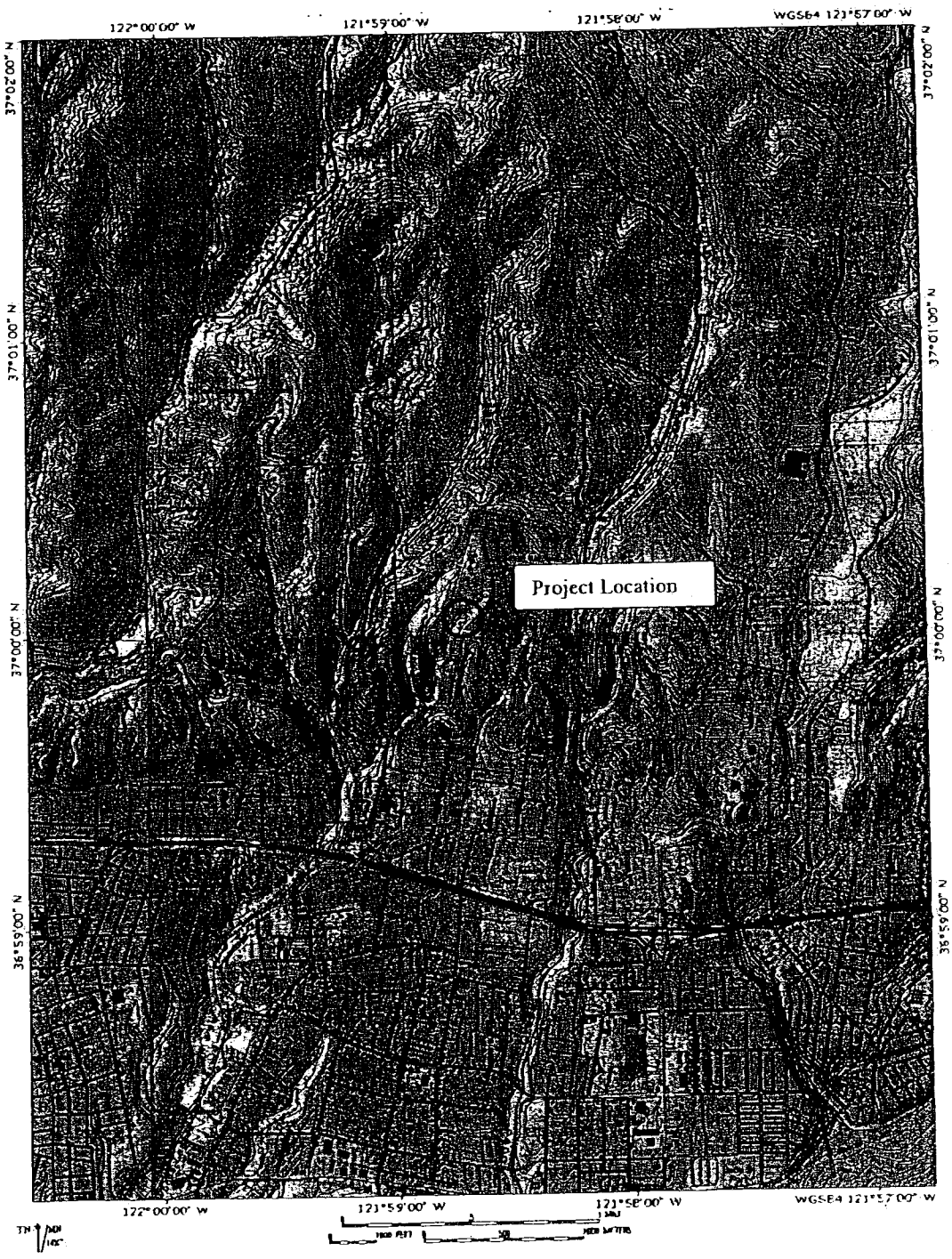
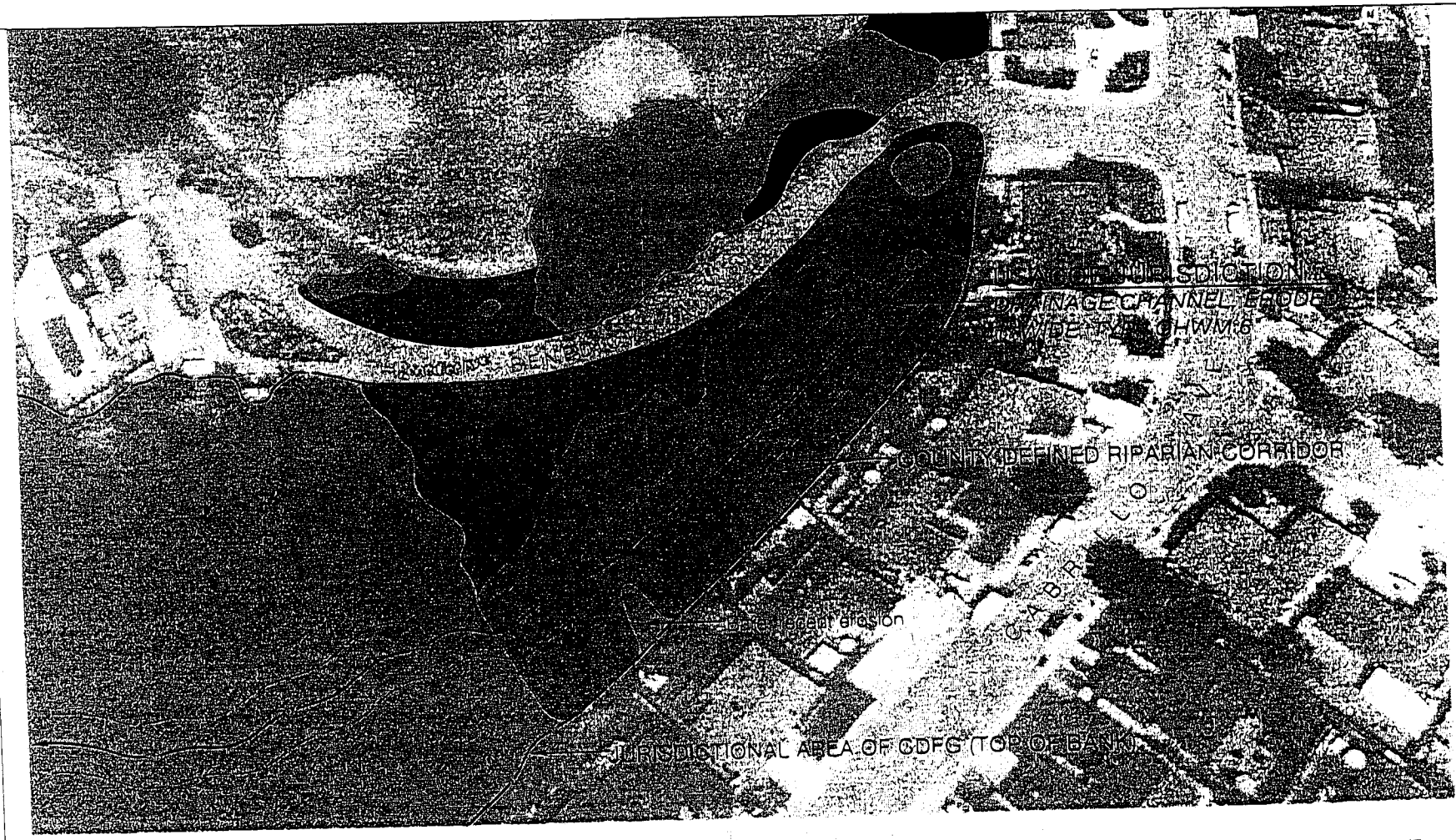


Figure 1. Location of Project Site on USGS Topographic Map



N

SCALE: 1" = 140'

0 140' 280'

LEGEND

- Eucalyptus Tree Grove
- Eucalyptus Tree Grove (previously cut)
- Ruderal
- Non-native Landscape Trees (Monterey pine, eucalyptus, deodar cedar, apple)
- Oak Trees/Tree Grove

Biotic Resources Group
2551 S. Rodeo Gulch # 12 • Soquel, California 95073
(831) 476-4803 • brg@cruzio.com

PEARSON PROPERTY
Gully Stabilization Project

Figure 2
5/10
622-01

ATTACHMENT 5

percent slopes (157). Level areas along Benedict Avenue are mapped as Watsonville loam, 2 to 15 percent slope (177) (Soil Survey of Santa Cruz County, USDA/NRCS).

Eucalyptus Tree Groves and Non-Native Landscape Tree Groves

The majority of the project area supports eucalyptus tree groves, both uncut and previously cut area. The primary tree species is blue gum eucalyptus (*Eucalyptus globulus)*. This species forms dense stands in the southern portion of the project area, where mature trees, ranging in diameter from less than six inches to over 48 inches. The northern (upper) portion of the drainage supports previously cut eucalyptus trees that are vigorously re-sprouting. Some the re-sprouts are 20 feet in height. Figure 3 depicts the character of the eucalyptus tree groves within the project area.

Figure 3. View of re-sprouting cut eucalyptus trees and mature trees within gully.

The understory vegetation within the eucalyptus tree grove is limited due to the dense shade and thick cover of leaves and bark peels. Within the mature tree grove, understory species include hedge nettle (*Stachys sp.)*, garden nasturtium (*Tropaeolum majus)*, California blackberry (*Rubus ursinus)*, Bermuda buttercup (*Oxalis pes-caprae)*, French broom (*Genista monspessulanus)*, mugwort (*Artemisia douglasiana)*, Mexican eupatorium (*Ageratina adenophora)*, coyote brush (*Baccharis pilularis)*, and poison hemlock (*Conium maculatum)*. The understory amid the previously cut trees supports several weedy, non-native species, such as poison hemlock, bull mallow (*Malva neglecta)*, Mexican eupatorium, Cape ivy (*Delairea odorata)*, Bermuda buttercup, poison hemlock, bull thistle (*Cirsium vulgare)*, and pampas grass (*Cortederia jubata)*.

The vegetation along Benedict Avenue supports landscape trees, including a deodar cedar (*Cedrus deodora)*, Monterey pines (*Pinus radiata)*, and blue gum eucalyptus.

Eucalyptus is not native to California, and does not support a very diverse wildlife assemblage. Common wildlife species that utilize eucalyptus groves include alligator lizard (*Gerrhonotus multicarinatus*), Anna's hummingbird (*Calypte anna*) and woodrat. Eucalyptus trees are locally important as they provide potential wintering habitat for monarch butterflies (*Danaus plexippus*), although none were observed at

ATTACHMENT 5

the project site during our early March 2010 survey. The eucalyptus groves on the project site provide potential roosting and nesting habitat for raptors such as red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*) and great horned owl (*Bubo virginianus*).

Ruderal

The upper slopes of the gully, along Benedict Avenue, is comprised of weedy herbaceous (i.e., ruderal) vegetation. This vegetation type occurs in open areas where eucalyptus trees have been removed and where previous or on-going erosion has removed other vegetation. The vegetation is comprised of annual, non-native grasses and forbs common to disturbed areas, as well as landscape plants and invasive, non-native species. Typical plant species include ripgut brome (*Bromus diandrus)*, garden nasturtium, lily-of-the Nile (*Agapanthus orientalis)*, poison hemlock, gopher spurge (*Euphorbia lathyris)*, Bermuda buttercup, periwinkle (*Vinca major)*, milk thistle (*Silybum marianum)*, Italian thistle (*Carduus pycnocephalus)*, pampas grass, and French broom. Native species include coyote brush, California poppy (*Eschscholzia californica)*, California blackberry, and young coast live oak (*Quercus agrifolia)*. One eroded area/hillside slump was observed to support patches of spreading rush (*Juncus patens)*. Figure 3 shows the character of the ruderal area down slope of Benedict Avenue.

Figure 4. View of weedy, ruderal vegetation down slope of Benedict Avenue.

The predominance of non-native weedy vegetation in the ruderal habitat on the project site reduces the value to native wildlife. The ruderal habitat is expected to be utilized occasionally by wildlife for perching, resting, and shelter that can tolerate the exposed areas, and non-native vegetation. For example, birds such as Western scrub-jay (*Aphelocoma californica*) and dark-eyed junco (*Junco hyemalis*) were observed perching and foraging on the project site in this habitat during our March 2010 site visit. The ruderal habitat is not expected to provide suitable habitat for any protected wildlife species.

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Waters of the U.S. - Waters of the State

The drainage channel begins at the culvert outlet near Benedict Avenue and extends southward through the project area for approximately 535 linear feet. Within the project area the drainage is within a ravine that is 20-30 feet deep near Benedict Avenue, with the ravine deepening as one goes downstream. The drainage channel continues southward off the project site, ultimately entering Arana Gulch near the Oakwood Park Cemetery on Paul Sweet Road.

Although not depicted as blue-line stream on the Laurel USGS topographic map, the drainage was observed to support a discernable bed and bank and Ordinary High Water Mark (OHWM). Water was present within the drainage during the January 26, 2010 field survey as heavy winter rains had recently occurred. The drainage currently receives runoff from an approximately 17-acre drainage area (portion of Santa Cruz Garden subdivision) (County of Santa Cruz, 2009). On average, the active channel within the upstream section is one foot wide, with the OHWM approximately six inches above the thalweg (lowest point of channel). The topographic map shows the bottom of the drainage widening downstream to widths of five feet. The active channel supports a sandy substrate, which recent deposition from hillside erosion. Figure 5 depicts the condition of the upper channel near the culvert outlet.

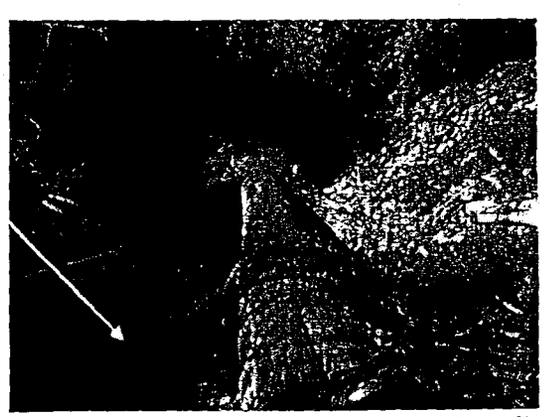

Figure 5. Condition of drainage channel downstream of culvert at Benedict Avenue, January 2010

Until recently an adjacent landowner pumped their grey wash water down the slope and into the gully. This pumping allowed the growth of a young willow (*Salix lasiolepis)*, with a clump of cat tail (*Typha sp.)*, bog rush (*Juncus effusus)*, and nutgrass (*Cyperus sp.)*. This vegetation established and was maintained by this man-made hydrology and, as such, is not considered to be a jurisdictional wetland.

The drainage channel does not provide any habitat of value to native aquatic wildlife species. The drainage is obviously ephemeral, currently the adjacent slopes are prone to erosion depositing sediment in the channel, and is surrounded by non-native vegetation.

SENSITIVE BIOTIC RESOURCES

Sensitive habitats are defined by local, State, or Federal agencies as those habitats that support special status species, provide important habitat values for wildlife, represent areas of unusual or regionally restricted habitat types, and/or provide high biological diversity.

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Regulated Habitats

The project area is located within Santa Cruz County outside the urban services line and outside the coastal zone (Santa Cruz County, 2009). According to County records, the property is not within mapped biologically sensitive habitat. The area along the drainage is considered a riparian corridor due to the presence of an active drainage channel. According to County Code (Section 16.30), the riparian corridor along intermittent channels extends 30 feet outward from the bank-full flow line or edge of riparian vegetation, whichever is greater. As this project site does not support riparian vegetation (except for one small willow from the release of grey wash water), the County-defined riparian corridor is located 30 feet outward from the OHWM. The project is subject to requirements of the County's Riparian and Wetland Protection Ordinance and the Sensitive Habitat Ordinance. The approximate location of the County-defined riparian corridor is depicted on Figure 2.

CDFG is a trustee agency that has jurisdiction under Section 1600 et seq. of the CDFG Code. Under Sections 1600-1603 of the California Fish and Game Code, the California Department of Fish and Game (CDFG) regulates all diversions, obstructions, or changes to the natural flow or bed, channel or bank of any river, stream or lake which supports fish or wildlife. Along watercourses, CDFG jurisdictional limits typically extend to the top of bank or to the edge of riparian habitat if such habitat extends beyond top of bank (outer drip line), whichever is greater. A portion of the proposed project is located within the regulatory jurisdiction of CDFG (see Figure 2).

Water quality in California is governed by the Porter-Cologne Water Quality Control Act and certification authority under Section 401 of the Clean Water Act, as administered by the Regional Water Quality Control Board (RWQCB). The Section 401 water quality certification program allows the State to ensure that activities requiring a Federal permit or license comply with State water quality standards. Water quality certification must be based on a finding that the proposed discharge will comply with water quality standards which are in the regional board's basin plans. The Porter-Cologne Act requires any person discharging waste or proposing to discharge waste in any region that could affect the quality of the waters of the state to file a report of waste discharge. The RWQCB issues a permit or waiver that includes implementing water quality control plans that take into account the beneficial uses to be protected. Waters of the State subject to RWQCB regulation extend to the top of bank, as well as isolated water/wetland features and saline waters. Should there be no Section 404 nexus (i.e., isolated feature not subject to USACE jurisdiction); a report of waste discharge (ROWD) is filed with the RWQCB. The RWQCB interprets waste to include fill placed into water bodies. A portion of the proposed project is located within the jurisdictional area of the RWQCB, as some work will occur within the drainage.

The US Army Corps of Engineers (USACE) regulates activities within waters of the United States pursuant to congressional acts: Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act (1977, as amended). Section 10 of the Rivers and Harbors Act requires a permit for any work in, over, or under navigable waters of the United States. Navigable waters are defined as those waters subject to the ebb and flow of the tide to the Mean High Water mark (tidal areas) or below the Ordinary High Water mark (freshwater areas). A portion of proposed project is located within the jurisdictional area of the USACE, as fill will be placed within the limits of the drainage's OHWM. The project area supports approximately 1,209 square feet (0.03 acre) of Waters of the U.S. (pending confirmation from the USACE).

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Special Status Plant Species

Plant species of concern include those listed by either the Federal or State resource agencies as well as those identified as rare by CNPS (List 1B). The search of the CNPS and CNDDB inventories identified the special status plant species with potential to occur in the project area. These species are listed on Table 1.

Surveys for rare plants were not conducted for this project; however, given the habitats present, as well as the eroded, ruderal condition of the project area and the long-term presence of densely-growing eucalyptus trees, the potential occurrence of special status plant species is considered to be very low. Although a population of Santa Cruz tarplant (*Holocarpha macradenia)* is known to inhabit the coastal terrace west of the project area (Santa Cruz Gardens #12 - located approximately 0.5 mile south of the project site), the channel repair project area does not provide suitable habitat for this species. No special status plant species were detected, nor are expected, within the project site.

Table 1. List of Special Status Plant Species Evaluated as to Potential to Occur within the Pearson Property Gully Stabilization Project Area, Santa Cruz County, California, March 2010

Species	CNPS	State Status	Federal Status	Habitat Type Known Occurrence in Vicinity? Potential Occurrence on Site?
Bent-flowered fiddleneck (*Amsinkia lunaris*)	List 1B.2	None	None	Grasslands Historic records from Polo Ranch in Scott's Valley No suitable habitat in project area
Santa Cruz manzanita (*Arctostaphylos andersonii*)	List 1B.2	None	None	Maritime chaparral and intermixes with woodlands Recorded from forested areas in Nisene Marks State Park No suitable habitat in project area
Schreiber's manzanita (*Arctostaphylos glutinosa*)	List 1B.2	None	None	Maritime chaparral and intermixes with woodlands Recorded from forested areas in Bonny Doon region, Nisene Marks State Park, near Big Basin RSP No suitable habitat in project area
Pajaro manzanita (*Arctostaphylos pajaroensis*)	List 1B.1	None	None	Maritime chaparral and intermixes with woodlands Historic record SE of Eagle Rock No suitable habitat in project area
Bonny Doon manzanita (*Arctostaphylos silvicola*)	List 1B.2	None	None	Maritime chaparral within Zayante sandhills Recorded from Bonny Doon, Felton regions No suitable habitat in project area
Marsh sandwort (*Arenaria paludicola*)	List 1B.1	None	None	Marshes and swamps Historic record from Camp Evers, Scotts Valley No suitable habitat in project area
Santa Cruz cypress (*Callitropsis abramsiana*)	List 1B.2	Endangered	Endangered	Chaparral Recorded from Bonny Doon, Bracken Brae, Majors Creek No suitable habitat in project area
Santa Cruz Mountains pussypaws (*Calyptridium parryi var*	List 1B.1	None	None	Maritime chaparral within Zayante sandhills Recorded from Bonny Doon, Felton region, Eagle

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Table 1. List of Special Status Plant Species Evaluated as to Potential to Occur within the Pearson Property Gully Stabilization Project Area, Santa Cruz County, California, March 2010

Species	CNPS	State Status	Federal Status	Habitat Type Known Occurrence in Vicinity Potential Occurrence on Site?
hesseae)				Rock area No suitable habitat in project area
Swamp harebell *(Campanula californica)*	List 1B.2	None	None	Mesic areas, marshes Historic record from Camp Evers, Scotts Valley No suitable habitat in project area
Deceiving sedge *(Carex saliniformis)*	List 1B.2	None	None	Coastal prairie, scrub, meadows, seeps Historic record from Camp Evers No suitable habitat in project area
Robust spineflower *(Chorizanthe robusta var. robusta)*	List 1B.1	None	Endangered	Sandy slopes, often intermixed with oak woodland/maritime chaparral Known from Market Street area and Pogonip in Santa Cruz, end of Paul Sweet Road No suitable habitat in project area
Ben Lomond spineflower *(Chorizanthe pungens var. hartwegiana)*	List 1B.1	None	Endangered	Maritime chaparral and pine forest in Zayante sandhills Known from Felton, Bonny Doon areas No suitable habitat in project area
San Francisco collinsia *(Collinsia multicolor)*	List 1B.2	None	None	Coastal scrub, pine forest Recorded from Swanton area No suitable habitat in project area
Ben Lomond buckwheat *(Eriogonum nudum var. decurrens)*	List 1B.1	None	None	Maritime chaparral within Zayante sandhills Recorded from Bonny Doon, Felton regions No suitable habitat in project area
Santa Cruz wallflower *(Erysimum teretifolium)*	List 1B.1	Endangered	Endangered	Maritime chaparral within Zayante sandhills Recorded from Bonny Doon, Felton regions, upper Glenwood No suitable habitat in project area
Minute pocket moss *(Fissidens pauperculus)*	List 1B.2	None	None	Coniferous forest Recorded from Nisene Marks SP No suitable habitat in project area
San Francisco gumplant *(Grindelia hirsutula var. maritima)*	List 1B.2	None	None	Coastal scrub, grassland Recorded from Half Moon Bay area No suitable habitat in project area
Loma Prieta hoita *(Hoita strobilina)*	List 1B.1	None	None	Chaparral, woodland Recorded from Loma Prieta; historic records from Santa Cruz No suitable habitat in project area
Santa Cruz tarplant *(Holocarpha macradenia)*	List 1B.1	Endangered	Threatened	Grasslands

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Table 1. List of Special Status Plant Species Evaluated as to Potential to Occur within the Pearson Property Gully Stabilization Project Area, Santa Cruz County, California, March 2010

Species	CNPS	State Status	Federal Status	Habitat Type; Known Occurrences in Vicinity; Potential Occurrence on Site
				Known from Arana Gulch Greenbelt, Twin Lakes State Beach (upper Schwann Lagoon), Anna Jean Cummings Park (Soquel), Fairway Drive Area (Soquel) and Watsonville No suitable habitat in project area
Kellogg's horkelia *(Horkelia cuneata ssp. sericea)*	List 1B.1	None	None	Oak woodland and edges of grasslands No suitable habitat in project area
Pt. Reyes horkelia *(Horkelia marinensis)*	List 1B.2	None	None	Oak woodland and edges of grasslands No suitable habitat in project area
Smooth lessingia *(Lessingia micradenia var. glabrata)*	List 1B.2	None	None	Serpentine chaparral Recorded from Loma Prieta area No suitable habitat in project area
Arcuate bush-mallow *(Malacothamnus arcuatus)*	List 1B.2	None	None	Chaparral Recorded from Mt. Bache area, N of Big Basin RSP No suitable habitat in project area
Marsh microseris *(Microseris paludosa)*	List 1B.2	None	None	Pine forest, coastal scrub, grassland Recorded from Marshal Field (UCSC), historic record from Graham Hill Road No suitable habitat in project area
Dudley's lousewort *(Pedicularis dudleyi)*	List 1B.2	None	None	Chaparral and grassland Recorded from Portola SP No suitable habitat in project area
Santa Cruz Mountains beardtongue *(Penstemon rattanii var. kleei)*	List 1B.2	None	None	Sandy soil in chaparral or burned chaparral Historic (1922) collection from headwaters of Aptos Creek; recent record from Nisene Marks SP No suitable habitat in project area
White-rayed pentachaeta *(Pentachaeta bellidiflora)*	List 1B.1	None	None	Grassland Historic record from beach cliff in Santa Cruz and SSW of Eagle Rock No suitable habitat in project area
Michael's piperia *(Piperia michaelii)*	List 1B.2	None	None	Grasslands, often on coastal terrace deposits Known from coastal bluff along Highway 1 No suitable habitat in project area
San Francisco popcorn flower *(Plagiobothrys diffusus)*	List 1B.1	Endangered	None	Seasonally moist grasslands/prairie Known from Moore Creek Preserve, parcel along Highway 1, Graham Hill Road, Polo Ranch, Fairway Drive area of Soquel No suitable habitat in project area
Artist's popcorn flower *(Plagiobothrys chorisianus var. chorisianus)*	List 1B.2	None	None	Seasonally moist grasslands/prairie Recorded from Arana Gulch Greenbelt and

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Table 1. List of Special Status Plant Species Evaluated as to Potential to Occur within the Pearson Property Gully Stabilization Project Area, Santa Cruz County, California, March 2010

Species	CNPS	State Status	Federal Status	Habitat Type Known Occurrence in Vicinity? Potential Occurrence on Site?
				Glenwood area of Scott's Valley No suitable habitat in project area
Maple-leaved checkerbloom *(Sidalcea malachroides)*	List 1B	None	None	Grasslands, often on coastal terrace deposits No suitable habitat in project area
Scotts Valley polygonum *(Polygonum hickmanii)*	List 1B.1	Endangered	Endangered	Grassland, on outcrops Recorded from Scotts Valley No suitable habitat in project area
Pine rose *(Rosa pinetorum)*	List 1B.2	None	None	Chaparral and pine woodlands Recorded from Big Basin SP No suitable habitat in project area
San Francisco campion *(Silene verecunda ssp. verecunda)*	List 1B.2	None	None	Grasslands, often on coastal terrace deposits Recorded from Swanton, Big Basin RSP area No suitable habitat in project area
Santa Cruz microseris *(Stebbinsoseris decipiens)*	List 1B.2	None	None	Oak woodland, grassland, coastal scrub Recorded SSW of Eagle Rock No suitable habitat in project area
Santa Cruz Clover *(Trifolium buckwestiorum)*	List 1B.1	None	None	Seasonally moist grasslands/prairie Known from Soquel, Graham Hill Road area and Glenwood area of Scott's Valley No suitable habitat in project area

CNPS Status: **List 1B:** These plants (predominately endemic) are rare through their range and are currently vulnerable or have a high potential for vulnerability due to limited or threatened habitat, few individuals per population, or a limited number of populations. List 1B plants meet the definitions of Section 1901, Chapter 10 of the CDFG Code. **List 4:** List 4 is a watch list of plants with limited distribution in the state that have low vulnerability and threat at this time. These plants are uncommon, often significant locally, and should be monitored.

Special Status Wildlife Species

Special status wildlife species include those listed, proposed or candidate species by either the Federal or the State resource agencies as well as those identified as State species of special concern. In addition, all raptor nests are protected by Fish and Game Code, and all migratory bird nests are protected by the Federal Migratory Bird Treaty Act. Special status wildlife species were evaluated for their potential presence in the project area as described in Table 2 below. Raptors may nest in the downstream portion of the intact Eucalyptus forest, but not in the upstream area where the trees have been removed.

Table 2. Special status wildlife species and their predicted occurrence within the Pearson Property Gully Stabilization Project Area, Santa Cruz County, California, March 2010

SPECIES	STATUS[1]	HABITAT	POTENTIAL OCCURRENCE ON SITE
Invertebrates			
Zayante band-winged grasshopper *Trimerotropis infantilis*	FE	Open sand parkland with Zayante soils	None, no suitable habitat on site.
Ohlone tiger beetle	FE	Coastal terrace prairie with	None, no suitable habitat on site.

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Table 2. Special status wildlife species and their predicted occurrence within the Pearson Property Gully Stabilization Project Area, Santa Cruz County, California, March 2010

SPECIES	STATUS[1]	HABITAT	POTENTIAL OCCURRENCE ON SITE
Cicindela ohlone		sparse vegetation and openings, Watsonville loam soils	
Monarch butterfly *Danaus plexippus*	•	Eucalyptus, acacia and pine trees groves provide winter habitat when they have adequate protection from wind and nearby source of water	None, no suitable habitat, lack of plants for nectar nearby.
Fish			
Coho salmon *Oncorhynchus kisutch*	FT, SE	Perennial creeks and rivers north of Santa Cruz	None, does not occur in Arana Creek.
Steelhead *Oncorhynchus mykiss*	FT	Perennial creeks and rivers with gravels for spawning.	None, no suitable habitat on site.
Tidewater goby *Eucyclogobius newberryi*	FE, CSC	Coastal lagoons and associated creeks up to 1 mile inland	None, no suitable habitat on site.
Amphibians			
California red-legged frog *Rana aurora draytonii*	FT, CSC	Riparian, marshes, estuaries and ponds with still water at least into June.	None, no suitable breeding habitat on site, no known occurrences within 5 miles.
Reptiles			
Western pond turtle *Actinemys marmorata*	CSC	Creeks and ponds with water of sufficient depth for escape cover, and structure for basking; grasslands or bare areas for nesting.	None, no suitable habitat on site.
Birds			
Western snowy plover *Charadrius alexandrinum nivosus*	FT, CSC	Nests in dunes on beaches	None, no suitable habitat on site.
Western burrowing owl *Athene cunicularia hypugea*	CSC	Nests and winters in grasslands with burrows and short vegetation	None, no suitable habitat on site.
Black swift *Cypseloides niger*	CSC	Nests on cliffs above ocean or in canyons with waterfalls	None, no suitable habitat on site.
Tricolored blackbird *Agelaius tricolor*	CSC	Dense bulrush and/or cattail vegetation adjacent to freshwater marshes	None, no suitable habitat on site.
Mammals			
American badger *Taxidea taxus*	CSC	Grasslands with friable soils	None, no suitable habitat on site.

[1] Key to status:

FE = Federally listed as endangered species
FT = Federally listed as threatened species
SE = State listed as endangered species
CSC = California species of special concern
• = Species of local concern under County LCP

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IMPACT AND MITIGATION DISCUSSION

IMPACT CRITERIA

The thresholds of significance presented in Appendix G of the CEQA Guidelines were used to evaluate project impacts and to determine if implementation of the proposed Project would pose significant impacts to botanical resources. For this analysis, significant impacts are those that substantially affect, either directly or through habitat modifications:

- A species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by CDFG or USFWS;
- Federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;
- Conflict with the provisions of an adopted Habitat Conservation plan, Natural Community Conservation plan, or other approved local, regional, or state habitat conservation plan.

POTENTIAL IMPACTS AND RECOMMENDED MITIGATION MEASURES

The proposed gully stabilization project was evaluated for its potential direct and indirect impacts to biotic resources. Impacts to sensitive habitats/resources were considered potentially significant.

Impacts to Sensitive Habitats. The project will remove several eucalyptus trees that are growing with the gully. Some of these trees are growing with the County-defined riparian corridor. Eucalyptus trees within the County-defined riparian corridor include trees that were previously cut and are re-sprouting as well as mature individuals. Collectively the canopy extent of these trees (within the mapped riparian corridor) is approximately 12,000 square feet, with almost all of this canopy cover is provided by non-native eucalyptus, with a smaller amount (less than 25 square feet) supplied by native willow. This one young willow will be removed.

Because the eucalyptus trees do not provide habitat to riparian dependent wildlife, the removal of eucalyptus trees by the project is not considered a significant impact to riparian resources.

The removal of the young willow is not considered an significant impact to riparian resources due to its small size and the strong influence of the surrounding eucalyptus trees. The willow has established as a result of a man-induced condition (release of grey wash water by adjacent landowner).

The project will alter approximately 537 linear feet of drainage channel. Due to the project construction within the drainage (including work within the County-designated riparian corridor), the project is subject to issuance of a County of Santa Cruz Riparian Exception and a Streambed Alteration Agreement from CDFG. In addition, the project proposes to place fill within the drainage. The placement of fill within jurisdictional Waters of the U.S. (pending verification by the USACE) will require a Section 404 permit from the

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USACE. Approximately 1,209 square feet (0.03 acre) of jurisdictional waters of the U.S. will be affected by the project (with placement of approximately 9.9 cu. yds. of fill), as listed on Table 3.

Table 3. Summary Table, indicating regulatory agency and jurisdiction

Agency	Permit Required	Permit Type	Jurisdictional Acreage	Project Impacts
USACE	Yes	404 Nationwide Permit	1,209 sq. ft. (0.03 acre) (other waters)	1,209 sq. ft. (0.03 acre) (other waters) 9.9 cu. yds. fill
RWQCB	Yes	401 Certification	1.2 acres[1]	1.2 acres[1]
CDFG	Yes	1602 Streambed Alteration Agreement	1.2 acres[1]	1.2 acres[1]

[1] Project area is located below top-of-bank; analysis assumes top of bank roughly corresponds to Benedict Avenue to the west and the backyards of residences along Cabrillo Avenue to the east.

The following measures are recommended to avoid or mitigate impacts to biological resources to a less-than significant level:

Measure 1. Implement riparian corridor protection measures to minimize impacts to downstream waters and resources located adjacent to the work area, including:

- Install plastic mesh fencing at the perimeter of the work area that abuts downstream waters and riparian corridor to prevent impacts to the adjacent riparian corridor and injury to nearby native trees (if present). Protective fencing shall be in place prior to ground disturbances and removed once all construction is complete. During construction, no grading, construction or other work shall occur outside the designated limits of work.
- No excess soil, chemicals, debris, equipment or other materials shall be dumped or stored outside the designated limits of work.
- Implement standard erosion control measures to prevent construction materials from entering the downstream drainage. Utilize a native erosion control seed mix on disturbed areas following construction. Plant species suitable for use include California brome (*Bromus carinatus)* and blue wild rye (*Elymus glaucus)*.

Measure 2. Secure all necessary regulatory agency permits (USACE, CDFG, and RWQCB) prior to construction. Prepare and implement a revegetation plan for the new stabilized slopes and drainage channel, that includes the following features:

- Create a wooded corridor along the new channel. Utilize native plant species within this planting zone. Due to the ephemeral nature of the drainage willow plantings within the area will be experimental.
- Vegetate the new stabilized slopes outside the riparian corridor with a mosaic of native trees and shrubs to create a riparian buffer area.
- The plan shall be subject to review by CDFG prior to commencement of construction activities as part of their issuance of a 1602 Streambed Alteration Agreement.
- Utilize locally-native planting stock to maximize survival.

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- Provide temporary irrigation to installed plantings and periodic maintenance such that container stock plantings of upland trees and shrubs achieve a minimum 80% survival rate after 5 years (please see the Revegetation and Monitoring Plan). Due to the ephemeral nature of the drainage riparian and wetland plantings within the new drainage will be experimental and not subject to plant survival requirements.

Measure 3. If possible, schedule construction to occur between August 1 and December 31 of any given year to avoid nesting birds. If this is not practical, then the project applicant shall hire a qualified biologist to conduct preconstruction surveys for nesting birds. The surveys shall be conducted no more than 30 days prior to construction. If nesting birds are observed within or adjacent to the project area, the following protective measures shall be implemented: 1) a buffer zone with highly visible tape or fencing shall be established around the active bird nest and no construction shall take place within the buffer zone until the biologist confirms that all young have fledged the nest. 2) For raptors, the buffer zone shall be approximately 250 feet, and adjusted according to the topography and visual sight line that may affect the nesting birds. 3) For other resident and migrant bird species, the buffer zone shall be at least 50 feet around the nest. The biologist shall monitor the nest, and advise the applicant when all young have fledged the nest. The biologist shall prepare a report of nest survey results, nest monitoring (if any), and the dates when the nesting was completed, a report suitable for the applicant to submit to County and State resource agencies.

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Biotic Resources Group

Biotic Assessments • Resource Management • Permitting

Pearson Property Gully

Stabilization Project

Revegetation and Monitoring Plan

Prepared For

Pete and Haruyo Pearson
101 Benedict Avenue
Soquel, CA 95065

Prepared By

Biotic Resources Group
Attn: Kathleen Lyons, Plant Ecologist

May 7, 2010

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Chapter 1. Responsible Parties

1.1. Applicant

Pete and Haruyo Pearson
101 Benedict Avenue
Santa Cruz, CA 95065

1.2. Applicant's Designated Agent (if any)

None

1.3. Preparer of the Revegetation and Monitoring Plan

Kathleen Lyons, M.A.
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Chapter 2. Project Location and Description

2.1. Location

The Pearson Property Gully Stabilization Project is located in the Santa Cruz Gardens area of Santa Cruz County. The project area is located west of Cabrillo Avenue and south of Benedict Avenue.

The project is located along an unnamed drainage. The drainage is not depicted as a blue-line stream on the Soquel or Laurel USGS quadrangles; however, winter flows within the drainage ultimately reach Arana Creek, a perennial waterway located approximately 4,500 linear feet southwest of the project. The project site location on the USGS Laurel quadrangle is depicted on Figure 1.

2.2. Brief Summary of Overall Project

The project area encompasses approximately 1.2 acres. The project includes the repair and stabilization of an eroded gully that originates at a culvert on Benedict Avenue and extends downstream for approximately 535 linear feet. The proposed project will allow surface flows, up to the 10-year storm event, to flow within a new channel for approximately 220 linear feet. Flow within the new channel will be regulated by four gabion check dams. Storm flows in excess of the 10-year event (i.e., flows over 24 cfs) will be directed into an underground drainage pipe that will extend from the inlet culvert downstream approximately 500 linear feet, day-lighting at a new rock-lined energy dissipater. Flows within the new channel will be directed into the underground storm drain pipe mid-way down the ravine. Other project features include new concrete-lined swales/V-ditches that will collect surface runoff and direct flow to the underground storm drain pipe via a series of drainage pipe inlets. The newly created drainage swale and hillsides will be revegetated with native vegetation. Riparian woodland vegetation will be established along the new drainage swale. Coastal scrub and native tree groves will be planted on the slopes above the drainage. In-stream seasonal wetland plants will be installed in the lowermost portion of the new channel. Due to the ephemeral nature of the drainage the willow and wetland plantings will be experimental.

The project area supports a previously-cut eucalyptus tree grove, uncut eucalyptus grove, non-native landscape trees, and weedy, ruderal vegetation. Bare, eroded slopes are also present. The entire 1.2 acre project area will be re-graded to stabilize the eroded slopes and install the new drainage features. Previously cut/re-sprouting eucalyptus trees, as well as other eucalyptus trees, will be removed. Project construction is anticipated to occur in 2010 and 2011. Revegetation is expected to commence in fall/winter 2011.

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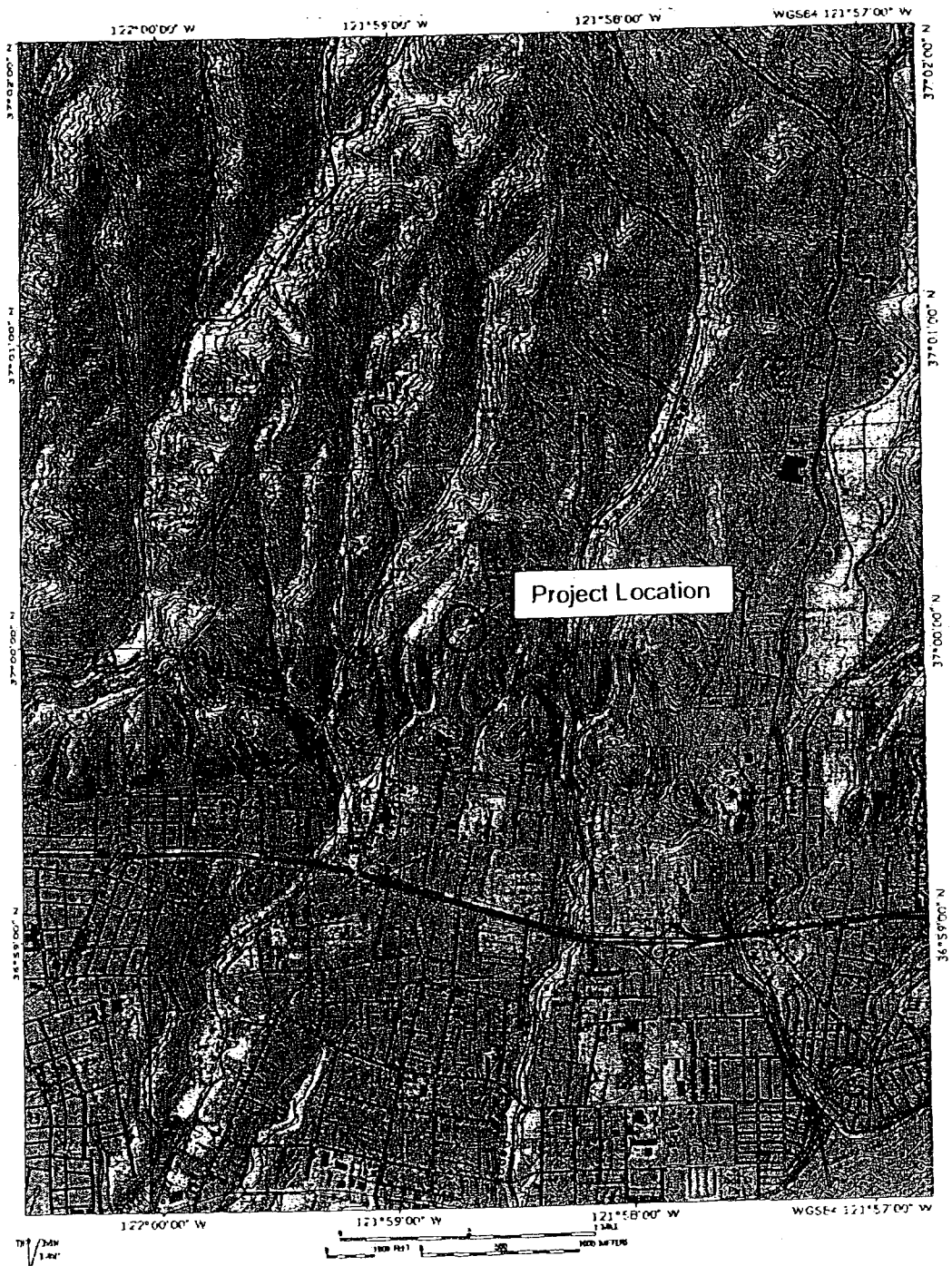

Figure 1. Project location depicted on USGS quadrangle (Laurel and Soquel USGS quadrangles)

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Chapter 3. Revegetation Design

3.1. Basis for Design

The revegetation plan is predicated on the requirement for rigorous engineering solutions for erosion repair and gully stabilization. Given the erosion features on the site, the revegetation plan acknowledges that the re-created drainage channel and slopes will be comprised of engineered features. Despite these site constraints, it is feasible to incorporate native riparian, wetland, and upland plantings into the project.

Habitats to be created on the site include riparian woodland, coastal scrub, native tree groves, in-stream seasonal wetlands, and native grasses beneath retained eucalyptus trees. The distribution of these proposed habitat types are depicted on Figure 2.

The revegetation plan proposes the establishment of a band of riparian woodland along the created drainage channel. Woody vegetation adapted to seasonally wet site conditions will be planted between each check dam. Plants will be installed outward of the channel, to a width that matches the zone of inundation/ponding designed for each check dam. During rainfall events up to the 10-year flow event, surface water will be available for plant growth within this seasonally wetted zone. Container stock plantings will receive supplemental drip irrigation during a 5-year establishment period, after which the installed plants will rely on natural soil moisture and creek channel flows for sustenance.

The slopes above the drainage channel will have upland conditions. The revegetation plan proposes the establishment of coastal scrub on these slopes. Establishment of the coastal scrub will be accomplished through a combination of hydroseed application and container stock plantings. Amid the scrub groves of native trees will be planted in select areas on the more mesic north-facing slopes. Tree groves will be established with container stock plantings. All container stock plantings will receive supplemental drip irrigation during a 5-year establishment period, after which the installed plants will rely on natural soil moisture for sustenance.

The center line of the re-shaped drainage channel upstream of the energy dissipater will be planted within in-stream wetland plant species. As this area will receive only localized drainage the wetlands will be seasonal in nature. The re-graded slopes adjacent to the channel will be hydroseeded with grasses that can withstand shade from the adjacent mature eucalyptus trees.

The temporary soil stockpile and equipment staging area will be hydroseeded after project completion.

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3.2. Proposed Revegetation Site

3.2.1 Ownership Status

The revegetation site is owned by Pete and Haruyo Pearson, the project applicants.

3.2.2 Jurisdictional Areas

The U.S. Army Corps of Engineers (USACE) regulates activities within waters of the United States pursuant to two congressional acts: Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act (1977, as amended). Section 10 of the Rivers and Harbors Act requires a permit for any work in, over, or under navigable waters of the United States. Examples of work include piers, docks, breakwaters, and dredging. Navigable waters are defined as those waters subject to the ebb and flow of the tide to the Mean High Water mark (tidal areas) or below the Ordinary High Water mark (freshwater areas). Navigable waters may be used currently, in the past, or in the future, to transport interstate or foreign commerce.

Section 404 of the Clean Water Act (CWA, 1977, as amended) requires a permit for discharge of dredged or fill material into Waters of the United States. Under Section 404, Waters of the United States is defined as all waters which are used currently, or were used in the past, or may be used in the future for interstate or foreign commerce, including waters subject to the ebb and flow of the tide up to the high tide line. Additionally, areas such as wetlands, rivers and streams (including intermittent streams and tributaries) are considered Waters of the U.S.

The proposed revegetation area supports a drainage channel that meets the definition of Waters of the U.S. (pending confirmation by the USACE). The drainage channel begins at the culvert outlet near Benedict Avenue and extends southward through the project area for approximately 535 linear feet. Within the project area the drainage is within a ravine that is 20 - 30 feet deep near Benedict Avenue, with the ravine deepening downstream. The drainage channel continues southward off the project site, ultimately entering Arana Creek near the Oakwood Park Cemetery on Paul Sweet Road. Although not depicted as blue-line stream on the Soquel or Laurel USGS topographic maps, the drainage was observed to support a discernable bed and bank and Ordinary High Water Mark (OHWM), suggesting ephemeral flow. On average, the active channel within the upstream section is one foot wide, with the OHWM approximately six inches above the thalweg (lowest point of channel). The topographic map shows the bottom of the drainage widening downstream to widths of approximately five feet. No wetlands occur within the drainage. Table 1 lists the acreages of areas potentially under the jurisdiction of USACE.

The California Department of Fish and Game (CDFG) is a trustee agency that has jurisdiction under Section 1600 et seq. of the CDFG Code. Under Sections 1600-1603 of the California Fish and Game Code, CDFG regulates all diversions, obstructions, or changes to the natural

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flow or bed, channel or bank of any river, stream or lake which supports fish or wildlife. Along watercourses, CDFG jurisdictional limits typically extend to the top of bank or to the edge of riparian habitat if such habitat extends beyond top of bank (outer drip line), whichever is greater. The proposed project is located within the regulatory jurisdiction of CDFG. Table 1 lists the acreages of areas potentially under the jurisdiction of CDFG.

Water quality in California is governed by the Porter-Cologne Water Quality Control Act and certification authority under Section 401 of the Clean Water Act, as administered by the Regional Water Quality Control Board (RWQCB). The Section 401 water quality certification program allows the State to ensure that activities requiring a Federal permit or license comply with State water quality standards. Water quality certification must be based on a finding that the proposed discharge will comply with water quality standards which are in the regional board's basin plans. The Porter-Cologne Act requires any person discharging waste or proposing to discharge waste in any region that could affect the quality of the waters of the state to file a report of waste discharge. The RWQCB issues a permit or waiver that includes implementing water quality control plans that take into account the beneficial uses to be protected. Waters of the State subject to RWQCB regulation extend to the top of bank, as well as isolated water/wetland features and saline waters. The proposed project is located within the jurisdictional area of the RWQCB, as work will occur within the drainage as well as within the limits of top of bank. Table 1 lists the acreages of areas potentially under the jurisdiction of RWQCB.

The project area is located within Santa Cruz County outside the urban services line and outside the coastal zone (Santa Cruz County, 2009). According to County GIS records, the property is not within a mapped biologically sensitive habitat. The area along the drainage is considered a riparian corridor due to the presence of an active drainage channel. According to County Code (Section 16.30), the riparian corridor along intermittent channels extends 30 feet outward from the bank-full flow line or edge of riparian vegetation, whichever is greater. As this project site does not support riparian vegetation (except for one small willow in the in-stream wetland patch), the County-defined riparian corridor would be located 30 feet outward from the bank-full flow line. For this project site, the bank-full flow line corresponds to the OHWM.

Table 1. Summary Table, indicating regulatory agency and jurisdiction

Agency	Permit Required	Permit Type	Jurisdictional Acreage	Project Impacts
USACE	Yes	404 Nationwide Permit	1,209 sq. ft. (0.03 acre) (other waters)	1,209 sq. ft. (0.03 acre) (other waters) 9.9 cu. yds. fill
RWQCB	Yes	401 Certification	1.2 acres[1]	1.2 acres[1]
CDFG	Yes	1602 Streambed Alteration Agreement	1.2 acres[1]	1.2 acres[1]

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[1] Project area is located below top-of-bank; analysis assumes top of bank roughly corresponds to Benedict Avenue to the west and the backyards of residences along Cabrillo Avenue to the east.

3.2.3 Aquatic Functions

Aquatic functions within the project area are limited due to the ephemeral nature of the channel. Primary aquatic functions are water infiltration, as standing water can occur within the drainage after rainfall events and allow for infiltration. The project may also provide water quality filtering functions. The drainage provides some sediment storage; this function is readily evident by the large amount of hillside material that has been deposited into the channel, although most material is likely transported downstream during larger storm events.

The channel has a low value for aquatic wildlife and endangered species due to the short duration that water is available, past and present disturbances (i.e., erosion, sedimentation), and the influence of the dense eucalyptus tree cover.

3.2.4 Hydrology/Topography/Geology

The elevations within the revegetation area range from 230 feet in the bottom of the drainage to 315 feet along Benedict Avenue. An analysis of geologic conditions and erosion history of the area have been documented by Dr. Gerald Webber (Report to Geoforensics, Inc. by G.E. Weber Geologic Consultant, May 16, 2008). Dr. Weber's work found evidence of fill on the west side of the ravine, which was largely placed during the grading of Benedict Avenue and possibly during construction of the playing fields for the nearby elementary school. Several small debris slides have occurred on this fill slope. Fill was also placed on the southeast side of the ravine in the 1960's during construction of the homes along Cabrillo Avenue. This fill has incrementally failed and has slid into the ravine over the past 35+ years.

According to County reports, prior to the construction of the Santa Cruz Gardens subdivision it is estimated that the drainage area that entered the ravine was five acres. The construction of the subdivision altered the drainage area, increasing it to approximately 17 acres. This three-fold increase in drainage area has resulted in an increase in the average discharge as well as an increase in the peak runoff, thus causing the failure of slopes behind the houses along Cabrillo Avenue as well as causing many large eucalyptus trees to fall over.

3.2.5 Soil/Substrate

The majority of the project area has soil within the Nisene-Aptos complex, 30 to 50 percent slopes (157). Level areas along Benedict Avenue are mapped as Watsonville loam, 2 to 15 percent slope (177) (Soil Survey of Santa Cruz County, USDA/NRCS). Studies by G.E. Weber Geologic Consultant in 2008 found that fill, including large amounts of trash, building materials, wood, and chunks of concrete were placed in the ravine, probably during construction of the Santa Cruz Gardens subdivision, roads, and/or the Santa Cruz Gardens elementary school. Incision of the stream channel and erosion of failed fill materials has exposed Purisima bedrock within the botton of the gully.

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The Nisene-Aptos complex (157) soil type is about 35 percent Aptos fine sandy loam and 30 percent Nisene loam, Ben Lomond sandy loam, and Lompico loam. The Nisene soil is typically deep and well-drained, formed in residuum derived from sandstone or shale. Permeability of this soil is moderate, with the effective rooting depth being 40-60 inches. Runoff tends to be rapid and the erosion hazard is high. The permeability of the Aptos soil is moderate with an effective rooting depth of 20 to 40 inces. Runoff is rapid and the hazard of erosion is high. The proposed project is located within this mapped soil type.

Watsonville loam occurs along Benedict Avenue, corresponding to level areas associated with coastal terraces. This soil type is very deep and somewhat poorly drained. Permeability is very slow with water perched above clay at times. The effective rooting depth is 60 inches, but roots are restricted to cracks in the clay below a depth of 10-20 inches. Runoff is slow to medium and the hazard for erosion is slight to moderate. The distribution of these soil types within the project area and surrounding areas is depicted in Figure 3.

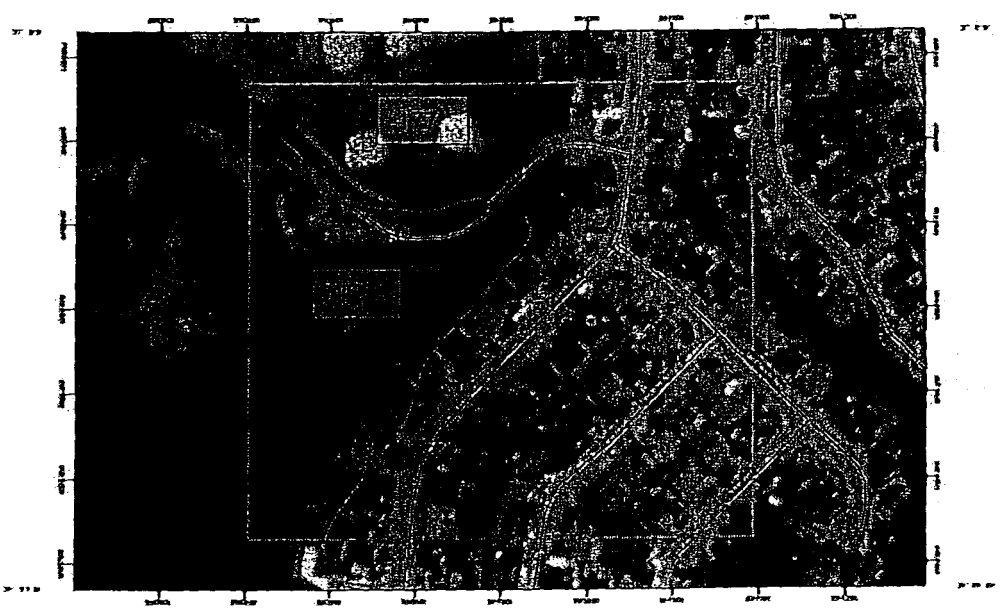

Figure 3. Soil map of project area (NRCS, 2009)

3.2.6 Vegetation

The Pearson Property Gully Stabilization Project area currently supports ruderal (weedy) vegetation, previously-cut (and re-sprouting) eucalyptus trees, an uncut eucalyptus tree grove, and non-native landscape tree groves. The eucalyptus tree grove within the project area is part of a larger eucalyptus grove that extends southward within the unnamed drainage and onto adjacent hillsides.

Table 2 lists the amount of each vegetation type within the project area. The distribution of plant community types within the project area is depicted on Figure 4.

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Table 2. Amount of existing vegetation types

Vegetation Type	Approximate Area
Ruderal	0.3 acre
Eucalyptus Tree Groves (cut and uncut)	0.7 acre
Non-native Landscape Tree Groves	0.2 acre
Total	**1.2 acres**

The majority of the project area supports eucalyptus tree groves, both uncut and previously cut area. The primary tree species is blue gum eucalyptus (*Eucalyptus globulus)*. This species forms dense stands in the southern portion of the project area, where mature trees, ranging in diameter from less than six inches to over 48 inches. The northern (upper) portion of the drainage supports previously cut eucalyptus trees that are vigorously re-sprouting. Some the re-sprouts are 20 feet in height. The understory vegetation within the eucalyptus tree grove is limited due to the dense shade and thick cover of leaves and bark peels. Within the mature tree grove, understory species include hedge nettle (*Stachys sp.)*, garden nasturtium (*Tropaeolum majus)*, California blackberry (*Rubus ursinus)*, Bermuda buttercup (*Oxalis pes-caprae)*, French broom (*Genista monspessulanus)*, mugwort (*Artemisia douglasiana)*, Mexican eupatorium (*Ageratina adenophora)*, coyote brush (*Baccharis pilularis)*, and poison hemlock (*Conium maculatum)*. The understory amid the previously cut trees supports several weedy, non-native species, such as poison hemlock, bull mallow (*Malva neglecta)*, Mexican eupatorium, Cape ivy (*Delairea odorata)*, Bermuda buttercup, poison hemlock, bull thistle (*Cirsium vulgare)*, and pampas grass (*Cortederia jubata)*.

The vegetation along Benedict Avenue supports landscape trees, including a deodar cedar (*Cedrus deodora)*, Monterey pines (*Pinus radiata)*, and blue gum eucalyptus. The upper slopes of the gully is comprised of weedy herbaceous (i.e., ruderal) vegetation. This vegetation type occurs in open areas where eucalyptus trees have been removed and where previous or on-going erosion has removed other vegetation. The vegetation is comprised of annual, non-native grasses and forbs common to disturbed areas, as well as landscape plants and invasive, non-native species. Typical plant species include ripgut brome (*Bromus diandrus)*, garden nasturtium, lily-of-the Nile (*Agapanthus orientalis)*, poison hemlock, gopher spurge (*Euphorbia lathyris)*, Bermuda buttercup, periwinkle (*Vinca major)*, milk thistle (*Silybum marianum)*, Italian thistle (*Carduus pycnocephalus)*, pampas grass, and French broom. Native species include coyote brush, California poppy (*Eschscholzia californica)*, California blackberry, and young coast live oak (*Quercus agrifolia)*. One eroded area/hillside slump was observed to support patches of spreading rush (*Juncus patens)*.

Sensitive habitats are defined by local, State, or Federal agencies as those habitats that support special status species, provide important habitat values for wildlife, represent areas of unusual or regionally restricted habitat types, and/or provide high biological diversity. Surveys for rare plants were not conducted for this project; however, given the habitats present, as well as the eroded, ruderal condition of the project area and the long-term presence of densely-growing

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eucalyptus trees, the potential occurrence of special status plant species is considered to be very low. Although a population of Santa Cruz tarplant (*Holocarpha macradenia)* is known to inhabit the coastal terrace west of the project area (Santa Cruz Gardens #12 - located approximately 0.5 mile south of the project site), the gully repair project area does not provide suitable habitat for this species. No special status plant species were detected, nor are expected, within the project site.

Invasive, non-native plant species occur within the project area. These species include blue gum eucalyptus, French broom, pampas grass, giant reed, poison hemlock, bull thistle, Italian thistle, periwinkle, Cape ivy, and English ivy. These species have a deleterious effect on native vegetation and/or have the ability to spread into un-infested areas.

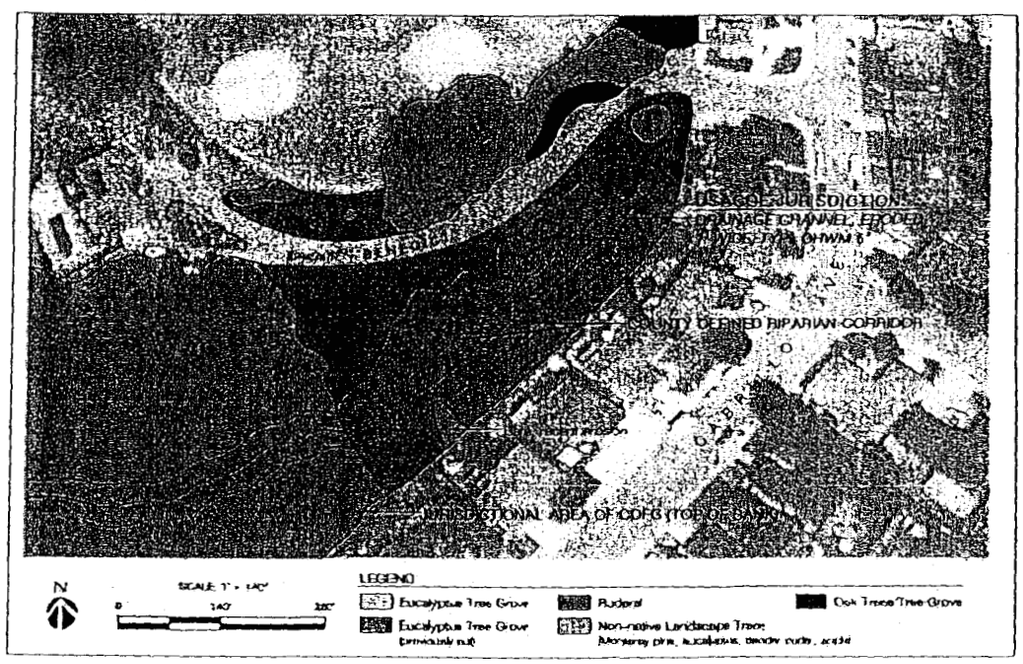

Figure 4. Existing vegetation

3.2.7 Present and Historical Uses of the Revegetation Area

The present use of the revegetation is de facto open space. The property is located west of the Santa Cruz Gardens subdivision and south of Santa Cruz Gardens Elementary School. A study of historical site conditions based on the interpretation of aerial photos was conducted by G.E. Weber Geologic Consultant in 2008. Dr. Weber's report documented site conditions from 1943 to present, which are summarized here. In 1943 the Santa Cruz Gardens subdivision and the elementary school site is open grassland. The ravine on the present day Pearson property supports a relatively dense cover of trees. A narrow road is located on the southeast side of the ravine. In 1963 the Santa Cruz Gardens subdivision is under construction; one home is present along the northwest side of Cabrillo Avenue that abuts the ravine. Grading for the subdivision removed a large number of trees for the ravine and fill was been pushed into the ravine, forming a new

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hillside extending from the bottom of the ravine to the home sites. The centerline of the drainage was also pushed to the northwest, away from the properties on Cabrillo Avenue, and sediment was evident in the channel. By 1968 rilling was noted on the slope below the homes on Cabrillo Avenue and the ravine is incised. By 1973, Benedict Avenue was graded and road construction had created fill at the head of the ravine and along the outer edge of the road; erosion within the ravine was also noted. By 1975, vegetation had established within the ravine with a dense tree canopy of eucalyptus. Additional landslide activity was noted behind the homes on Cabrillo Avenue, which continues to the present time.

3.3. Revegetated/Created Habitat

3.3.1 Long-term Goals

Long-term biological goals have been identified for the gully stabilization area. The Revegetation Plan identifies the following long-term goals and objectives for each of the habitat types created within the revegetation area:

1) Establish a band of riparian woodland vegetation along both sides of the drainage channel. Achieve this goal by implementing the following objectives:
    a) Install woodland vegetation that can persist in winter-wet and summer-dry site conditions that will create an approximately 220 linear-foot corridor of wooded habitat. Given the ephemeral nature of the channel willow plantings along the channel are experimental and not subject to success criteria.
    b) Install plant species outward of the channel and in a band whose width corresponds to the winter-season inundation level designated for each check dam.
    c) Utilize site-specific plant propagules or those collected from the Arana Creek watershed and/or Santa Cruz County in the revegetation efforts.
    d) Maintain 80% survival of installed upland container stock trees and shrubs each year for a minimum period of five years. Install replacement plants if needed to meet survival rates.
    e) Control cover of target invasive weeds (e.g., thistles, periwinkle, Cape ivy, French broom, and others) to less than 5% each year.
2) Establish coastal scrub on the slopes abutting the drainage to provide scrub habitat for wildlife and to buffer the riparian woodland.
    a) Install a diversity of locally-derived native shrubs, grasses and forbs to create scrub with a minimum of 20% woody cover in five years.
    b) For woody plant species, utilize site-specific plant propagules, those collected from the Arana Creek watershed and/or Santa Cruz County in the revegetation efforts.
    c) Control cover of target invasive weeds (e.g., thistles, periwinkle, Cape ivy, French broom, and others) to less than 5% each year.
3) Establish native tree groves on the lower and north-facing slopes to provide habitat for wildlife.

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a) Install locally-derived native trees to create five groves of trees, with each grove achieving a minimum of 20% woody cover in five years.
b) Utilize site-specific plant propagules, those collected from the Arana Gulch watershed and/or Santa Cruz County in the revegetation efforts.
c) Maintain 80% survival of installed trees each year for a minimum period of five years. Install replacement plants if needed to meet survival rates.
d) Control cover of target invasive weeds (e.g., thistles, periwinkle, Cape ivy, French broom) to less than 5% each year.

4) Establish a band of in-stream seasonal wetlands within the lower portion of the newly-created drainage to provide water quality benefits and enhance habitat for wildlife.
   a) Install locally-derived native wetland plants that can persist in winter-wet and summer-dry site conditions that will create an approximately 200 linear feet band of in-stream wetlands. Due to the ephemeral nature of the drainage, the wetland plantings are experimental and not subject to success criteria.
   b) Utilize site-specific plant propagules, those collected from the Arana Creek watershed and/or Santa Cruz County in the revegetation efforts.
   c) Control cover of target invasive weeds (e.g., thistles, periwinkle, Cape ivy, French broom, and others) to less than 5% each year.
5) Establish understory plants adjacent to the lowermost drainage to enhance habitat for wildlife.
   a) Install native grasses that can persist within the understory of existing mature eucalyptus trees that will stabilize newly constructed slopes and attain 30% plant cover in five years.
   b) Control cover of target invasive weeds (e.g., thistles, periwinkle, Cape ivy, French broom, and others) to less than 5% each year.
6) Hydroseed the equipment staging and stockpile area at project completion.
   a) Install native grasses and forbs that will stabilize this equipment use area.

3.3.2 Aquatic Functions

The aquatic functions of the revegetation area will provide higher storm water quality and will reduce sediment transport to downstream receiving waters, compared to existing conditions.

Repair and stabilization of the eroding slopes within the project area, coupled with the proposed revegetation, will reduce the amount of sediment moving downstream and into Arana Creek. Sedimentation is a resource problem within Arana Creek, as the creek empties into the Yacht Harbor (Woods Lagoon) and deposits a significant amount of material into the harbor and Monterey Bay. Arana Creek has historically provided habitat for fish, including steelhead. A high level of fine sediment in the stream reduces the quality of habitat for steelhead spawning and aquatic insects. Reducing fine sediment levels in the watershed has high value and the project actions are consistent with recommendation contained in Phase 1 of the Arana Gulch Watershed Enhancement Plan (AGWA, 2002).

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The riparian and in-stream wetland revegetation will provide water quality benefits. Storm water flows, up to the 10-year storm event, within the approximately 220 foot long channel will be captured and detained behind a series of check dams. Riparian plant species planted along this channel, as well as in-stream wetland plants planted in the lower portion of the project area can provide water filtration functions and facilitate nutrient uptake.

3.3.3 Hydrology/Topography

Creek flows will enter the site from a culvert under Benedict Avenue. Water up to the 10-year storm event, will flow within the five-foot wide channel and will be regulated by four gabion check dams. Storm flows in excess of the 10-year event (i.e., flows over 24 cfs) will be directed into an underground drainage pipe that will extend from the inlet culvert downstream approximately 500 linear feet, day-lighting at a new rock-lined energy dissipater. Flows within the channel will be directed into the underground storm drain pipe mid-way down the ravine. Hillside runoff and runoff from the homes along Cabrillo Avenue will be collected in concrete V-ditches and directed into the underground storm drain pipe. In a 100-year storm event the underground storm drain pipe would carry flows of 44 cfs.

Creek flows within the channel will be seasonal and dependent upon winter storm events and upstream runoff. It is expected that surface flow will be evident behind one or more check dams after each significant rainfall event between December and March. Each check dam is designed to detain water to about two feet deep before flow spills over and enters the lower channel. During the winter months, saturated soil conditions are expected to be present outward of the channel, with the wetted edge corresponding to the highest water level of each check dam. This wetted area ranges from two to five feet wide.

Within the lower portion of the ravine (upstream of the energy dissipater) surface flow in the re-graded channel will be limited to precipitation and hillside runoff from the adjacent eucalyptus grove. This portion of the channel will receive less watershed area runoff than existing conditions. Seasonally wet conditions are expected to occur with the channel to support a band of seasonal wetland vegetation that is adapted to wet winters and dry summers. Due to the ephemeral nature of this area; however, the wetland plantings are experimental.

The grading plan for the project is depicted on Figure 5. This plan shows the location of the channel, inlets for the underground storm drain pipe and the energy dissipater. The final slopes will be 2:1.

Water will be needed for supplemental irrigation of installed container stock plants. The landowner will supply a water source from the residential water service at 101 Benedict Avenue.

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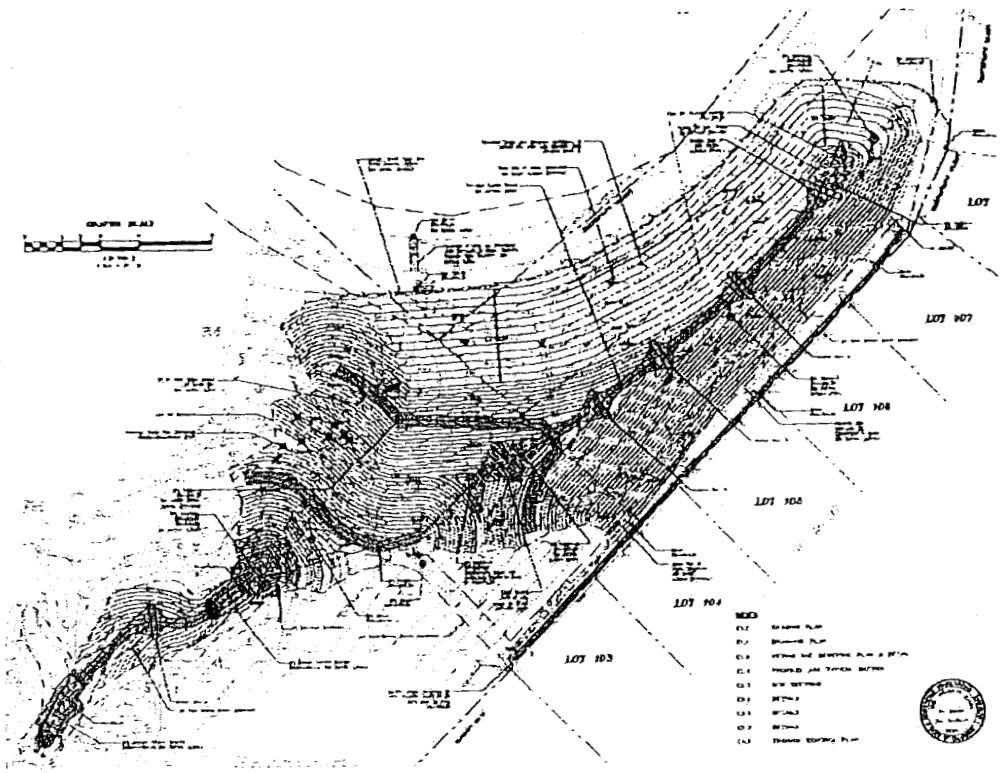

Figure 5. Grading plan (Bowman & Williams, 5/10)

3.3.4 Soil/Substrate

The channel and created slopes will be engineered fill using clean stockpiled native soil and, if needed, imported material. The new fill will be compacted onto benches cut into the unfailed hillside materials. Where the thickness of the fill exceeds 25 feet the lower portion of the fill will be compacted to a minimum compaction of 95 percent. Where fills are thinner than 25 feet the soil will be compacted to a minimum of 90 percent.

3.3.5 Vegetation

Five habitat/vegetation types will be created on site. These include riparian woodland, coastal scrub, native tree groves, in-stream seasonal wetlands, and eucalyptus understory. Figure 6 presents a conceptual planting plan. This plan will be refined prior to construction wherein a more detailed drawing will depict planting locations and other installation features.

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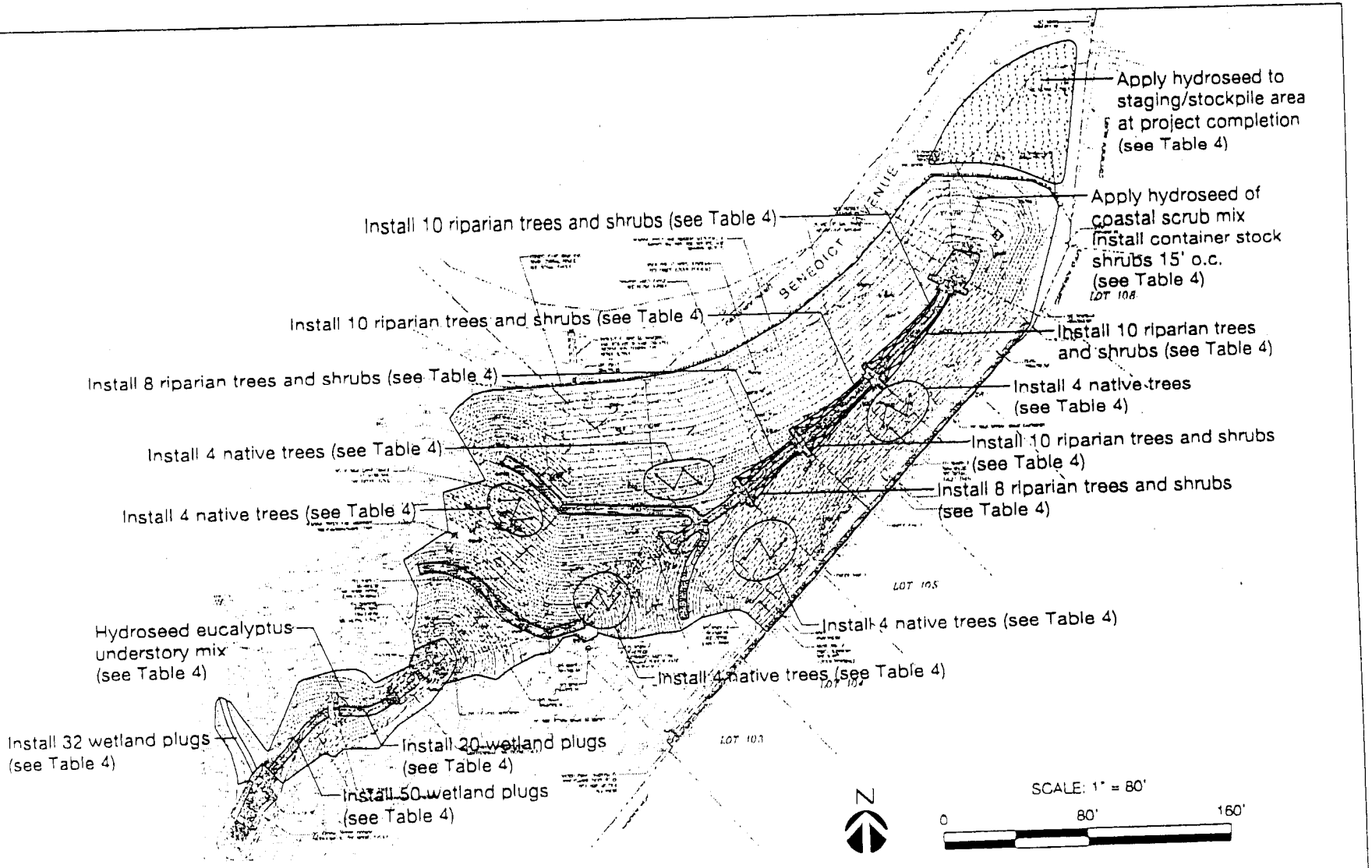

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PEARSON PROPERTY GULLY STABILIZATION PROJECT
Conceptual Planting Plan

Figure 6
5/10
622-02

Chapter 4. Success Criteria and Monitoring

4.1 Success Criteria

The final success criteria for the revegetation are outlined below. When these criteria are fulfilled, the revegetation area will be determined to be progressing toward the habitat type and values that constitute the long-term goals of this project. These final success criteria will be monitored for compliance at the end of the 5-year monitoring period. Final success criteria for the revegetation area will be documented by monitoring by a qualified botanist, ecologist or revegetation specialist.

Performance standards are established for the woodland, coastal scrub, native tree groves, and eucalyptus understory. These are measured during Years 1-5. Due to the ephemeral nature of the drainage willow and wetland plantings are experimental and not subject to success criteria. As depicted on Table 3, survival of container stock plantings and plant cover, and site maintenance will be monitored. Remedial measures will be implemented by the project applicant if these standards are not achieved in any of the monitoring years. Examples of remedial actions include re-planting failed plants, increasing weeding sessions, and/or modifying the irrigation system.

Table 3. Performance standards for Years 1-4 and final success criteria for Year 5

	Year 1	Year 2	Year 3	Year 4	Year 5
RIPARIAN WOODLAND					
Woody Plant Cover (%)[1]	5	5	10	10	20
Plant Survival (%)[1]	80	80	80	80	80
COASTAL SCRUB					
Woody Plant Cover (%)	5	5	10	10	20
Container Stock Plant Survival (%)	80	80	80	80	80
NATIVE TREE GROVES					
Woody Plant Cover (%)	-	5	10	10	20
Container Stock Plant Survival (%)	80	80	80	80	80
EUCALYPTUS UNDERSTORY					
Plant Cover (%)	10	10	20	30	30

[1] willows are not subject to success criteria.

4.2 Monitoring

Monitoring is an important component of the Revegetation Plan. Monitoring is used to evaluate the effectiveness of plan activities and as a tool in determining if management actions should be revised to better reach Plan goals. The ability to alter management activities based on monitoring results is the primary tenet of the adaptive management process.

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Implementation of the Plan will utilize adaptive management strategies. This approach is particularly important as new data/research is gathered on-site and elsewhere on the native plant revegetation and management.

4.2.1 Methods

Reconnaissance Surveys

A qualified botanist, ecologist, or revegetation specialist will periodically survey the revegetation area during the first year after planting. Reconnaissance surveys will be conducted four times during Year 1 and twice a year during Years 2-5. These surveys will be in addition to any visits made to evaluate contractor performance.

The purpose of the reconnaissance visits will be to assess how the revegetation is proceeding, and to identify problems or potential problems that may exist. During these surveys, the inspector will look for plant damage, document significant damage, and will make recommendations to correct any significant problems or potential problems. Plants are most vulnerable to many types of disturbances during the early part of the establishment period, so monitoring must be relatively intensive during these early years. These visits will also be used to document the need to change or adjust revegetation plan activities (i.e., altering the maintenance schedule, adding extra weed control visits, increasing or reducing the frequency or amount of irrigation water, etc.). The presence of invasive non-native plant species will be ascertained during the reconnaissance surveys.

Detailed Monitoring of Shrubs and Trees for Plant Survival and Growth

In addition to the reconnaissance surveys, monitoring visits will be made to the revegetation area between July and September of Years 1-5. These visits will be used to collect quantitative data on the revegetation plantings. The monitoring survey will evaluate plant survival and health/vigor during or, for some species, just after, peak growth.

The container stock plantings will be monitored as to dead/alive, height, and health/vigor. During Years 1-5, yearly plant survival within each created habitat type should be at least 80 percent. If plant survival falls below 80% in any year, supplemental container stock planting will be undertaken the following fall. If a plant species does poorly at the site, the revegetation specialist will access suitability of the revegetation site for that plant species and recommend further remedial action, including species substitutions.

If plant cover is less than the required amounts, the revegetation specialist will assess whether remedial actions are necessary (i.e., additional plantings to increase cover values) to achieve the Year 5 performance standards.

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Monitoring of Habitat Development

Each created habitat will be monitored for vegetation cover and species' composition. Vegetative cover data will be collected using the point-intercept methods along permanent transects. Along the transect data will be collected on plant composition, plant cover (percent cover), and natural recruitment of native and non-native species.

4.2.2 Monitoring Schedule

Reconnaissance surveys will be conducted four times during Year 1 and twice a year during Years 2-5. Detailed monitoring (plant survival counts, vegetative cover measurements) will be conducted between July and September of Years 1-5.

4.2.3 Photo-documentation

Photos shall be taken of the revegetation area at least once a year in Years 1-5. Photos will be taken from the same vantage point and in the same direction every year, and shall reflect the findings discussed in the monitoring report. A minimum of 4 photo stations will be established. The location and photo direction of each photo stations will be established in Year 1. GPS data for each photo station shall be recorded and the location depicted on the as-built planting plan.

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Chapter 5. Implementation Plan

5.1 Site Preparation

5.1.1 Grading

Heavy equipment will be used to grade the site, place the underground storm drain, create the channel and create the new slopes. It is expected that grading work will begin at the downstream end of the project and work will move upslope (northward). Equipment is expected to enter the site from Benedict Avenue along a constructed access path. The access path will be within the limits of grading.

Site preparation will include the removal of all vegetation, existing organic debris and existing fill from the work area. Eucalyptus trees slated for removal, as well as previously-cut trees, and their stumps will be removed from the work area. All organic materials and any of the existing fill deemed to be unacceptable for use as new fill will be removed from the site. All concrete pieces, loose pipes and other debris will be removed from the site.

All disturbed areas will be seeded and straw mulched; a native seed mix is specified on Table 4. The erosion control plan for the project specifies the placement of straw and erosion control blankets on slopes greater than 20% (Bowman & Williams, 4/10). Prior to application of seed, straw and the erosion control blanket, the planting locations for container stock (coastal scrub shrubs and trees) will be marked in the field and the planting holes augured. During placement of the erosion control blanket, holes will be cut into the blanket at each planting site. The planting site will be flagged.

5.1.2 Avoidance Measures

Prior to any site work, the limits of the work area (limits of grading) will be staked by the project engineers. Orange construction fencing will be installed at the limit of grading. No equipment or other construction access will occur beyond the limits of grading.

Construction work will occur between April 15 and October 15 when the drainage is dry and no rainfall is expected. No equipment shall be operated in areas of flowing or standing water; no fueling, cleaning, or maintenance of vehicles or equipment shall take place within any areas where an accidental discharge to the seasonal tributary may occur. All earth moving work shall be performed outside of areas of flowing water or standing water.

Silt fencing will be placed along the down slope edge of the limits of grading to retain any sediment that is dislodged during construction and prevent their movement downstream. No debris, rubbish, creosote-treated wood, soil, silt, sand, cement, concrete, or washings thereof, or other construction related materials or wastes, oil or petroleum products or other organic or earthen material will be allowed to enter into, or be placed where it may be washed by rainfall or runoff into the seasonal tributary to Arana Creek. Any of these materials placed

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within or where they may enter the seasonal tributary will be removed immediately. When operations are completed, any excess material will be removed from the work area and any areas adjacent to the work area where such material may be washed into the seasonal tributary.

If possible, schedule construction to occur between August 1 and October 15 of any given year to avoid nesting birds. If this is not practical, then the project applicant shall hire a qualified biologist to conduct preconstruction surveys for nesting birds. The surveys shall be conducted no more than 30 days prior to construction. If nesting birds are observed within or adjacent to the project area, the following protective measures shall be implemented:

1) A buffer zone with highly visible tape or fencing shall be established around the active bird nest and no construction shall take place within the buffer zone until the biologist confirms that all young have fledged the nest.

2) For raptors, the buffer zone shall be approximately 250 feet, and adjusted according to the topography and visual sight line that may affect the nesting birds.

3) For other resident and migrant bird species, the buffer zone shall be at least 50 feet around the nest.

The biologist shall monitor the nest, and advise the applicant when all young have fledged the nest. The biologist shall prepare a report of nest survey results, nest monitoring (if any), and the dates when the nesting was completed, a report suitable for the applicant to submit to County and State resource agencies.

5.1.3 Soil Disposal

Soil removed from the site that is not used for fill will be disposed of as per County requirements.

5.1.4 Soil Treatment

The top four to six inches of topsoil will be retained on site to be used for the new fill slopes. The soil will be stockpiled in a designated area along Benedict Avenue. It is expected that the soil will be stockpiled for up to four months.

The top six inches of finish grade will consist of topsoil existing on site, and, if necessary, additional imported topsoil.

The compacted slopes will be appropriately disked to create a suitable planting bed and individual tree and shrub planting sites will require mechanical auguring. The project contractor will do this site preparation work. Prior to application of seed, straw and erosion control blankets, the planting locations for container stock (coastal scrub shrubs and trees) will be marked in the field and the planting holes augured. During placement of the erosion control blanket, holes will be cut into the blanket at each planting site. The planting site will be flagged.

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Any imported soil will have the same physical/chemical characteristics and be suitable for intermixing with existing on-site soils. The contractor will submit soil analyses of both existing and proposed soils performed by an approved Soils and Plant Laboratory. Soil tests will include, at a minimum, soil texture, total nitrogen, phosphorus, potassium and pH. The lab will also evaluate the need for mychorizzal inoculants. The contractor will amend the existing and/or imported topsoil as recommended by the laboratory, including spreading of inoculums.

5.1.5 Pest Plant Removal

All vegetation will be stripped from the work area, such as existing trees, shrubs, and herbaceous cover. This vegetation includes invasive, non-native (pest) species such as eucalyptus, French broom, thistles, periwinkle, pampas grass, Cape ivy, and poison hemlock.

Due to the presence of invasive weed species on-site and the potential for weed seeds to be within the stockpiled topsoil, the stockpiled topsoil will be irrigated to encourage a flush of weed seeds. After germination, the stockpiled topsoil will be covered with plastic to kill any remaining seeds. Eucalyptus bark peels and leaves shall be removed from the stockpiled soil to avoid any potential allelopathic effects on subsequent revegetation efforts.

If necessary, the applicant's contractor will selectively eradicate perennial rhizomatous weeds (i.e., periwinkle, ivy) from the salvaged topsoil with biodegradable contact or systemic herbicide.

5.1.6 Construction Monitor

The project applicant, with the approval of County of Santa Cruz Planning Department, will designate a revegetation specialist to monitor phases of construction that relate to the revegetation areas, such as weed control of stockpiled topsoil and preparation of the created slopes for planting (pre hydroseed disking and/or auger holes for container stock plantings).

5.2 Planting/Seeding

The conceptual planting plan is presented in Figure 6; a detailed planting plan will be prepared prior to site construction.

5.2.1 Planting Plan

A list of tree, shrub, and herbaceous plant species to be planted in the revegetation area is presented in Table 4. Each plant species is listed by both scientific name and common name. Other native plant species suited to each community may be added to the list at the time of installation, depending on availability and genetic compatibility. Changes or modifications to the plant list will be approved by a botanist, plant ecologist, or revegetation specialist and

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approved by the County of Santa Cruz Planning Department. Plant species will be contract-grown at a native plant nursery from collections made from the project vicinity and/or the Arana Creek watershed.

Table 4. Species to be planted

Common Name	Scientific Name	Spacing	Size	Approximate Amount
RIPARIAN WOODLAND				
Red Willow	*Salix laevigata*	12'	Pole cutting	18
Coast Live Oak	*Quercus agrifolia*	12'	Tree pot	10
Pacific Madrone	*Arbutus menziesii*	12'	Tree pot	10
Coyote Brush	*Baccharis pilularis*	6'	1 gallon	18
Total				**56**
COASTAL SCRUB - HYDROSEED (APPROX. 0.75 ACRE)				
California Sagebrush	*Artemisia californica*	-	Seed	2 lbs/acre PLS
Coyote Brush	*Baccharis pilularis*	-	Seed	2 lbs/acre PLS
Sticky Monkey Flower	*Mimulus aurantiacus*	-	Seed	2 lbs/acre PLS
Mugwort	*Artemisia douglasiana*	-	Seed	2 lbs/acre PLS
California Figwort	*Scrophularia californica*	-	Seed	1 lbs/acre PLS
Common Yarrow	*Achillea millefolium*	-	Seed	1 lbs/acre PLS
Deerweed	*Lotus scoparius*	-	Seed	4 lbs/acre PLS
California Poppy	*Eschscholzia californica*	-	Seed	8 lbs/acre PLS
Blue Wild Rye	*Elymus glaucus*	-	Seed	12 lbs/acre PLS
California Brome	*Bromus carinatus*	-	Seed	12 lbs/acre PLS
Biosol Mix 7-2-3	-	-	Fertilizer	Tbd[1]
Turbo Start	-	-	Microbial inoculants	Tbd[1]
COASTAL SCRUB - CONTAINER STOCK				
California Sagebrush	*Artemisia californica*	15'	1 gallon	50
Coyote Brush	*Baccharis pilularis*	15'	1 gallon	59
Black Sage	*Salvia mellifera*	15'	1 gallon	23
California Lilac	*Ceanothus thrysiflorus*	15'	1 gallon	15
Total				**147**
NATIVE TREE GROVES (5 GROVES OF 4 TREES EACH)				
California Buckeye	*Aesculus californica*	15'	Tree pot	4
California Wax Myrtle	*Myrica californica*	15'	Tree pot	8
Scrub oak	*Quercus berberidifolia*	15'	Tree pot	4
Tanbark Oak	*Lithocarpus densiflorus*	15'	Tree pot	4
Total				**20**

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Table 4. Species to be planted

Common Name	Scientific Name	Spacing	Size	Approximate Amount
IN STREAM WETLAND (EXPERIMENTAL)				
Spreading Rush	*Juncus patens*	1'	Dee pot	102
Total				**102**
EUCALYPTUS UNDERSTORY - HYDROSEED (APPROX 0.25 ACRE)				
Meadow Barley	*Hordeum brachyantherum*	-	Seed	12 lbs/acre PLS
Creeping Wild Rye "Rio"	*Leymus triticoides*	-	Seed	4 lbs/acre PLS
Red Fescue 'Molate'	*Festuca rubra*	-	Seed	4 lbs/acre PLS
Biosol Mix 7-2-3	-	-	Fertilizer	Tbd[1]
Turbo Start	-	-	Microbial inoculants	Tbd[1]
STAGING/SOIL STOCKPILE AREA - HYDROSEED (APPROX 0.25 ACRE)				
Common Yarrow	*Achillea millefolium*	-	Seed	1 lbs/acre PLS
Deerweed	*Lotus scoparius*	-	Seed	4 lbs/acre PLS
California Poppy	*Eschscholzia californica*	-	Seed	8 lbs/acre PLS
Blue Wild Rye	*Elymus glaucus*	-	Seed	12 lbs/acre PLS
California Brome	*Bromus carinatus*	-	Seed	12 lbs/acre PLS
Biosol Mix 7-2-3	-	-	Fertilizer	Tbd[1]

[1] Amount to be determined after soil testing

5.2.2 Nature and Source of Propagules

The purpose of the revegetation plan is to create native plant riparian habitats within the stabilized ravine. With the exception of the grasses and forb species identified in the planting plan, seeds, plugs and cuttings to propagate woody plants for the revegetation project will be supplied by a native plant nursery that has the ability to provide stock collected or propagated from the Arana Creek watershed and/or Santa Cruz County. One or more reliable propagation techniques are known for all the species to be used in the revegetation plantings.

Container Stock

Dee pots, tree pots and similar containers developed for use in revegetation work produce a plant with a deep root system, inhibit circling of roots, and air-prune roots. They promote strong rooted plants. Dee pots, tree pots and one-gallon containers (with internal ridges to discourage circling of the roots) are the preferred containers specified for the project.

All container stock for the revegetation areas will be contract-grown by a native plant nursery, assuring availability and health of plant material.

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Hydroseeding

The plant species identified for the coastal scrub, eucalyptus understory, and the staging/stockpile area will be applied through hydroseed. The specific plant species to be utilized are listed on Table 4, as well as requirements for fertilizer and inoculants. The exact amount of fertilizer and inoculums will be determined after soil testing. Hydroseeding will include a spray wood fiber mulch or an application of non-weed straw (approximately 2"). On slopes greater than 20% an erosion control blanket (North American Green SC150 or approved equal) will be placed on the slopes (see Erosion Control Plan by Bowman & Williams, 4/09).

5.2.3 Plant Installation

Installation of the container stock plants will occur in early fall after project construction. Installation will consist of flagging all planting locations, auguring/digging planting holes, installing plants, creating planting/watering basins around the plants (if appropriate), above-ground browse protection and placing mulch in the planting basins. The hydroseed application of the coastal scrub and eucalyptus understory habitats will be done after container stock planting and prior to October 15.

Prior to application of seed, straw and the erosion control blanket, the planting locations for container stock (coastal scrub shrubs and trees) will be marked in the field and the planting holes augured. During placement of the erosion control blanket, holes will be cut into the blanket at each planting site. The planting site will be flagged.

5.3 Irrigation

Supplemental irrigation will be required for the coastal scrub and tree container stock plants immediately after installation and for a minimum of three years. A battery-controlled above-ground drip system is recommended. This system will be designed and installed by the project landscape contractor.

The in-stream wetland plantings will require irrigation immediately after installation and until winter rains commence. A temporary sprinkler system is recommended for these plantings. This system will be designed and installed by the project landscape contractor.

No fixed schedule of irrigation will meet the needs of different plants during all times of year and in varying weather and soil conditions. Therefore, irrigation will be scheduled by analysis of drought stress and soil moisture conditions. Revegetation areas will be irrigated when soil in the root zone is dry enough to warrant irrigation.

Irrigation will be discontinued at the end of three years after planting, but will be resumed any time during Years 4 and 5 if plants show significant drought stress during monitoring.

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The goal is to have the plants off irrigation for two years before the end of the 5-year establishment period.

Each year that irrigation is required, operation of irrigation will begin by early April, subject to determination by the revegetation specialist. Irrigation will occur approximately twice a week during the summer and about once a week during spring and fall until October 15 (exact schedule depending upon weather). In the event of a drought year, periodic irrigation may be required throughout the year.

To encourage deep rooting, deep watering will be implemented for all container stock. Woody plantings will be watered in such a way that the soil profile is wetted continuously to a depth of at least three inches, as determined by the revegetation specialist

5.4 Implementation Schedule

The schedule of the revegetation actions outlined in Revegetation Plan is depicted on Table 5.

Table 5. Typical revegetation schedule, Years 0-5

Task	Year 0				Year 1				Year 2				Years 3-5			
	W	S	S	F	W	S	S	F	W	S	S	F	W	S	S	F
Propagation of Propagules[1]																
Construction and Final Site Preparation																
Auger Container Stock Planting Sites																
Hydroseed Coastal Scrub, Understory Area and Staging/Stockpile Area																
Install Erosion Control Blanket and/or Straw Mulch																
Install Container Stock Plants																
Conduct Site Maintenance																
Supplemental Planting (if necessary)																
Conduct Yearly Monitoring																

[1] Collection of propagules and contract-growing of plant materials should be initiated at least one year prior to out planting. Given the expected schedule of plant installation in fall/winter 2010, plants should be grown at the nursery in 2010 and 2011.

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Chapter 6. Maintenance During Monitoring Period

6.1 Maintenance Activities

The goal for the revegetation area is to establish native habitats that provides suitable and sustainable habitat for wildlife, and that will require little or no maintenance in the long term. Several other goals for the project involve minimizing maintenance efforts, minimizing opportunities for invasive, non-native plant species establishment, and minimizing irrigation system operation and maintenance. During the early establishment period, proper maintenance will be important. When the habitats have established, maintenance efforts should be reduced.

The revegetation area will be maintained in perpetuity. An establishment period maintenance program will be implemented for the first five years following plant installation. After these five years, the site will be periodically maintained by the project applicant as part of their duties in maintaining the site.

Maintenance efforts will consist primarily of weed removal and irrigation system operation and upkeep. Some plant replacement may be necessary during the first five years. When plants are well established, maintenance efforts will consist of weed control. After Years 5 maintenance will likely be reduced to control/removal of invasive non-native plants.

6.1.1 Weeds and Invasive, Non-Native Plant Control

Infestations of non-native plants will be reduced and controlled throughout the revegetation area and in adjacent existing vegetation if these areas are providing a significant source of weed seeds. The safest way to control weeds is to patrol frequently, and remove weeds manually. It is improbable that pre-emergent herbicides will be appropriate for use on the revegetation site as they do not discriminate between desirable native seeds and undesirable weeds, but prevent all seed germination. If herbicides are considered necessary, they will be used only on the recommendation of a California Licensed Qualified Applicator in conjunction with a qualified revegetation specialist, and only on sites narrowly specified. Table 6 lists the weeds currently or potentially of management concern within the project area.

Table 6. Invasive weeds of management concern

Common Name	Scientific Name	Cal-IPC Ranking	Growth Habit
Wild mustard	*Brassica spp.*	Moderate	Annual Biennial
Italian thistle	*Carduus pycnocephalus*	Moderate	Annual Biennial
Bull thistle	*Cirsium vulgare*	Moderate	Annual

Table 6. Invasive weeds of management concern

Common Name	Scientific Name	Cal-IPC Ranking	Growth Habit
			Biennial
Poison hemlock	*Conium maculatum*	Moderate	Annual Biennial
Pampas/Jubata grass	*Cortederia jubata*	High	Perennial
French broom	*Genista monspessulanus*	High	Perennial
Fennel	*Foeniculum vulgare*	High	Perennial
Cape Ivy	*Delairea odorata*	High	Perennial
Periwinkle	*Vinca major*	High	Perennial
Harding grass	*Phalaris aquatica/ P. arundinacea*	Moderate	Perennial
Bristly ox-tongue	*Picris echioides*	Limited	Biennial
Wild radish	*Raphanus sativa*	Limited	Annual
Himalaya berry	*Rubus discolor*	High	Perennial

Categories of Invasive Plants, California Invasive Plant Inventory (Cal-IPC)

Ranking	Meaning of Ranking
High	Plant species pose severe ecological impacts on physical processes, plant and animal communities and vegetation structure, plants have moderate to high rates of dispersal and establishment.
Moderate	Plant species have substantial ecological impacts; plants have moderate to high rates of dispersal yet establishment is generally dependent on ecological disturbance.
Limited	Plant species are invasive, but ecological impacts are minor on statewide level; reproductive biology result in low to moderate rates of spread, but species may be locally persistent and problematic.

Source: Cal-IPC 2006

6.1.2 Irrigation System Inspection and Maintenance

The site will be irrigated under direction of the project revegetation specialist. Irrigation may cease on the recommendation of the revegetation specialist at the end of the 5-year establishment period if the following conditions are met: 1) the tree and shrub composition meets the criteria of the performance standards; and 2) the plants are deemed to be established and no longer in need of irrigation

6.1.3 Repair of Watering Basins

Where individual plants are surrounded by watering basins, the basins will be routinely inspected. The basins will be repaired expeditiously so irrigation water is directed to plant roots and does not contribute to erosion.

6.1.4 Pruning

Pruning will not be required. Much more irregular and random plant growth is desirable (for wildlife value) in natural habitats than is typical for urban landscaping. Pruning will not be permitted for grooming plants. Most especially, pruning to clean the understory shrubs and

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low branches of trees will not be conducted. This practice would undermine progress toward the vegetative community structures specified in the performance standard, where cover, screening and closure of shrubs are part of the criteria for success.

If pruning is necessary, under the direction of a revegetation specialist, pruning will be limited to the barest minimum required to accomplish the following goals:

a. Promote healthy initial plant growth. Extremely unbalanced plant growth will be pruned only during the first five years after planting, and just enough to promote initial strong growth of trees and shrubs.
b. Repair storm damage or remove hazard. Storm damage, such as broken branches or fallen trees, will be cleaned up if they are deemed to compromise channel stability or capacity.

There will be no anticipated need for safety pruning of hazard trees since the revegetation areas are not intended for public access.

6.1.5 Herbivore Protection

Above ground browse protection cages will need maintenance if they are knocked over by deer or other animals. Cages will be removed once plants reach the top of the cage.

6.1.6 Insect Pest Control

Insect infestations will not be treated unless more than 5 to 10 percent of the trees or shrubs show significant damage. Insects are a primary food source for riparian birds, and once the habitats are functioning, the birds themselves will keep insects in balance. If this level of tolerance is exceeded and insects must be controlled, a revegetation specialist will develop an Integrated Pest Management (IPM), which will be implemented and the use of biological controls will be maximized.

6.1.7 Debris Removal

All non-organic debris will be removed and properly disposed of off-site during the entire maintenance period. All organic debris such as leaves, dead branches, plants, snags, etc., will be left in the restoration area to increase wildlife habitat and add organic matter to the soil.

6.2 Supplemental Seeding and Planting

6.2.1 Supplemental Seeding

Supplemental seeding will be conducted if monitoring results indicate failure of the initial seeding. This may occur from poor seed viability, disease, or an unexpected drought or other weather anomaly. Supplemental seeding will be conducted in the fall following the monitoring. A qualified revegetation specialist will decide the seeding application. Substitute species may be used if the original species consistently perform poorly, and

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suitable alternative species perform well. However, substitute species should be consistent with the goals and objectives, and be compatible with the criteria for success.

6.2.2 Supplemental Planting

The density of woody plant species was formulated to allow for expected mortality rates, so that supplemental planting can be kept to a minimum. Even with over planting, some sites are expected to require supplemental planting due to unforeseen events or factors, such as soil compaction, vandalism, drought, or severe flooding. Supplemental planting needs will be assessed during the annual monitoring. The need for supplemental planting will be determined by monitoring field performance and comparing it to the success criteria for each revegetation area. The number of replacement plants, the species, and the propagule or container size, will be determined by the monitor and stated in the annual monitoring reports. The project applicant will be responsible for contracting with a native plant nursery for the production of the required plants.

Supplemental plant installation will occur within 30 days of the site inspection. This schedule may be amended if the necessary plants are not available, are low in quality, or conditions are deemed unsuitable for replanting. It is desirable to replant as soon as possible to minimize the extension of the establishment period maintenance.

Supplemental planting will be triggered when the number of live, healthy plants falls below (or is thought to imminently fall below) the numbers required as outlined in the success criteria section. A qualified revegetation specialist will decide the number of plants, the species, and the propagule or container size. Substitute species may be used if the original species consistently performs poorly and suitable alternative species perform well. However, substitute species should be consistent with the goals and objectives and be compatible with the criteria for success.

The number of supplemental plants installed should be greater than the number of plants required to bring the total live plants up to the criteria for success. Enough plants should be replanted to allow for expected mortality and still meet the success criteria.

6.3 Maintenance Activities

After plant installation, maintenance activities will be selected and timed to minimize disturbance to wildlife. Maintenance activities will occur only in areas designated for those activities.

During the five-year establishment period, the revegetation specialist will check and, if necessary, tend to each plant at least once a month. Irrigation emitters (if used) will also be checked at least once every other week during periods of irrigation system operation. If necessary, animal protection devices, such as screening, will be adjusted, weeds removed, or mulch adjusted. Soil around the plant will be examined to ensure that adequate moisture is

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available and the emitter or irrigation system will be adjusted, if necessary. A log of all observations and adjustments will be kept by maintenance personnel. All plants will receive water at the rate specified in the irrigation section during the dry season. If appropriate, each irrigation circuit or valve zone will be checked during each irrigation session for proper operation.

The revegetation contractor or maintenance personnel will monitor the need for maintenance and will keep records documenting maintenance task items performed. Documentation will include the date, maintenance tasks performed, who performed maintenance, notes on other tasks requiring action, and observations of problems or potential problems. Maintenance tasks documented will include, but not be limited to: irrigation, irrigation system maintenance, weed control, supplemental planting, mulching, plant protection measures and debris removal.

6.4 Maintenance Schedule

Table 7. Maintenance schedule

Task	Winter	Spring	Summer	Fall
Yearly, conduct field inspections to monitor plant growth and progress of flowering stalks on invasive weed species. Monitor project area for changes in distribution of existing invasive weeds.				
Yearly, prior to the spring flowering season conduct first-season removal of invasive weeds.				
Monthly, check planting basins and remove weeds, repair browse protection cages, if needed.				
Yearly, in early spring check irrigation system and program system for spring and summer irrigation (Years 1-3)				
In spring and summer, every two weeks check irrigation system to ensure each plant is receiving adequate water; repair leaks or other problems with irrigation system				

ATTACHMENT 6

Chapter 7. Proposed Monitoring Reports

7.1. Due Dates

The first annual report shall be delivered to the USACE, CDFG, RWQCB and the County of Santa Cruz Planning Department on December 31 of each monitoring year (i.e., Year 1). Each annual report is to be delivered by that date in subsequent years, Year 2-5.

7.2. Monitoring Report Content

Annual reports for monitoring Years 1-5 will present data on the revegetation and the attainment of yearly target criteria, progress toward final success criteria, and any remedial actions required.

Annual reports will include the following:

1. Project name and location
2. Applicant's name, address, and phone number
3. Names, titles, and companies of all persons who prepared the content of the annual report and participated in monitoring activities for that year
4. County application number, CDFG SAA number, USACE file number, RWQCB file number
5. Purpose and goals of the revegetation
6. Dates of revegetation site construction, hydroseeding, and planting
7. Results of field data and analysis of quantitative monitoring data and success criteria
8. Monitoring photographs from photo stations.
9. Maps identifying monitoring areas, planting zones, etc., as appropriate.
10. Identification of any remedial actions necessary to meet performance standards.
11. List of actions for the next year's maintenance.

ATTACHMENT 6

Chapter 8. Potential Contingency Measures

8.1. Initiating Procedures

If an annual performance goal is not met for all or any portions of the revegetation site is any monitoring year, or if the final success criteria are not met, the applicant will prepare an analysis of the cause(s) of failure and proposed remedial actions for County Planning Department approval. Remedial action may include re-planting on-site or other measures approved by the applicant and the County Planning Department.

8.2. Contingency Funding Mechanism

The project applicant is responsible for funding implementation of contingency items.

ATTACHMENT 6

Chapter 9. Completion of Mitigation Responsibilites

9.1. Notification

When the required monitoring period is complete and the applicant believes that the final success criteria have been met, the applicant will notify the County Planning Department when submitting the proposed final report (Year 5). Final success criteria will be considered met a minimum of two years after all irrigation has ceased. Maintenance actions, such as control and/or removal of invasive non-native plant species can occur throughout (and beyond) the five-year monitoring period.

9.2. County Confirmation

Following receipt of the proposed final report, the County Planning Department will either confirm the successful completion of the revegetation obligation or require additional years of monitoring. The County Planning Department will make this determination within 30 days of receipt of the final report. The applicant will not be released from the revegetation obligation until written notice of completion is received from the County Planning Department or 180 days have passed since the applicant's submittal of the final report.

ATTACHMENT 6

Chapter 10. Long Term Management Plan

10.1. Property Ownership

The property owner after completion of the monitoring period will be Pete and Haruyo Pearson.

10.2. Management Plan

Long-term management will include the control/removal of invasive, non-native plant species from the revegetation area.

ATTACHMENT 6

CULTURAL RESOURCE EVALUATION OF THE PROPERTY AT 101 BENEDICT AVENUE IN THE COUNTY OF SANTA CRUZ

FOR

MR. RICHARD EMIGH
413 CAPITOLA AVENUE
CAPITOLA, CA 95010
NWIC#-09-1129

BY

Archaeological Resource Management
Dr. Robert Cartier, Principal Investigator
496 North Fifth Street
San Jose, CA 95112
Phone: (408) 295-1373
FAX: (408) 286-2040
Email: armcartier@netscape.net

APRIL 1, 2010

ATTACHMENT 7

ADMONITION

Certain information contained in this report is not intended for general public distribution. Portions of this report locate significant archaeological sites in the region of the project area, and indiscriminate distribution of these data could result in the desecration and destruction of invaluable cultural resources. In order to ensure the security of the critical data in this report, certain maps and passages may be deleted in copies not delivered directly into the hands of environmental personnel and qualified archaeologists.

THE PRINCIPAL INVESTIGATOR

ATTACHMENT 7

ABSTRACT

This cultural resource evaluation was conducted for the project at 101 Benedict Avenue in the County of Santa Cruz. The research included an archival search in the State records and a surface survey of the proposed project area. The archival search revealed that there are no recorded sites located within the proposed project area, or within one-half mile of the project area. No significant cultural materials, prehistoric or historic, were noted within the immediate project area. However, soil visibility was limited by terrain and vegetation. In the event that an access ramp will be excavated in order to complete the proposed improvements, it is recommended that an archaeological spot-check be carried out.

REQUEST FOR CULTURAL RESOURCE EVALUATION

This cultural resource evaluation was carried out to determine the presence or absence of any significant cultural resources. Cultural resource services were requested in March of 2010 in order to provide an evaluation that would investigate the possible presence of cultural resources. This study meets the requirements of CEQA (California Environmental Quality Act).

QUALIFICATIONS OF ARCHAEOLOGICAL RESOURCE MANAGEMENT

Archaeological Resource Management has been specifically engaged in cultural resource management projects in central California since 1977. The firm is owned and supervised by Dr. Robert Cartier, the Principal Investigator. Dr. Cartier has a Ph.D. in anthropology, and is certified by the Register of Professional Archaeologists (RPA) for conducting cultural resource investigations as well as other specialized work in archaeology and history. He also fulfills the standards set forth by the Secretary of the Interior for inclusion as a historian and architectural historian and is certified as such on the State of California referral lists.

LOCATION AND DESCRIPTION OF THE SUBJECT AREA

The subject area is located at 101 Benedict Avenue in the County of Santa Cruz. On the USGS 7.5 minute quadrangle of Laurel, CA, the Universal Transverse Mercator Grid (UTMG) approximate centerpoint of the project area is 10S 5 91 010mE/40 95 428mN. The elevation is approximately 318 feet MSL. The nearest source of fresh water is an unnamed drainage which runs through the subject property.

The proposed project consists of a rip-rap dissipater and vegetation plan. This will require the necessary grading and other earthmoving activities.

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METHODOLOGY

The methodology used in this investigation consisted of an archival search, a surface reconnaissance, and a written report of the findings with appropriate recommendations. The archival research is conducted by transferring the study location to a state archaeological office which maintains all records of archaeological investigations. This is done in order to learn if any archaeological sites or surveys have been recorded within a half mile of the subject area. Each archival search with the State is given a file number for verification. The surface reconnaissance portion of the evaluation is done to determine if traces of historic or prehistoric materials exist within the study area. This survey is conducted by a field archaeologist who examines exposed soils for cultural material. The archaeologist is looking for early ceramics, Native American cooking debris, and artifacts of stone, bone, and shell. For historic cultural resources, the field evaluation also considers older structures, distinctive architecture, and subsurface historic trash deposits of potentially significant antiquity. A report is written containing the archival information, record search number, the survey findings, and appropriate recommendations. A copy of this evaluation is sent to the State archaeological office by requirements of State procedure.

A cultural resource is considered "significant" if it qualifies as eligible for listing in the California Register of Historic Resources (CRHR). Properties that are eligible for listing in the CRHR must meet one or more of the following criteria:

1. Association with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States;
2. Association with the lives of persons important to local, California, or national history;
3. Embodying the distinctive characteristics of a type, period, region, or method of construction, or representing the work of a master, or possessing high artistic values; or
4. Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Most Native American prehistoric sites are eligible due to their age, scientific potential, and/or burial remains.

The CRHR interprets the integrity of a cultural resource as its physical authenticity. An historic cultural resource must retain its historic character or appearance and thus be recognizable as an historic resource. Integrity is evaluated by examining the subject's location, design, setting, materials, workmanship, feeling, and association. If the subject has retained these qualities, it may be said to have integrity. It is possible that a cultural resource may not retain sufficient integrity to be listed in the National Register of Historic Places yet still be eligible for listing in the CRHR. If a cultural resource retains the potential to convey significant historical/scientific data, it may be said to retain sufficient integrity for potential listing in the CRHR.

ATTACHMENT 1

ETHNOGRAPHIC BACKGROUND

Early ethnographic accounts of local Native American cultures provide a cultural context for archaeological studies. The Ohlone, or Costanoan, Indians inhabited the San Francisco Bay regions from the Golden Gate south to Monterey. Derived from a Spanish word, Costanoan means "people of the coast," and is an older term. Descendants of these people prefer to refer to themselves as "Ohlone," and it is now the generally accepted term. The research area is located in the Hordean linguistic area, which shared many cultural traits with other linguistic groups in the Ohlone region. It is believed that the Ohlone Indians inhabited the area since A.D. 500, and that speakers of the Hokan language previously inhabited at least part of the region (Levy 1978). However, it is unclear when the Hokan or even earlier Paleo-Indians first came to the area. The earliest radiocarbon dates that are available for the area to which the Ohlone came to live are 12,000 B.P. (years before present) at SCR-177 in Scotts Valley (Cartier 1993), 3,200 B.P. at the University Village Site (SMA-77) (Gerow 1968), 6,349 B.P. at Palm Canyon (SCL-106) near Gilroy (Cartier 1980), and 6,628 B.P. at Camden Avenue (SCL-64) (Winter 1978).

The Ohlone were gatherers and hunters who utilized only the native flora and fauna with the exception of one domesticate, the dog. Yet, the abundance and high quality of natural resources allowed them to settle in semi-sedentary villages. The Ohlone were typically organized in basic political units called "tribelets" that consisted of 100 to 250 members (Kroeber 1954). The "tribelet" was an autonomous social unit consisting of one or more permanent villages with smaller villages in a relatively close proximity (Kroeber 1962). Parties went out from the major villages to locations within the tribal territory to obtain various resources.

The proximity of both mountainous and bay regions in the Santa Clara Valley made a diversity of resources available during different seasons to the native inhabitants. During the winter months, the low-lying flats near the San Francisco Bay have abundant marine and waterfowl resources, while the surrounding mountainous areas are best in the summer months for their nut, seed, and mammalian resources (King and Hickman 1973). A primary food source was acorns, abundant in autumn and easily stored for the remainder of the year. According to Gifford, the acorn industry of California was probably the most characteristic feature of its domestic economy (Gifford 1951). An elaborate process of grinding and leaching acorns is necessary to render them palatable. The acorn industry first became a major source of food in the Middle Period as is indicated by the appearance of mortars and pestles in the archaeological record (King and Hickman 1973). Other important resources include various plant foods, land animals, and the marine resources of the San Francisco Bay. Both large and small land mammals were typically hunted, trapped or poisoned. Many items, including shell beads and ornaments, were extensively traded with other groups as far away as the Great Basin of Nevada (Davis 1974).

It is argued that contrary to usual conceptions of hunters and gatherers, native Californian groups, including the Ohlone, practiced a form of resource management that was close to agriculture. Bean and Lawton (1976) consider this pattern a "semi-agricultural" stage which included quasi-agricultural harvesting activity and proto-agricultural techniques. Some plants were pruned and reseeded seasonally for optimal production. Foods such as acorns were stored for many months at a time. Ethnographic accounts also report the re-

ATTACHMENT 7

peated burning of woodlands grass belt to increase animal and plant resources. It is likely to have made hunting conditions better by reducing scrubby growth and encouraging the growth of grasses and other plants that are appealing to grazers such as deer and elk. The plant growth succession after a burning is also rich in grains and legumes that were major food sources for Native Californians.

Bean and Lawton also claim that the abundance of plant and animal resources in California and the development of ingenious technological processes allowed Native Californians to develop social structures beyond the normal parameters of hunting and gathering. These include extensive political systems, controlled production and redistribution of goods, and alliances and trade with other groups.

ARCHIVAL BACKGROUND

Prior to surface reconnaissance of the subject area, a study of the maps and records at the Northwest Information Center of the California Historical Resources Information System was conducted and given the number NWIC#-09-1129. This research into the records at the Information Center was done to determine if any known archaeological resources were reported in or around the subject area. The archival research revealed that there are no previously recorded sites or studies within the proposed project area, or within one-half mile of the project area. In addition, no previous studies have been carried out within the project area or the vicinity.

SURFACE RECONNAISSANCE

A "general surface reconnaissance" was conducted by the Principal Investigator on all visible open land surfaces in the project area. A "controlled intuitive reconnaissance" was performed in places where burrowing animals, exposed banks and inclines, and other activities had revealed subsurface stratigraphy and soil contents. The boundaries of the project area were well established in the field by a detailed contour map and on-site topography. Accessibility to the project area was fair; the proposed project area was located at the bottom of a steep overgrown ravine. Access was gained by reaching the base of the ravine and walking the creek. Soil visibility within the subject area was fair; soil was exposed in several eroded areas, as well as along the bottom of the creek. Vegetation on the property consisted of eucalyptus trees with small shrubs including scotch broom. Where visible, native soils consisted of a sand-rich medium brown loam. Rock types noted included sandstone gravel along the base of the creek. No significant cultural materials, prehistoric or historic, were noted during surface reconnaissance.

CONCLUSION AND RECOMMENDATIONS

The archival search revealed that there are no recorded sites located within the proposed project area, or within a one-half mile radius of the project area. No significant cultural materials, prehistoric or historic, were noted within the immediate project area. However, soil visibility was limited by terrain and vegetation. In the event that an access ramp will be excavated in order to complete the proposed improvements, it is recommended that an archaeological spot-check be carried out.

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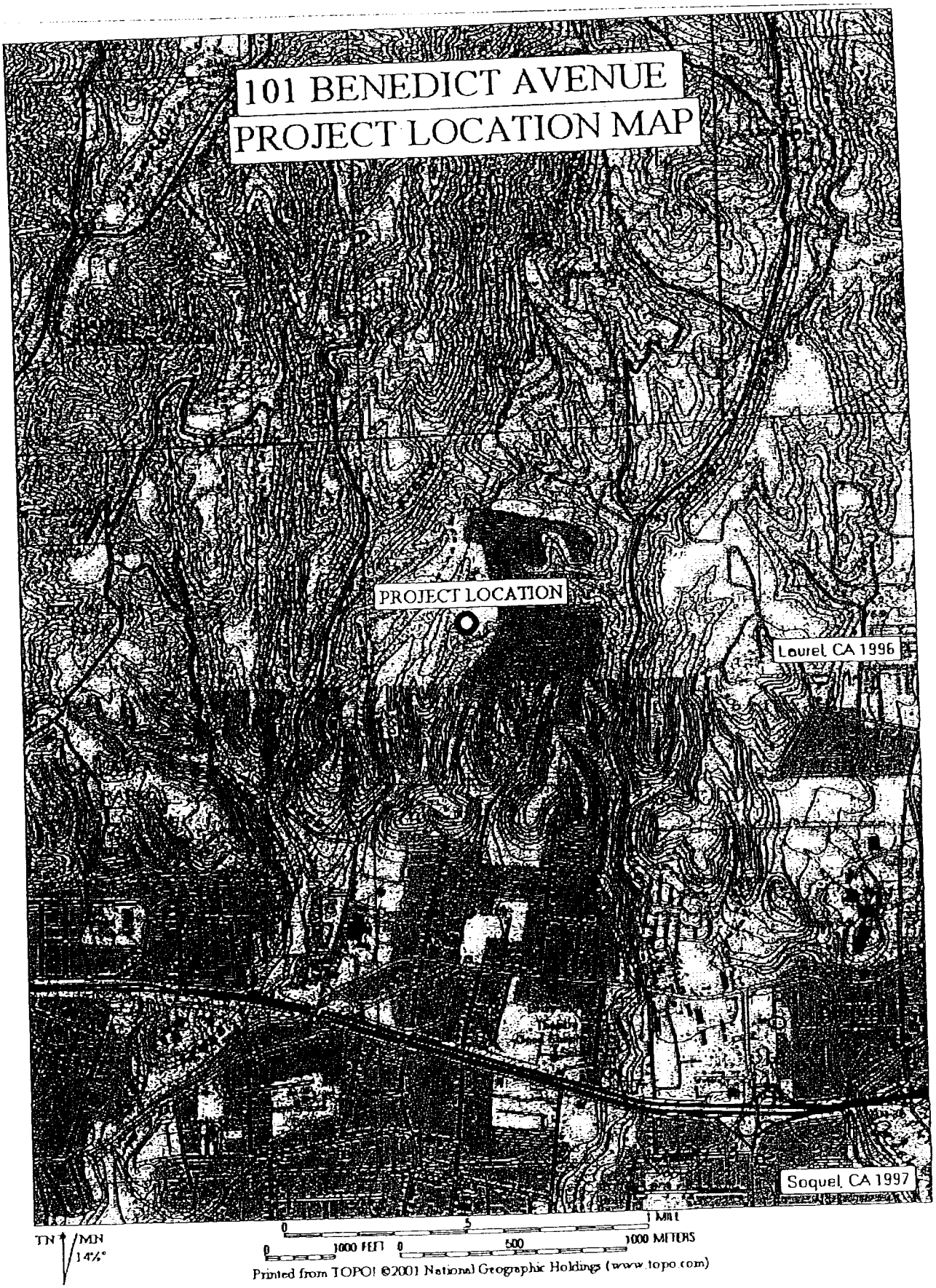

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ATTACHMENT 7

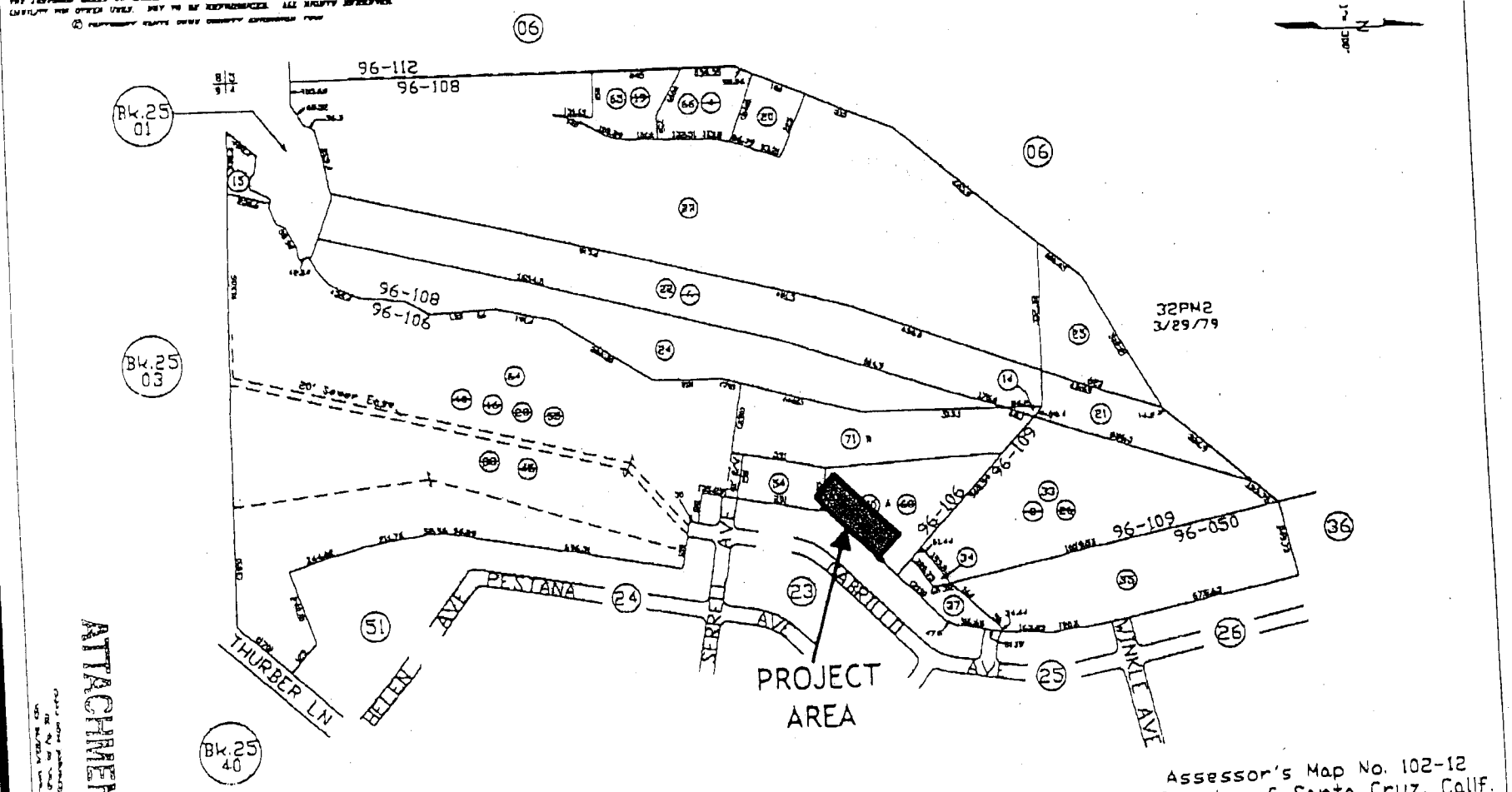
101 BENEDICT AVENUE PROJECT AREA MAP

FOR TAX PURPOSES ONLY

POR. SEC. 4,
T.11S., R.1W., M.D.B. & M.

Tax Area Code
96-050 96-106
96-108 96-109

102-12



Assessor's Map No. 102-12
County of Santa Cruz, Calif.
Sep. 1998

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

ATTACHMENT 7

County of Santa Cruz

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123
KATHLEEN MOLLOY PREVISICH, PLANNING DIRECTOR

MITIGATION MONITORING AND REPORTING PROGRAM
for
Application No. 08-0106, May 2010

Environmental Impacts		Mitigation Measure	Responsibility for Compliance	Method of Compliance	Timing of Compliance
Biological Resources					
BIO-1	Have a substantial adverse effect on any riparian habitat or sensitive natural community identified in local or regional plans, policies, regulations (e.g., wetland, native grassland, special forests, intertidal zone, etc.) or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	The project applicant shall secure all necessary regulatory agency permits (ACOE, CDFG, and RWQCB) prior to construction. Prepare and implement a final revegetation and monitoring plan for the new stabilized slopes and drainage channel, that includes the following features: • Create a wooded corridor along the new channel. Utilize native plant species within this planting zone. Due to the ephemeral nature of the drainage willow plantings within the area will be experimental. • Vegetate the new stabilized slopes outside the riparian corridor with a mosaic of native trees and shrubs to create a riparian buffer area. • The final revegetation and monitoring plan shall be subject to review by County Planning and CDFG prior to commencement of construction activities as part of their issuance of a 1602 Streambed Alteration Agreement. • Utilize locally native planting stock to maximize survival. • Provide temporary irrigation to installed plantings and periodic maintenance such that container stock plantings of upland trees and shrubs achieve a minimum 80% survival rate after 5 years (please see the Revegetation and Monitoring Plan). Due to the ephemeral nature of the drainage, willow cuttings and in-stream wetland plantings (i.e., spreading rush) within the new drainage will be experimental and not subject to plant survival requirements.	Applicant	Grading Permit	Following grading and installation of drainage improvements
BIO-2		The project applicant shall implement riparian corridor protection measures to minimize impacts to downstream waters and resources located adjacent to the work area, including: • Install plastic mesh fencing at the perimeter of the work area that abuts downstream waters and riparian corridor to prevent impacts to the adjacent riparian corridor and injury to nearby native trees (if present). Protective fencing shall be in place prior to ground disturbances and removed once all construction is complete. During construction, no grading, construction or other work shall occur outside the designated limits of work. • No excess soil, chemicals, debris, equipment or other materials shall be dumped or stored outside the designated limits of work.	Applicant	Grading Permit	During grading, construction, and revegetation
BIO-3	Interfere substantially	If possible, schedule construction to occur between August 1 and December 31	Applicant	Grading Permit	Clearing and

EXHIBIT C
148/151
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Environmental Impacts		Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
	with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native or migratory wildlife nursery sites?	of any given year to avoid nesting birds. If this is not practical, then the project applicant shall hire a qualified biologist to conduct preconstruction surveys for nesting birds. The surveys shall be conducted no more than 30 days prior to construction. If nesting birds are observed within or adjacent to the project area, the following protective measures shall be implemented: • A buffer zone with highly visible tape or fencing shall be established around the active bird nest and no construction shall take place within the buffer zone until the biologist confirms that all young have fledged the nest. • For raptors, the buffer zone shall be approximately 250 feet, and adjusted according to the topography and visual sight line that may affect the nesting birds. • For other resident and migrant bird species, the buffer zone shall be at least 50 feet around the nest. The biologist shall monitor the nest, and advise the applicant when all young have fledged the nest. The biologist shall prepare a report of nest survey results, nest monitoring (if any), and the dates when the nesting was completed, a report suitable for the applicant to submit to County Planning Department and CDFG.			Grubbing, grading, construction, and revegetation
N/A	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game, or U.S. Fish and Wildlife Service?	See BIO-3 above.	Applicant	Grading Permit	Clearing and Grubbing, grading, construction, and revegetation
Cultural Resources					
CUL-1	Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?	An archaeological spot check shall be conducted following the clearing of vegetation, which will improve soil visibility. In addition, pursuant to Section 16.40.040 of the Santa Cruz County Code, if archeological resources are uncovered during construction, the responsible persons shall immediately cease and desist from all further site excavation and comply with the notification procedures given in County Code Chapter 16.40.040.	Applicant	Grading Permit	Clearing and Grubbing, grading, and construction

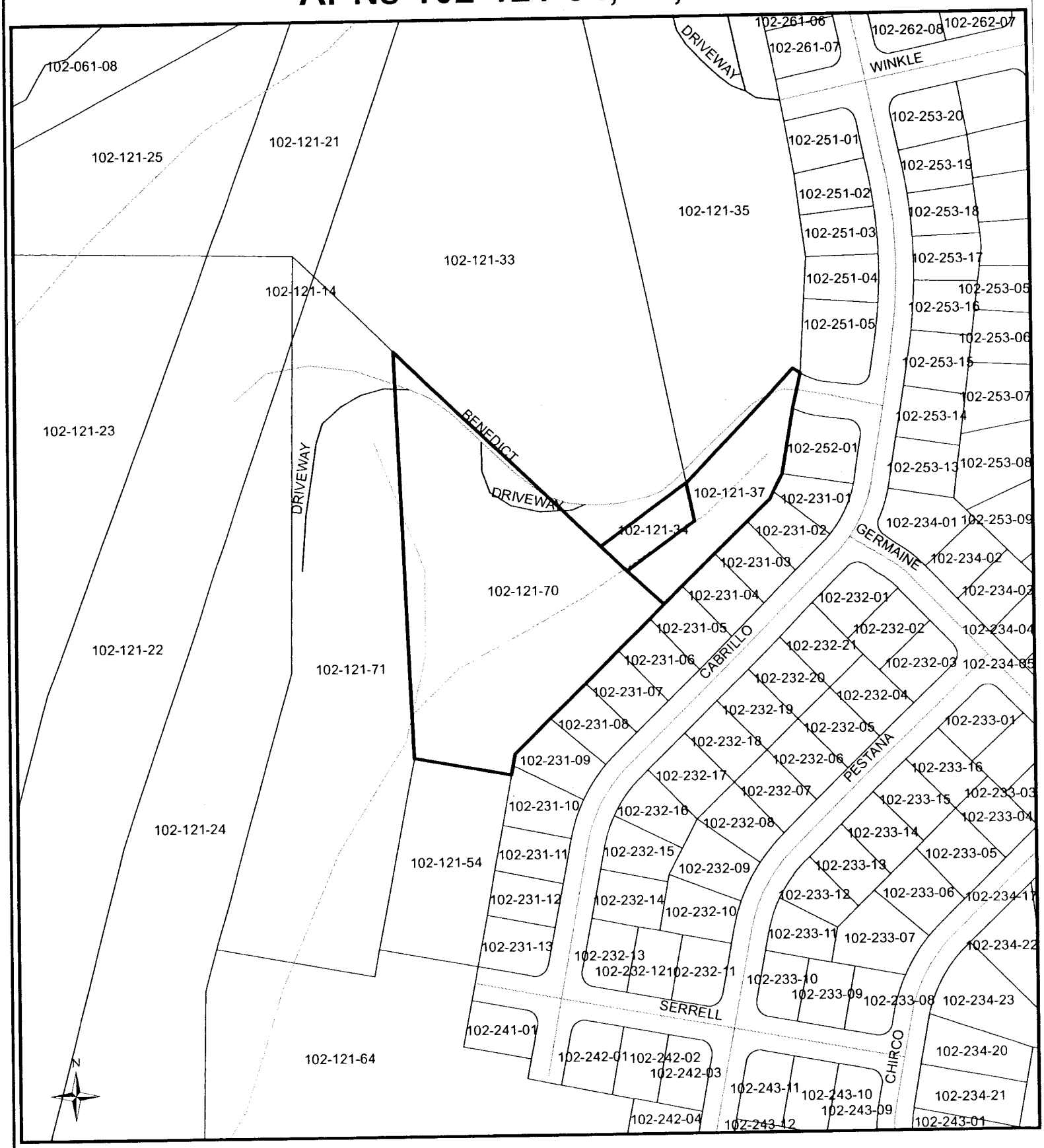
Environmental Impacts		Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
Hydrology, Water Supply and Water Quality					
N/A	Substantially degrade a public or private water supply? (Including the contribution of urban contaminants, nutrient enrichments, or other agricultural chemicals or seawater intrusion).	See BIO-3 above.	Applicant	Grading Permit	Clearing and Grubbing, grading, construction, and revegetation
Noise					
NOI-1	Exposure of persons to or generation of noise levels in excess of standards established in the General Plan or noise ordinance, or applicable standards of other agencies?	In order to minimize impacts associated with short-term construction noise, the County Planning Department shall ensure that the following noise control measures are incorporated into the final construction design plans for the proposed project: (a) Construction that involves motorized equipment shall be limited to Monday through Friday from 7:30 AM to 4:30 PM to avoid the times of day and the days of the week when noise effects would cause the greatest annoyance to residents. (b) Exceptions to the specified construction hours will be allowed only for construction emergencies and approved by County Planning; and (c) 3. Signs will be posted that are clearly visible to users on Benedict Road and Cabrillo Avenue that provide the phone number for the public to call to register complaints about construction-related noise problems. A single "disturbance coordinator" shall be assigned to log in and respond to all calls. All verified problems shall be resolved within 24 hours of registering the complaint.	Applicant	Grading Permit	Clearing and Grubbing, grading, construction, and revegetation
Transportation/Traffic					
TRA-1	Result in inadequate emergency access?	During partial closure, a 12-foot wide access shall be maintained to allow for the ingress and egress of emergency vehicles and residents down Benedict Avenue.	Applicant	Grading Permit	Clearing and Grubbing, grading, construction, and revegetation
Utilities & Service Systems					
USS-1	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause	See Mitigation Measures BIO-1, BIO-2, BIO-3, CUL-1, NOI-1, TRA-1 and USS-1.	Applicant	Grading Permit	Clearing and Grubbing, grading, construction, and revegetation

Environmental Impacts		Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
	significant environmental effects?				

Exhibit E

Assessor's, Location, Zoning and General Plan Maps

APNs 102-121-34, 37, 70



Legend

- APNs 102-121-34, 37, 70
- Streams
- <all other values>
- STREAMTYPE
- PERENNIAL
- INTERMITTENT
- SWALE

Assessors Parcel Map

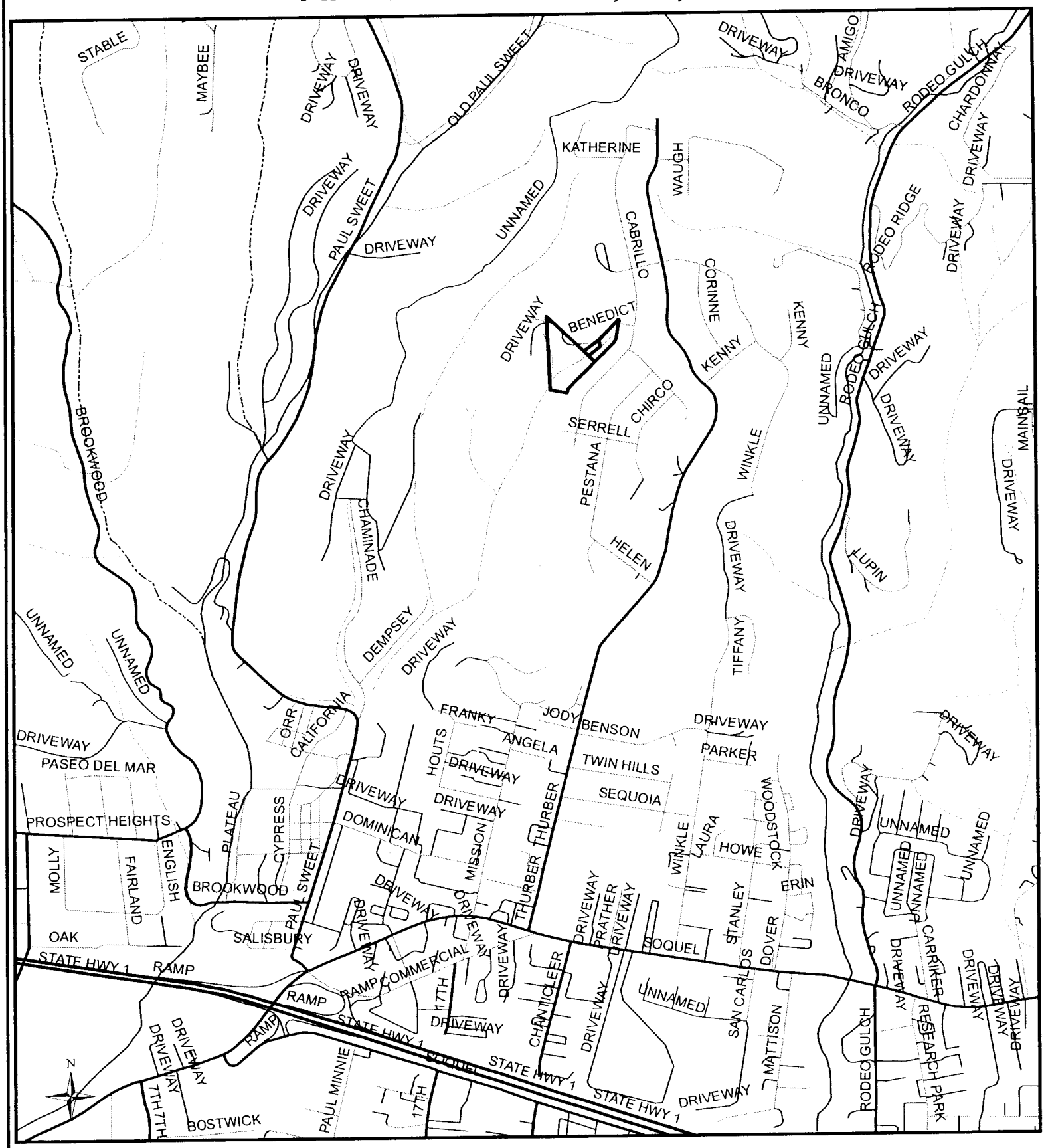
0 115 230 460 Feet

0 0.01(- 181 - 0.04 Miles

EXHIBIT E

County of Santa Cruz
Planning Department
Map Created
June 2010

APNs 102-121-34, 37, 70



Location Map

0 650 1,300 2,600 Feet

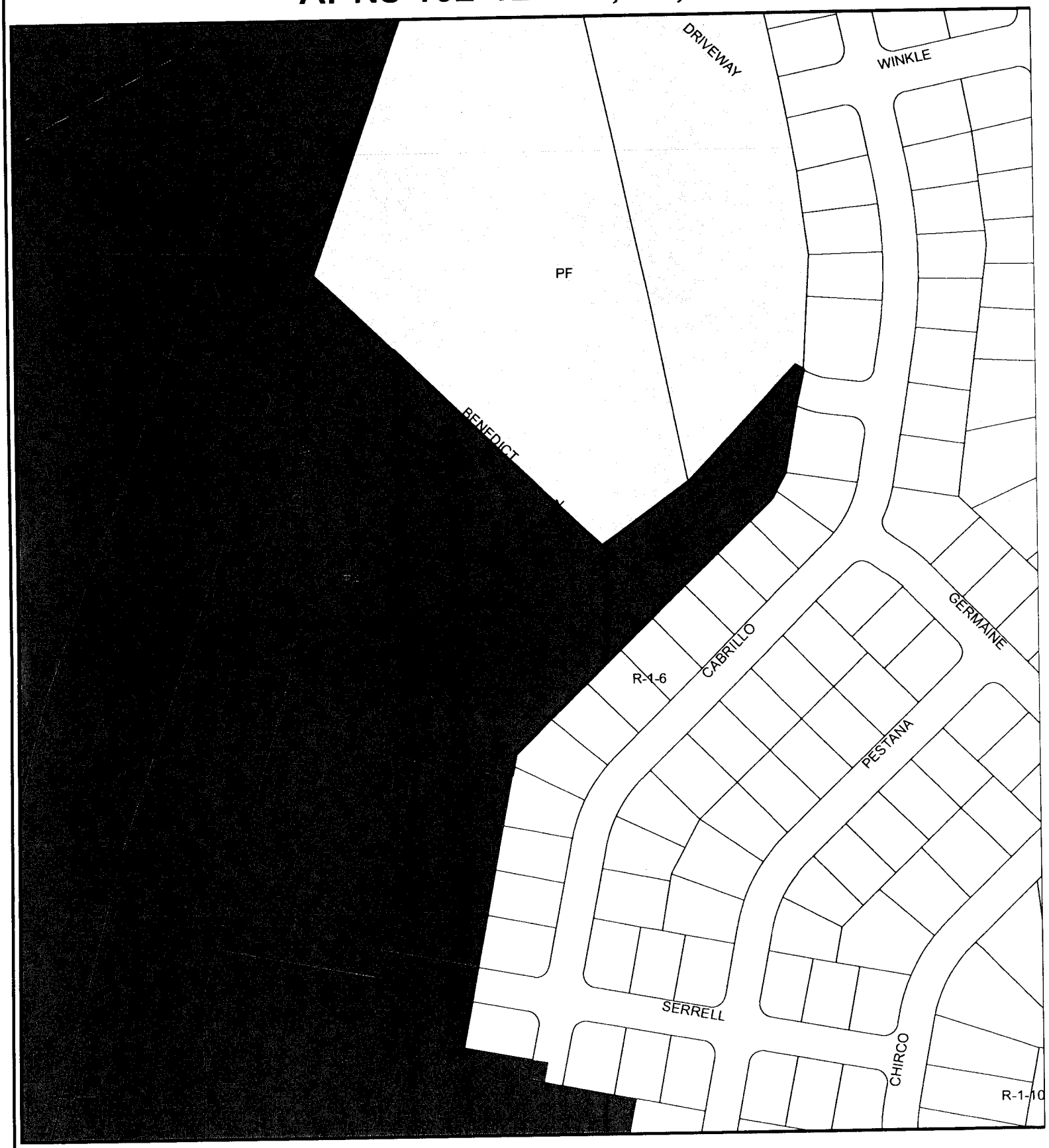
0 0.050 - 182 - .2 Miles

Legend
- APNs 102-121-34, 37, 70
- Streams
- <all other values>
- STREAMTYPE
- PERENNIAL
- INTERMITTENT
- SWALE

EXHIBIT E

County of Santa Cruz
Planning Department
Map Created
June 2010

APNs 102-121-34, 37, 70



Zoning Map

Legend

- APNs 102-121-34, 37, 70
- AGRICULTURE RESIDENTIAL
- PUBLIC FACILITY
- RESIDENTIAL-SINGLE FAMILY

0 115 230 460 Feet

0 0.01 - 183 - 0.04 Miles

EXHIBIT E

County of Santa Cruz
Planning Department
Map Created
June 2010

APNs 102-121-34, 37, 70

General Plan Map

Legend

- APNs 102-121-34, 37, 70
- Public Facilites
- Residential-Mountain
- Residential-Suburban
- Residential - Urban Low Density
- Urban Open Space

0 115 230 460 Feet

0 0.01 - 184 - 0.04 Miles

EXHIBIT E

County of Santa Cruz
Planning Department
Map Created
June 2010

Exhibit F

Comments and Correspondence