Environmental Assessment (EA)/Initial Study (IS)

FOR

South Boundary Road/Gigling Road Improvement Project

Volume II of II

Prepared For:

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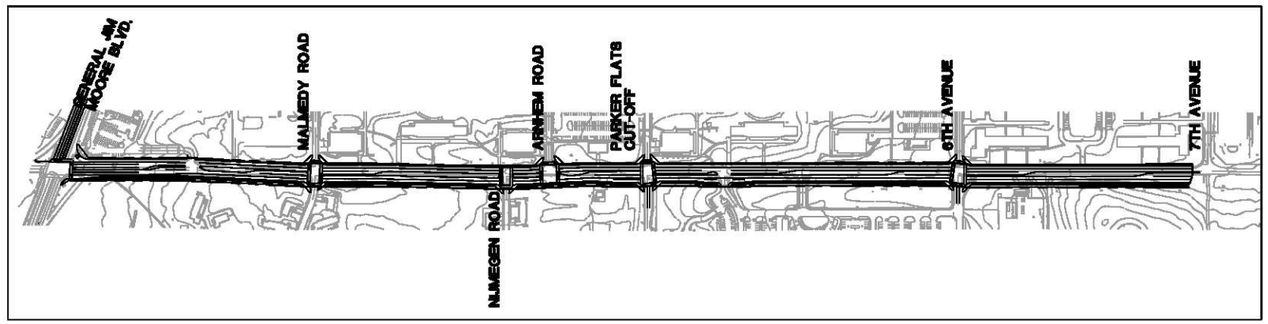
May 2010

Appendix B

Improvement Plans – South Boundary Road/Gigling Road (Creegan and D'Angelo Consulting Engineers)

GIGLING ROAD
FORT ORD REUSE AUTHORITY
CITY OF SEASIDE, CALIFORNIA

JANUARY 2008



KEY MAP
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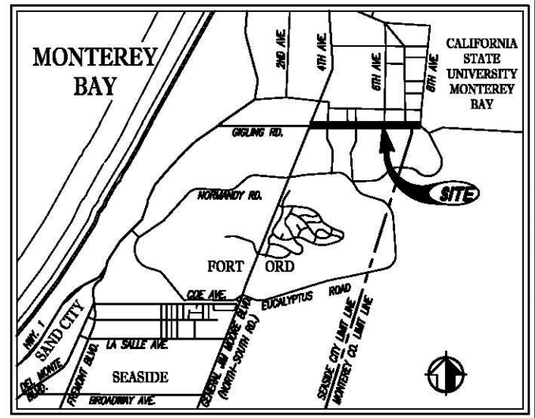

VICINITY MAP
NTS

BENCHMARK
A MAGNETIC NAIL AND BRASS WASHER STAMPED "BESTOR ENGINEERS" SET IN THE EASTERN PAVED SHOULDER OF GENERAL JIM MOORE BLVD, APPROXIMATELY 280' SOUTHERLY OF THE CENTERLINE OF EUCALYPTUS ROAD, HAVING AN ESTABLISHED NGVD 29 ELEVATION OF 332.31 FEET.

SHEET INDEX

C1	COVER SHEET
C2	GENERAL NOTES
C3	TYPICAL SECTIONS
C4	GIGLING ROAD – PLAN & PROFILE
C5	GIGLING ROAD – PLAN & PROFILE
C6	GIGLING ROAD – PLAN & PROFILE
C7	GIGLING ROAD – PLAN & PROFILE
C8	GIGLING ROAD – PLAN & PROFILE

ABBREVIATIONS

AB	AGGREGATE BASE	HWY	HIGHWAY
A.D	ALGEBRAIC DIFFERENCE	ICV	IRRIGATION CONTROL VALVE
AC	ASPHALT CONCRETE	ID	INSIDE DIAMETER
APPROX	APPROXIMATELY	INV, IE	INVERT ELEVATION
ARCH	ARCHITECTURAL	IRR	IRRIGATION
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	JT	JOINT
		K	CURVE COEFFICIENT
BC	BEGIN CURVE	LAT	LATERAL
BLDG	BUILDING	LF	LINEAL FEET
BOW	BACK OF SIDEWALK	MAX	MAXIMUM
BVCS	BEGIN VERTICAL CURVE STATION	MECH	MECHANICAL
BVCE	BEGIN VERTICAL CURVE ELEVATION	MJ	MECHANICAL JOINT
CB	CATCH BASIN	MH	MANHOLE
CIP	CAST IRON PIPE	MIN	MINIMUM
CL	CLASS	N	NORTH
℄	CENTERLINE	NIC	NOT INCLUDED IN CONTRACT
CLR	CLEAR	NO., #	NUMBER
CMP	CORRUGATED METAL PIPE	NTS	NOT TO SCALE
CO	CLEAN OUT	OC	ON CENTER
CONC	CONCRETE	OD	OUTSIDE DIAMETER
COR	CORNER	OG	ORIGINAL GROUND
CP	CONCRETE PIPE	PBMH	PAC BELL MANHOLE
CR	CURB RETURN	PCC	PORTLAND CONCRETE CEMENT
C & G	CURB AND GUTTER	PIV	POST INDICATOR VALVE
DEPT	DEPARTMENT	POC	POINT OF CONNECTION
DIA, ø	DIAMETER	PVC	POLY VINYL CHLORIDE
DIP	DUCTILE IRON PIPE	PVI	POINT OF VERTICAL INTERSECTION
DW	DOMESTIC WATER	PVMT	PAVEMENT
DWG	DRAWING	R	RADIUS
D/W, DWY	DRIVEWAY	RCP	REINFORCED CONCRETE PIPE
E	EAST	REINF	REINFORCED
EC	END CURVE	RPV	REDUCED PRESSURE VALVE
ELEV	ELEVATION	R/W	RIGHT OF WAY
EP	EDGE OF PAVEMENT	RWD	REDWOOD
EW	EACH WAY	SSFM	SANITARY SEWER FORCE MAIN
EX, EXIST	EXISTING	S	SOUTH
FC, FOC	FACE OF CURB	S =	SLOPE %
FD	FOUND	SD	STORM DRAIN
FDC	FIRE DEPARTMENT CONNECTION	SPECS.	SPECIFICATIONS
FF	FINISH FLOOR	SQ	SQUARE
FG	FINISH GROUND	SS	SANITARY SEWER
FH, HYD	FIRE HYDRANT	STD	STANDARD
E , FL	FLOW LINE	SW	SIDEWALK
FW	FIRE WATER	T, TELE	TELEPHONE, COMMUNICATION
G	GAS	TC	TOP OF CURB – BACK
GALV	GALVANIZED	TEMP	TEMPORARY
GB	GRADE BREAK	THK	THICK
GR	GRATE	TYP	TYPICAL
GRD	GRADE	UNO	UNLESS NOTED OTHERWISE
HB	HOSE BIB	UTIL	UTILITY
HC, H/C	HANDICAPPED	W	WEST
HI PT, HP	HIGH POINT	W/	WITH
HGT, HT	HEIGHT	WV	WATER VALVE

LEGEND

EXISTING		PROPOSED
EX.SSFM	SANITARY SEWER FORCE MAIN	
EX.18"SD	STORM DRAIN and MANHOLE	24"SD
	CATCH BASIN	
EX.8"SS	SANITARY SEWER and MANHOLE	8"SS
	CLEAN OUT	
EX.6"W	WATER LINE	6"W
EX.4"DW	DOMESTIC WATER	
EX.4"FW	FIRE WATER	
	REDUCED PRESSURE BACKFLOW DEVICE	
	CHECK VALVE	
	VALVE	
	FIRE HYDRANT	
	BLOW OFF	
	POST INDICATOR VALVE	
	FIRE DEPARTMENT CONNECTION	
	WATER METER	WM
	HOSE BIB	
EX.8"IRRG	IRRIGATION PIPE	
	IRRIGATION CONTROL VALVE	
EX.2"G	GAS LINE	
	GAS VALVE	
	GAS METER	
E	ELECTRIC LINE	
	POWER POLE	
	UTILITY VAULT	
T	TELEPHONE LINE	
	ELECTROLIER	
	HANDICAP RAMP	
	DRIVEWAY	
	CURB, GUTTER and SIDEWALK	
	AIR RELEASE VALVE (ARV)	
	LIMIT OF GRADING	
	(CUT OR FILL)	(C OR F)

Preliminary/Not For Construction

– Submittal — By: RGS

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CITY OF SEASIDE

APPROVED: _____ DATE: _____

DIANA INGERSOLL, PE
DIRECTOR OF PUBLIC WORKS

FORT ORD REUSE AUTHORITY

APPROVED: _____ DATE: _____

JAMES A. FEENEY, PE
ASSISTANT EXECUTIVE DIRECTOR

NO.	DESCRIPTION	DATE	APPRD	DESCRIPTION	DATE

DESIGNED BY: C+D
DRAWN BY: LDR, SWS
CHECKED BY: DLL/APR
DATED: JAN. 2008
SCALE: AS NOTED

Creegan+D'Angelo
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FORT ORD REUSE AUTHORITY
GIGLING ROAD
COVER SHEET
Monterey County California

SHEET NUMBER
C1
OF 8 SHEETS

DRAWING NO.
707012

JANUARY 09, 2008 10:48:36 p.m.
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OCTOBER 15, 2007 7:33:09 p.m.

GENERAL NOTES

1. ALL STATIONING AND DISTANCES INDICATED ON THE DRAWINGS ARE BASED ON HORIZONTAL MEASUREMENTS IN FEET.

2. THE CONTRACTOR SHALL NOTIFY THE FORA REPRESENTATIVE AT LEAST 2 WORKING DAYS IN ADVANCE OF ANY WORK WHICH WILL REQUIRE THE INSPECTION SERVICES.

3. AT LEAST 2 WORKING DAYS PRIOR TO ANY EXCAVATION WORK, THE CONTRACTOR SHALL CALL UNDERGROUND SERVICE ALERT AT 1-800-642-2444 FOR LOCATING AND MARKING UNDERGROUND UTILITIES IN THE AREAS OF THE WORK.

4. THE EXISTING UTILITIES SHOWN AND INDICATED ON THE DRAWINGS ARE APPROXIMATE AND FOR GENERAL INFORMATION ONLY, AND ARE BASED ON AVAILABLE UTILITY INFORMATION PROVIDED BY THE UTILITY OWNER AND SELECTED FIELD LOCATING. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR VERIFICATION OF EXISTING UNDERGROUND UTILITIES, WHETHER INDICATED OR NOT ON THE DRAWINGS, PRIOR TO ANY CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL PROTECT ALL EXISTING OR NEWLY PLACED UTILITY STRUCTURES AND LINES FROM DAMAGE OR DISRUPTION OF SERVICE DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE NECESSARY TEMPORARY UTILITY SERVICES AND SHALL RESTORE PERMANENT UTILITY SERVICES DISRUPTED BY CONSTRUCTION ACTIVITY.

5. THE CONTRACTORS SHALL EXPOSE ALL EXISTING UTILITY LINES AT LEAST ONE WORKING DAY AHEAD OF PIPE LAYING OPERATION TO VERIFY LOCATION AND DEPTH OF EXISTING UTILITIES. ANY CONFLICTS WILL BE RESOLVED BY THE FORA REPRESENTATIVE PRIOR TO PIPE INSTALLATION.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MONITORING FOR THE PRESENCE OF CONTAMINATED SOIL AND/OR GROUNDWATER DURING THE COURSE OF THE WORK. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE FORA REPRESENTATIVE IF ANY SUSPECT MATERIALS ARE ENCOUNTERED. CONTACT SHALL BE MADE IMMEDIATELY BY TELEPHONE, WITH WRITTEN NOTIFICATION WITHIN 3 WORKING DAYS.

7. ALL TRENCHING OPERATIONS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF TITLE 8 (CAL/OSHA).

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE ON OR OFF THE PROJECT SITE AS A RESULT OF CONSTRUCTION ACTIVITIES INCLUDING THE LACK OF DUST CONTROL AND TRAFFIC CONTROL.

9. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL CERTIFY THAT ALL WORK WAS PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. VARIATIONS SHALL BE DECLARED AND PRESENTED TO THE ENGINEER IN WRITING UPON COMPLETION OF CONSTRUCTION, IN THE FORM OF MARKED UP PLANS SHOWING ALL CHANGES.

10. THE FORA REPRESENTATIVE WILL NOT DIRECTLY CONTROL THE PHYSICAL ACTIVITIES OF THE CONTRACTOR OR ANY SUBCONTRACTORS. CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR WORKING CONDITIONS ON THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

11. CONTRACTOR SHALL VERIFY WORK IN FIELD AND SHALL SATISFY HIMSELF AS TO THE ACCURACY BETWEEN WORK SET FORTH ON THESE PLANS AND THE WORK REQUIRED IN THE FIELD. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE FORA REPRESENTATIVE PRIOR TO START OF CONSTRUCTION.

12. EXCEPT WHEN A LANE CLOSURE IS IN EFFECT IN ACCORDANCE WITH THE CONTRACTOR'S APPROVED TRAFFIC CONTROL PLAN, NO VEHICLES, EQUIPMENT OR MACHINERY ARE ALLOWED TO PARK ON THE SHOULDER OF GENERAL EUCALYPTUS ROAD AT ANY TIME.

13. ANY AREAS DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED TO ORIGINAL CONDITIONS AND HYDROSEEDED SO AS TO RESTORE NATURAL GROWTH. THIS INCLUDES ALL CUT OR FILL SLOPES.

14. CONTRACTOR IS RESPONSIBLE FOR OBTAINING PERMISSION FOR WATER USE AND METERING FROM MARINA COAST WATER DISTRICT - 11 RESERVATION RD, MARINA, CA 93933. PHONE (831)384-6131.

15. CONTRACTOR SHALL MAINTAIN ACCESS TO PROPERTIES ON EUCALYPTUS ROAD IN COMPLIANCE WITH THE TRAFFIC CONTROL PLAN AND CONTRACT DOCUMENTS.

16. CONSTRUCTION ON EUCALYPTUS ROAD SHALL COMPLY WITH JULY 2002 STANDARD PLANS AND SPECIFICATIONS OF THE CALIFORNIA DEPARTMENT OF TRANSPORTATION, STATE OF CALIFORNIA, AND THE CITY OF SEASIDE STANDARD PLANS. IN PARTICULAR THE FOLLOWING CALTRANS STANDARD PLANS ARE NOTED:
PAVEMENT MARKERS AND TRAFFIC LINES - A20A, B, C, D
PAVEMENT MARKING ARROWS - A24A, B, C, D, E, HOWEVER, USE CITY OF SEASIDE STENCILS
OBJECT MARKERS, MARKERS AND DELINEATORS - A73, A, B, C

THE FOLLOWING CITY OF SEASIDE STANDARD PLANS ARE NOTED AND THE CITY OF SEASIDE STANDARD PLANS SHALL GOVERN OVER CALTRANS STANDARD PLANS:

CURB AND GUTTER, TYPE A, AND CURB TYPE B	ST-01 & ST-02
CATCH BASIN	SD-01
MANHOLE FRAME AND COVER	SS-01

WATER LINES, VALVES, WATER APPERTENANCES AND SANITARY SEWER SHALL CONFORM TO THE STANDARD SPECIFICATIONS AND STANDARD PLANS OF THE MARINA COAST WATER DISTRICT.

ALL CONCRETE, REGARDLESS OF USE, SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.

EROSION CONTROL NOTES

1. THE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE OPERABLE DURING THE RAINY SEASON OCTOBER 15th TO APRIL 15th. BY OCTOBER 15th, GRADING AND INSTALLATION OF STORM DRAINAGE AND EROSION AND SEDIMENT CONTROL FACILITIES SHALL BE COMPLETED. NO GRADING SHALL OCCUR BETWEEN OCTOBER 15th AND APRIL 15th WITHOUT WRITTEN APPROVAL FROM THE OWNER.

2. CHANGES TO THIS EROSION AND SEDIMENT CONTROL PLAN TO MEET FIELD CONDITIONS SHALL BE MADE ONLY WITH THE APPROVAL OF, OR AT THE DIRECTION OF, THE OWNER.

3. DURING THE RAINY SEASON, PUBLIC ROADWAY SHALL BE KEPT CLEAR OF EARTH MATERIAL AND DEBRIS. THE SITE SHALL BE MAINTAINED SO THAT A MINIMUM OF SEDIMENT LADEN RUNOFF ENTERS THE STORM DRAINAGE SYSTEM AND PUBLIC ROADWAY. THIS PLAN COVERS ONLY THE FIRST WINTER FOLLOWING GRADING. PLANS SHALL BE UPDATED AND RESUBMITTED FOR APPROVAL PRIOR TO OCTOBER 1st OF EACH SUBSEQUENT YEAR UNTIL THE PROPOSED IMPROVEMENTS ARE COMPLETED AND ACCEPTED BY THE CITY.

4. NO STORM RUNOFF SHALL BE ALLOWED TO DRAIN DIRECTLY INTO THE EXISTING UNDERGROUND STORM SYSTEM BEFORE THE ONSITE STORM DRAIN SYSTEM IS INSTALLED.

5. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE MAINTAINED UNTIL DISTURBED AREAS ARE STABILIZED. CHANGES TO THE EROSION AND SEDIMENTATION CONTROL PLAN SHALL BE MADE TO MEET FIELD CONDITIONS, BUT ONLY WITH THE APPROVAL OF OR AT THE DIRECTION OF THE OWNER. GENERAL NOTES CONT.:

6. THIS PLAN MAY NOT COVER ALL SITUATIONS THAT ARISE DURING CONSTRUCTION DUE TO UNANTICIPATED FIELD CONDITIONS. VARIATIONS MAY BE MADE TO THE PLAN IN THE FIELD SUBJECT TO THE APPROVAL OF THE OWNER.

7. THE EROSION AND SEDIMENTATION CONTROL PLAN COVERS ONLY THE FIRST WINTER DURING WHICH CONSTRUCTION IS TO TAKE PLACE. PLANS ARE TO BE RESUBMITTED PRIOR TO OCTOBER 1ST OF EACH SUBSEQUENT YEAR UNTIL THE SITE IMPROVEMENTS ARE ACCEPTED BY THE OWNER.

TEMPORARY STRAW WATTLES AROUND INLETS AND AT CONC. DITCH

1. STAW WATTLE SHALL BE PLACED WITH ENDS TIGHTLY ABUTTING AROUND INLETS.

2. EACH STRAW WATTLES SHALL BE EMBEDDED IN THE SOIL MINIMUM 3 TO 4 INCHES IF IT IS INSTALLED OVER SOIL.

3. SACKS FILLED WITH 3/4" CRUSHED ROCK CAN BE USED IN LIEU OF CONC. BLOCKS AT SIDE OPENING CATCH BASIN AFTER CONCRETE V-DITCHES ARE COMPLETED (USE 2 TO 4 BAGS PER OPENING).

4. INSTALL STRAW WATTLES AT ALL TOE OF SLOPE WITHIN GRADING LIMITS.

5. STRAW WATTLES AND CONC. BLOCKS SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR PURPOSE AND REVEGETATION IS ESTABLISHED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

EROSION CONTROL HYDROSEED

1. ALL GRADED AREAS SHALL BE HYDROSEEDED. CUT AND FILL SLOPES STEEPER THAN 10% WITH HEIGHTS OF 3 FEET OR GREATER SHALL BE HYDROSEEDED BEFORE SEPTEMBER 15.

THE HYDROSEED MIX SHALL BE: (VOLUMES SHOWN ARE PER ACRE OF SLOPE).

FERTILIZER = 500 POUNDS 16-6-8
CHEMICAL TACKIFIER = 2,000 POUNDS WOOD CELLULOSE
80 POUND ORGANIC BINDER OR PER CITY REQUIREMENTS.

SEED: GRASSLAND EROSION CONTROL BLEND "CRITICAL COASTAL MIX."

30% WHMERA 62 RYEGRASS
20% CALIFORNIA OATS
15% BLANDO BROMEGRASS
15% CRIMSON CLOVER
15% LANA VETCH
5% CALIFORNIA FIELD FLOWERS
SEED: 75 POUNDS/ACRE

MAINTENANCE NOTES:

1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INSPECT AND REPAIR ALL EROSION CONTROL FACILITIES AT THE END OF EACH WORK DAY DURING THE RAINY SEASON.

2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT TEMPORARY MEASURES SATISFACTORY TO OWNER.

NO.	DESCRIPTION	DATE	APPRVD

DESIGNED BY: C+D
DRAWN BY: MW/JDC/DMS
CHECKED: RGS/LDG
DATE: OCT. 2007
SCALE: AS NOTED

REGISTERED PROFESSIONAL ENGINEER - RICHARD G. SWANITY CH - No. 43560 - EXP. 8-09-08 - CIVIL - STATE OF CALIFORNIA

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FORT ORD REUSE AUTHORITY

GIGLING ROAD
GENERAL NOTES

Monterey County, California

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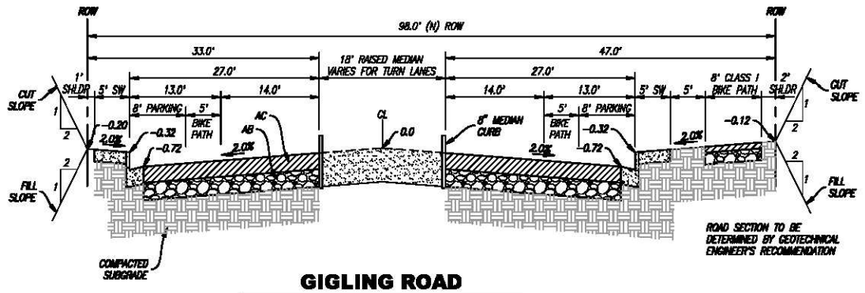
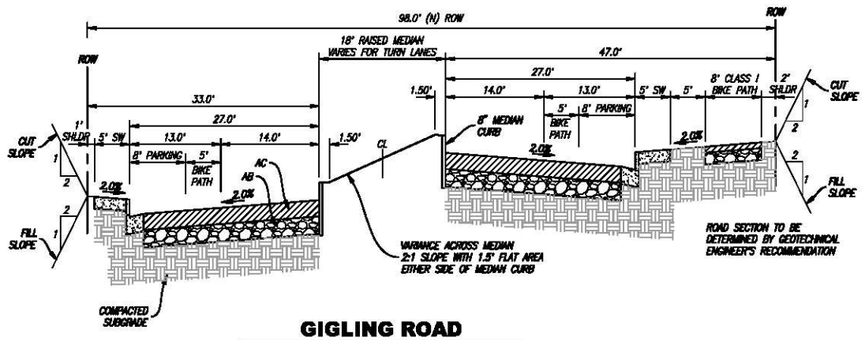


GIGLING ROAD

NTS



GIGLING ROAD

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SECTION VARYING ACROSS MEDIAN

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FORT ORD REUSE AUTHORITY

GIGLING ROAD
TYPICAL SECTIONS

Monterey County California

Preliminary/Not For Construction

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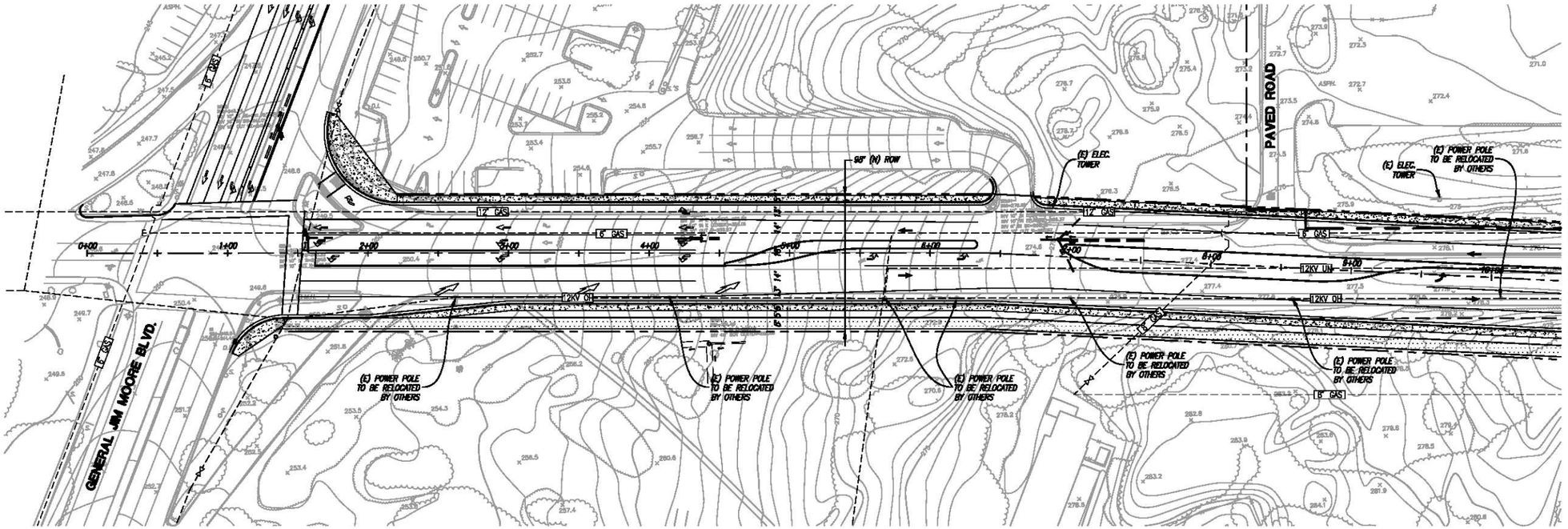
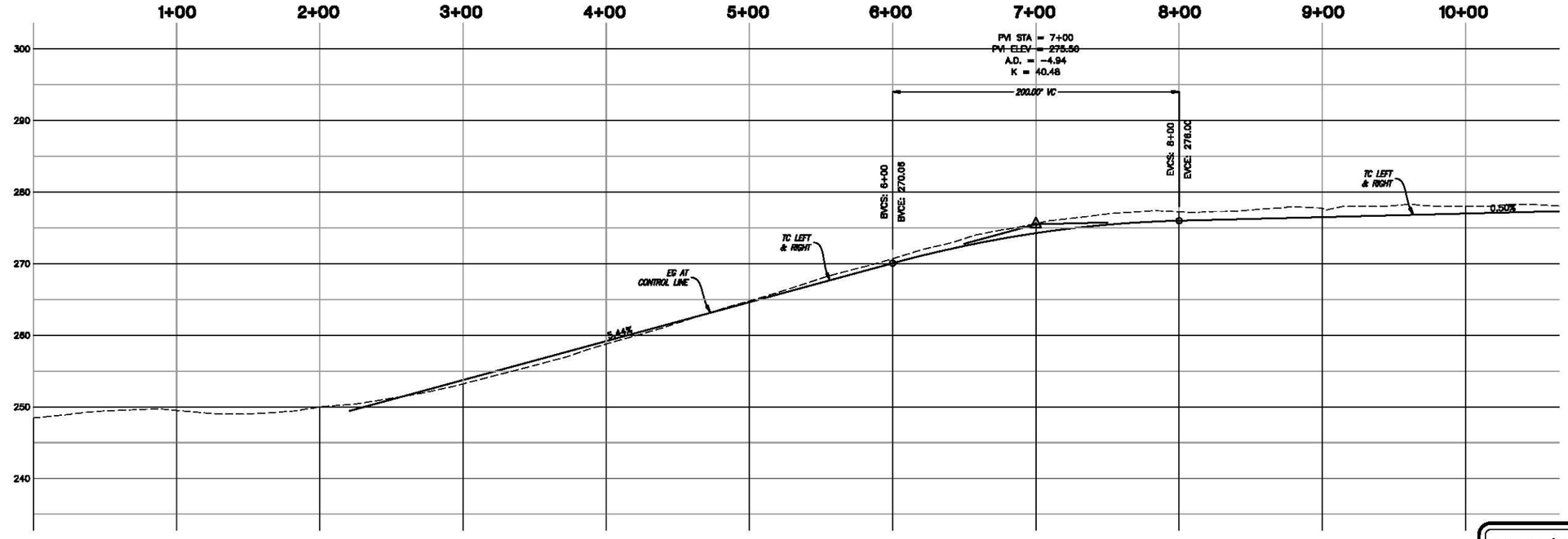


PLAN - GIGLING ROAD

SCALE:
H: 1"=40'

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.



PROFILE - GIGLING ROAD

SCALE:
H: 1"=40'
V: 1"=8'

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FORT ORD REUSE AUTHORITY
GIGLING ROAD
PLAN AND PROFILE
Monterey County California

SHEET NUMBER
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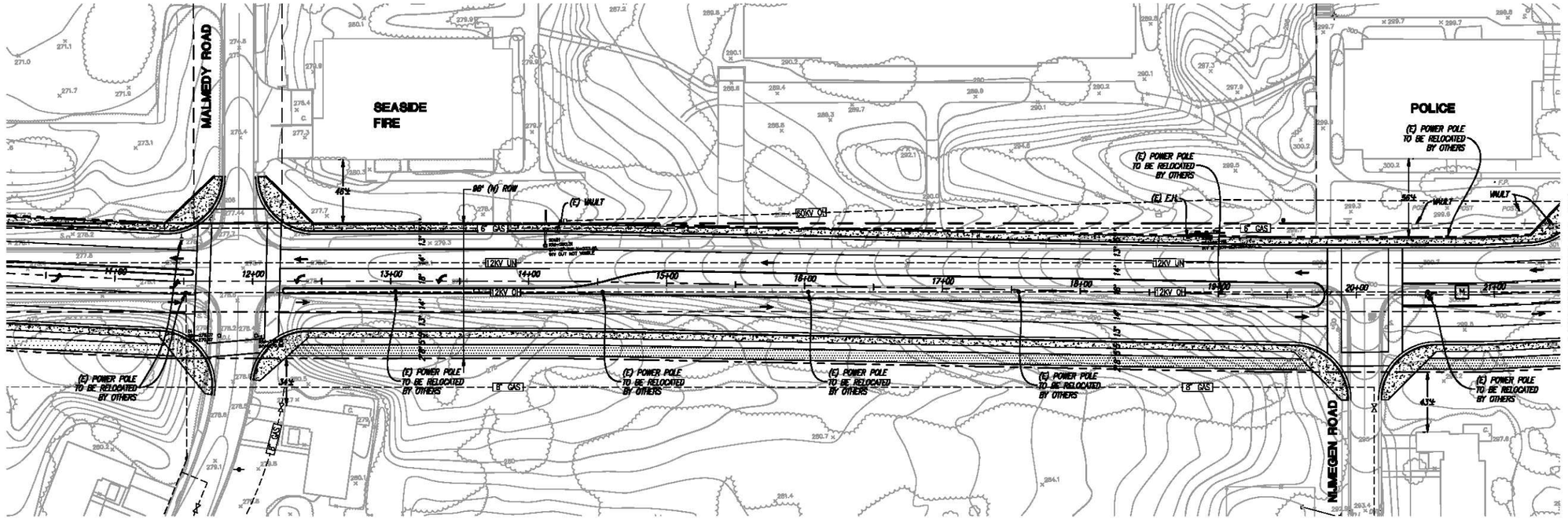

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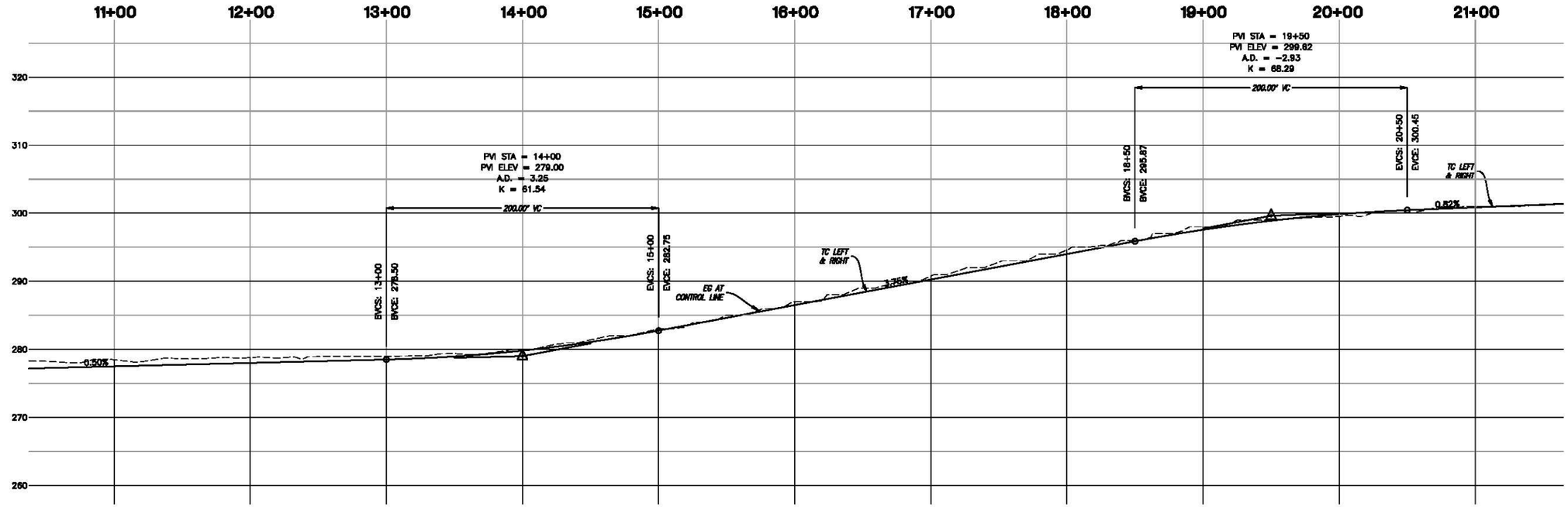
H: 1"=40'

GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.



PROFILE - GIGLING ROAD

SCALE:
H: 1"=40'
V: 1"=8'

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PLAN AND PROFILE
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DRAWING NO.
707012

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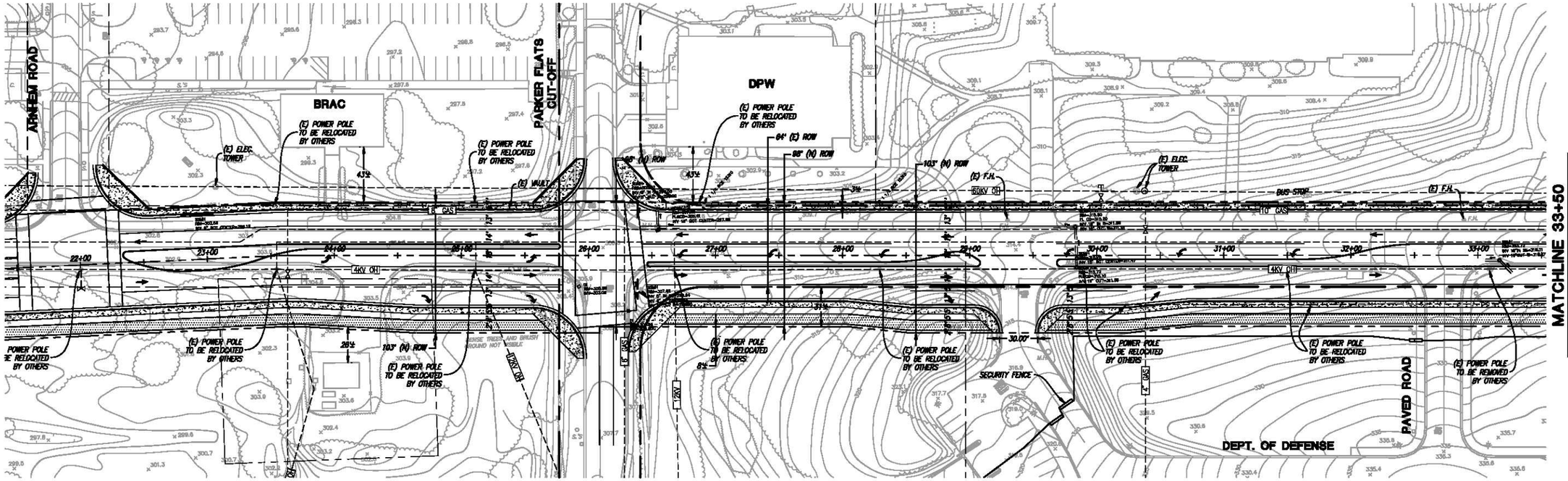
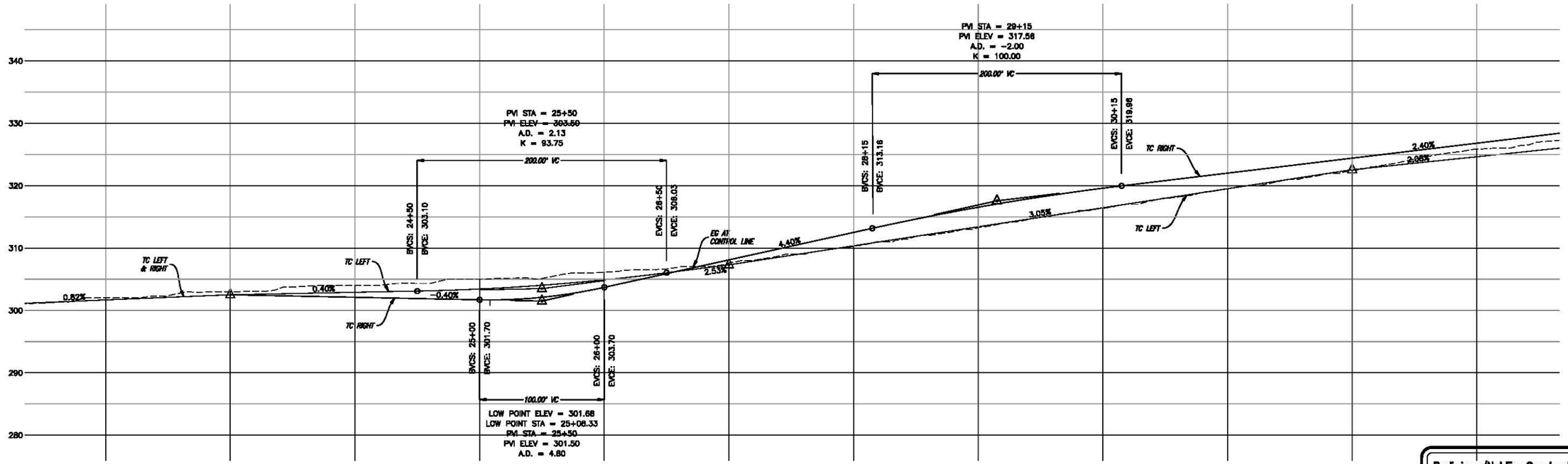


PLAN - GIGLING ROAD

SCALE:
H: 1"=40'

GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.



PROFILE - GIGLING ROAD

SCALE:
H: 1"=40'
V: 1"=8'

Preliminary/Not For Construction
- Submittal
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By: RGS
P.E.#: 43560
Date: -

Creegan+D'Angelo
INFRASTRUCTURE ENGINEERS
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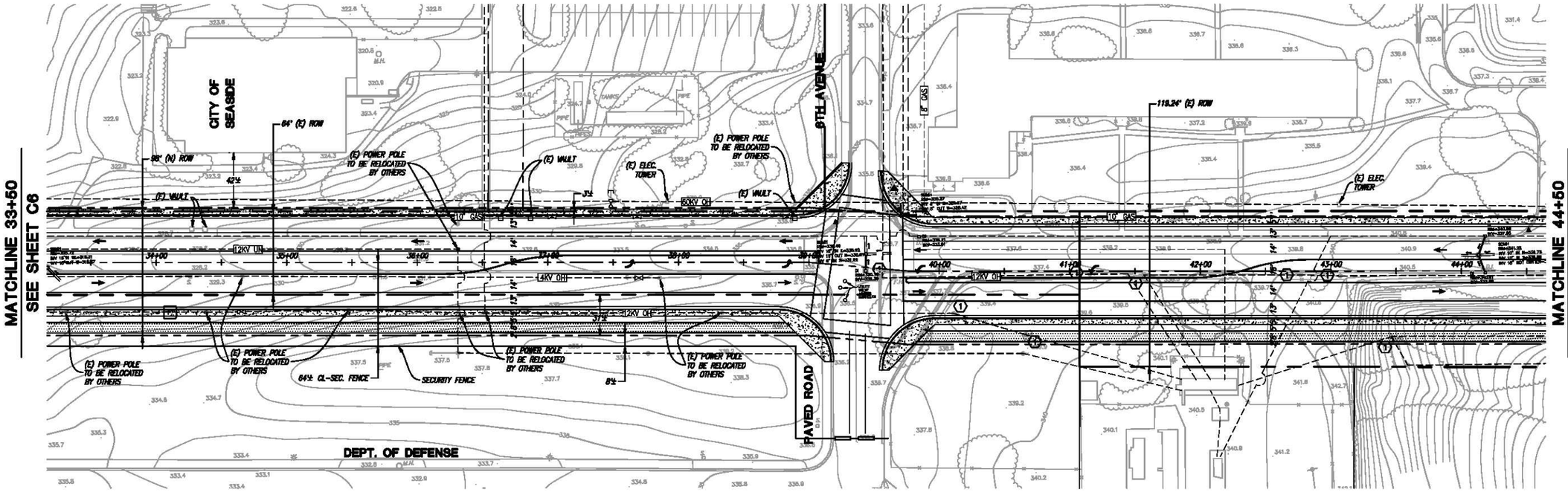
Monterey, CA 93940
Tel (831) 373-1333
Fax (831) 373-0733
www.cdengineers.com

FORT ORD REUSE AUTHORITY
GIGLING ROAD
PLAN AND PROFILE
Monterey County California

SHEET NUMBER
C6
OF 8 SHEETS
DRAWING NO.
707012



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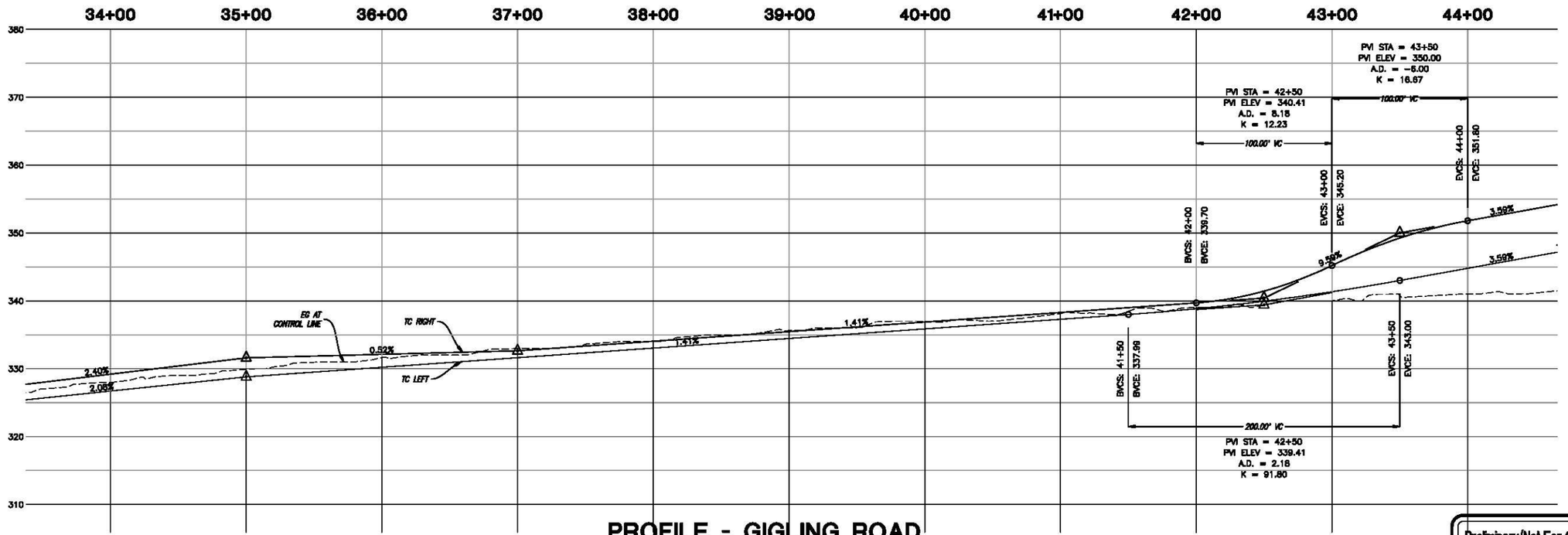

PROFILE - GIGLING ROAD

SCALE:
H: 1"=40'
V: 1"=8'

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DESCRIPTION	DATE	APPRD	DESCRIPTION	REV.	DATE

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DRAWN BY: LJW, JWS
CHECKED BY: DLL/APB
DATE: JAN. 2008
SCALE: AS NOTED

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707012

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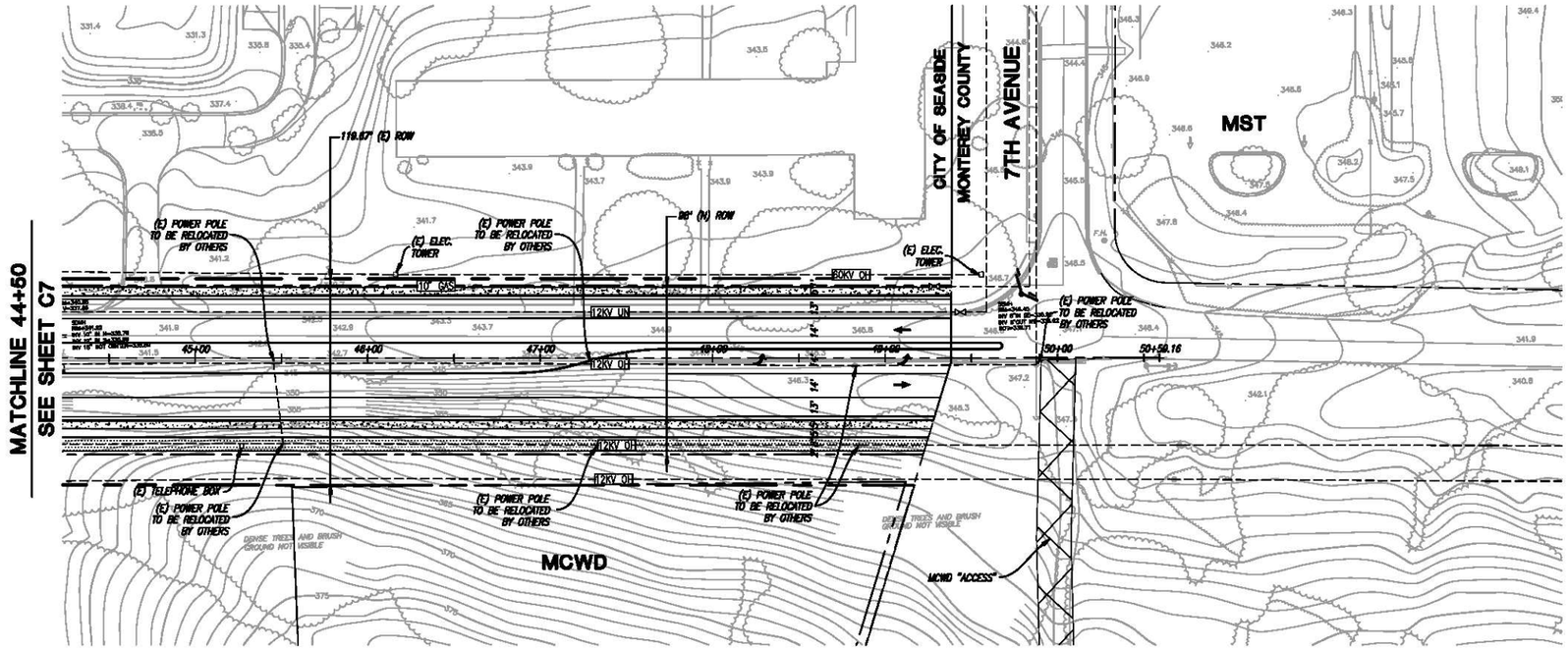

PLAN - GIGLING ROAD

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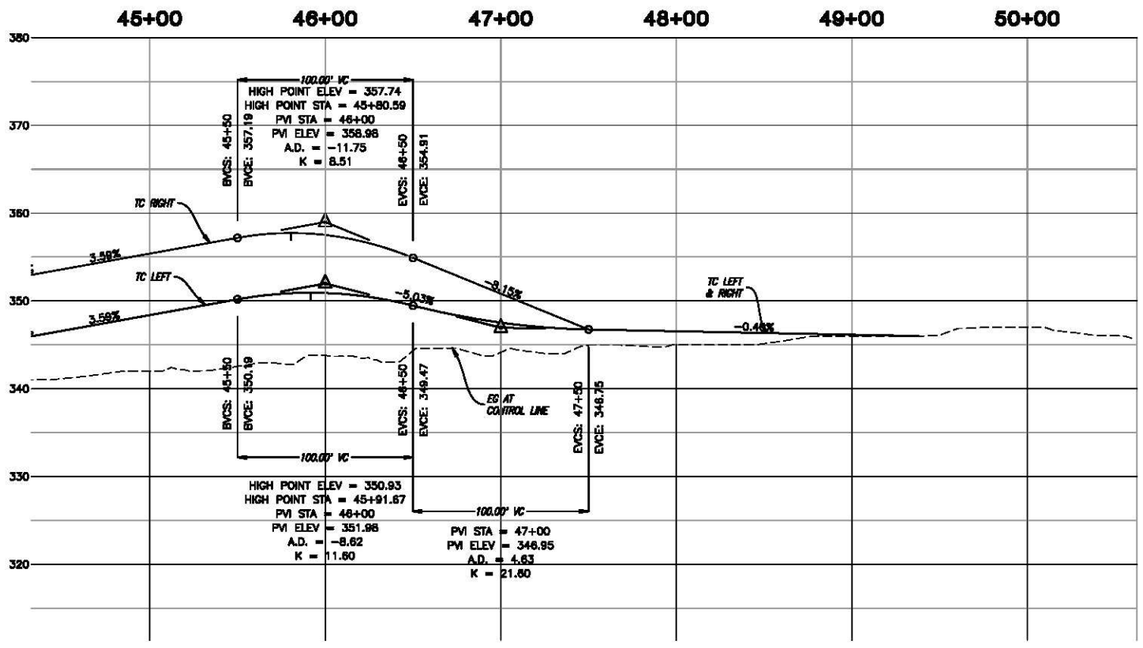
1 inch = 40 ft.



PROFILE - GIGLING ROAD

SCALE:
H: 1"=40'
V: 1"=8'

DESIGNED BY: C+D	DESCRIPTION	DATE	APPRD	DESCRIPTION	REV.	DATE	DESCRIPTION
DRAWN BY: J.C.T.							
CHECKED BY: DLL/APR							
DATED: JAN. 2008							
SCALE: AS NOTED							

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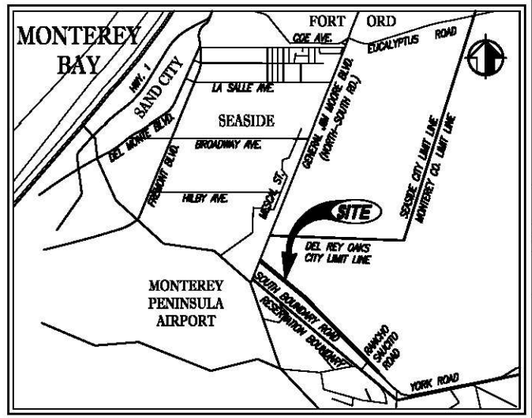
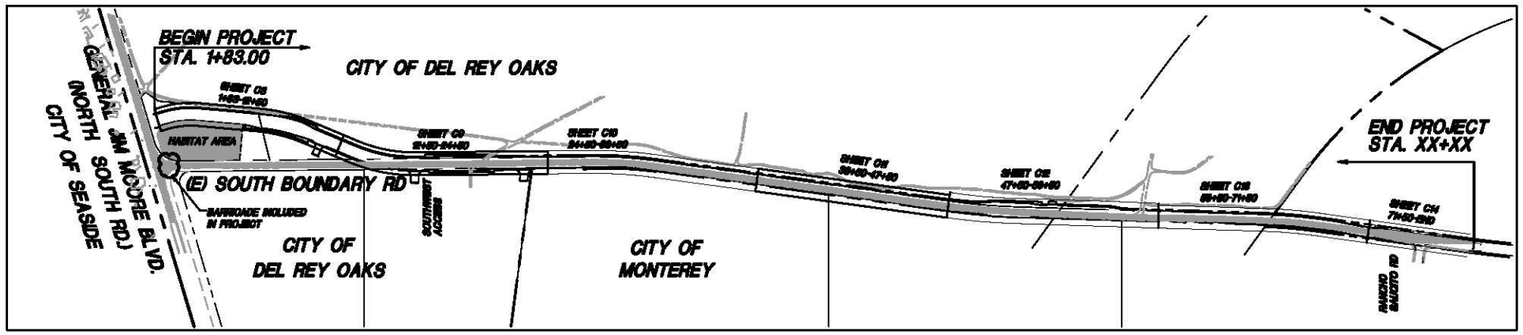
SOUTH BOUNDARY ROAD
FORT ORD REUSE AUTHORITY
CITY OF DEL REY OAKS, CALIFORNIA
PHASE 1
IMPROVEMENT PLANS
JUNE 2009



VICINITY MAP
NTS

ABBREVIATIONS

AB	AGGREGATE BASE	MCWD	MARINA COAST WATER DISTRICT
AC	ASPHALT CONCRETE	MIN	MINIMUM
APPROX	APPROXIMATELY	N	NORTH
ARV	AIR RELIEF VALVE	(N)	NEW
BC	BEGIN CURVE	NIC	NOT INCLUDED IN CONTRACT
BMP's	BEST MANAGEMENT PRACTICES	NO., #	NUMBER
BOW	BACK OF SIDEWALK	NTS	NOT TO SCALE
BVCE	BEGIN VERTICAL CURVE ELEVATION	NWS	NATIONAL WEATHER SERVICE
BVCS	BEGIN VERTICAL CURVE STATION	(P)	PROPOSED
C	CUT	PC	POINT OF CURVE
CAW	CALIFORNIA AMERICAN WATER	PT	POINT OF TANGENT
CB	CATCH BASIN	PVC	POLY VINYL CHLORIDE
CL	CENTERLINE	PVI	POINT OF VERTICAL INTERSECT
CRWQCB	CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD	PVMT	PAVEMENT
		R	RADIUS
CTR	CENTER	RCP	REINFORCED CONCRETE PIPE
D	DEGREE	REINF	REINFORCED
E	EAST	RET	RETURN
(E)	EXISTING	RIM	RIM ELEVATION
EC	END CURVE	RW	RECYCLED WATER
EG	EXISTING GRADE	ROW	RIGHT OF WAY
ELEC	ELECTRICAL	RT	RIGHT
ELEV	ELEVATION	RWQCB	REGIONAL WATER QUALITY CONTROL BOARD
EP	EDGE OF PAVEMENT		
ESC	EROSION & SEDIMENT CONTROL	S	SOUTH
EVCE	END VERTICAL CURVE ELEVATION	S =	SLOPE EQUALS
EVCS	END VERTICAL CURVE STATION	SD	STORM DRAIN
F	FILL	SDCB	STORM DRAIN CATCH BASIN
(F)	FUTURE	SHLDR	SHOULDER
FC	FACE OF CURB	SS	SANITARY SEWER
FG	FINISH GRADE	STA	STATION
FH, HYD	FIRE HYDRANT	STD	STANDARD
FL	FLOW LINE	SW	SIDEWALK
FO	FIBER OPTICS	SWPPP	STORM WATER POLLUTION PREVENTION PLAN
FORA	FORT ORD REUSE AUTHORITY		
G	GRADE ELEVATION	TELE	TELEPHONE, COMMUNICATION
GAS	GAS	TC	TOP OF CURB
GB	GRADE BREAK	TEMP	TEMPORARY
GRD	GRADE	TI	TRAFFIC INDEX
GJM	GENERAL JIM MOORE BOULEVARD	TYP	TYPICAL
HP	HIGH POINT	UNO	UNLESS NOTED OTHERWISE
INV	INVERT ELEVATION	VC	VERTICAL CURVE
IRR	IRRIGATION	W	WATER, WEST
L	LENGTH	WTR	WATER
LF	LINEAL FEET	W/	WITH
LT	LEFT		
MAX	MAXIMUM		
MH	MANHOLE		



KEY MAP
SCALE: 1"= 400'

LEGEND

- BOUNDARY LINE/CITY LIMIT (AS NOTED)
- (E) RIGHT OF WAY
- (E) UTILITY EASEMENT (as noted)
- (E) STORM DRAIN — 15" SD
- (E) WATER LINE — 20" W
- (E) RECYCLED WATER LINE — 14" RW
- (E) CONDUIT — 24" CON
- (E) ELECTRIC LINE — ELEC
- (E) FIBER OPTICS LINE — FO
- (E) MANHOLE (SS OR SD as noted)
- (E) STORM DRAIN CATCH BASIN
- (E) ELECTRICAL TOWER
- (E) UTILITY/POWER POLE
- (E) MAJOR CONTOUR — 300
- (E) MINOR CONTOUR
- (E) PAVEMENT
- (N) RIGHT OF WAY
- (N) CONTROL LINE/CENTER OF ROW — 1+00
- (N) MAJOR CONTOUR — 300
- (N) MINOR CONTOUR
- (N) STORM DRAIN AND MANHOLE — 15" SD
- (N) STORM DRAIN CATCH BASIN
- (N) WATER LINE — 24" W
- (N) RECYCLED WATER LINE (FUTURE) — 14" RW
- (N) WATER VALVE (<12"=GATE, >12"= BUTTERFLY)
- (N) WATER VALVE (BLOW-OFF)
- (N) WATER VALVE (REDUCER)
- (N) WATER VALVE (AIR AND VACUUM)
- (N) STUB/CAP
- (N) SANITARY SEWER AND MANHOLE — 8" SS
- (N) UNDERGROUND INFILTRATION SYSTEM
- (N) GRADE/DIRECTION OF DRAINAGE — 2.0%
- GRADE BREAK (HIGH POINT/LOW POINT) — G.B. H.P. L.P.
- (N) GRADING LIMITS (CUT OR FILL AS NOTED) — C F
- (N) SILT FENCE
- (N) STRAW WATTLE (AT CL OF GRADED ROADWAY)
- (N) STRAW WATTLE (AT TOE OF CUT SLOPES)
- RETAINING WALL

BENCHMARK

A MAGNETIC NAIL AND BRASS WASHER STAMPED "BESTOR ENGINEERS" SET IN THE EASTERN PAVED SHOULDER OF GENERAL JIM MOORE BLVD, APPROXIMATELY 350' SOUTHERLY OF THE CENTERLINE OF EUCALYPTUS ROAD, HAVING AN ESTABLISHED NGVD 29 ELEVATION OF 332.51 FEET.

BASIS OF BEARINGS

THE BEARING OF S14°23'43"E ALONG THE WESTERLY BOUNDARY LINE OF PARCEL 1, "SEASIDE IV-A" AS SHOWN ON THE MAP RECORDED IN VOLUME 23 OF SURVEYS AT PAGE 99 AND THE EASTERLY BOUNDARY LINE OF "SEASIDE III" AS SHOWN ON THE MAP RECORDED IN VOLUME 23 OF SURVEYS AT PAGE 83, AS FOUND MONUMENTED, WAS TAKEN AS THE BASIS OF BEARINGS SHOWN UPON THIS MAP.

GRADING QUANTITIES

Cut = 28130 cu.yds Fill = 6049 cu.yds
Net = 20101 cu.yds CUT

Note: these values are RAW grading quantities and are unadjusted for compaction, shrinkage, or spoiling. Contractor is responsible for the verification of these grading quantities.

SHEET INDEX

C1	COVER SHEET
C2	EROSION CONTROL, GENERAL NOTES AND DETAILS
C3	NOTES & DETAILS
C4	MARINA COAST WATER DISTRICT STANDARD DETAILS
C5	INFILTRATION SYSTEM
C6	TYPICAL SECTIONS
C7	TYPICAL SECTIONS
C8	SOUTH BOUNDARY ROAD - PLAN & PROFILE STA. 1+00-12+50
C9	SOUTH BOUNDARY ROAD - PLAN & PROFILE STA. 12+50-24+50
C10	SOUTH BOUNDARY ROAD - PLAN & PROFILE STA. 24+50-36+50
C11	SOUTH BOUNDARY ROAD - PLAN & PROFILE STA. 36+50-47+50
C12	SOUTH BOUNDARY ROAD - PLAN & PROFILE STA. 47+50-59+50
C13	SOUTH BOUNDARY ROAD - PLAN & PROFILE STA. 59+50-71+50
C14	SOUTH BOUNDARY ROAD - PLAN & PROFILE STA. 71+50-END

CONTACT INFORMATION

CRWQCB
CENTRAL COAST REGIONAL WATER QUALITY CONTROL BOARD
895 AEROVISTA PLACE SUITE 101
SAN LUIS OBISPO, CA 93401
(805) 549-3150
DAVID INNIS

CIVIL ENGINEER
CREEGAN + D'ANGELO
225 CANNERY ROW, SUITE H
MONTEREY, CA 93940
(831) 373-1333
RICHARD SIMONITCH, P.E.

GEOTECHNICAL ENGINEER
PACIFIC CREST ENGINEERING, INC.
444 AIRPORT BOULEVARD, SUITE 106
WATSONVILLE, CA 95076
(831) 722-9446
MICHAEL KLEAMES, P.E.

OWNER
FORT ORD REUSE AUTHORITY (FORA)
100 12th STREET BLDG. 2880
MARINA, CA 93933
(831) 883-3672
JIM ARNOLD

WATER PURVEYOR
MARINA COAST WATER DISTRICT (MCWD)
11 RESERVATION ROAD
MARINA, CA 93933
(831) 384-6131
BRIAN TRUE

MARINA COAST WATER DISTRICT

APPROVED FOR CONSTRUCTION: _____ DATE: _____
BRIAN TRUE, P.E.
INTERIM DISTRICT ENGINEER

FORT ORD REUSE AUTHORITY

APPROVED: _____ DATE: _____
JAMES A. FEENEY, PE
ASSISTANT EXECUTIVE OFFICER

NO.	DESCRIPTION	DATE	APPRD	DESCRIPTION	DATE

DESIGNED BY: CJD
DRAWN BY: DR
CHECKED BY: RDS
DATE: JUNE 2009
SCALE: AS NOTED

RICHARD D. SIMONITCH — No. 45570 — EXP. 6-30-10 — CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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INFRASTRUCTURE ENGINEERS

FORT ORD REUSE AUTHORITY
SOUTH BOUNDARY ROAD
COVER SHEET
Del Rey Oaks/Monterey Monterey County California

SHEET NUMBER
C1
OF 14 SHEETS

DRAWING NO.
707011

JULY 28, 2009 11:56:19 a.m.
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GENERAL NOTES

1. ALL STATIONING AND DISTANCES INDICATED ON THE DRAWINGS ARE BASED ON HORIZONTAL MEASUREMENTS IN FEET.

2. THE CONTRACTOR SHALL NOTIFY THE FORA REPRESENTATIVE AT LEAST 2 WORKING DAYS IN ADVANCE OF ANY WORK WHICH WILL REQUIRE THE INSPECTION SERVICES.

3. AT LEAST 2 WORKING DAYS PRIOR TO ANY EXCAVATION WORK, THE CONTRACTOR SHALL CALL UNDERGROUND SERVICE ALERT AT 1-800-642-2444 FOR LOCATING AND MARKING UNDERGROUND UTILITIES IN THE AREAS OF WORK.

4. THE EXISTING UTILITIES SHOWN AND INDICATED ON THE DRAWINGS ARE APPROXIMATE AND FOR GENERAL INFORMATION ONLY, AND ARE BASED ON AVAILABLE UTILITY INFORMATION PROVIDED BY THE UTILITY OWNER AND SELECTED FIELD LOCATING. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR VERIFICATION OF EXISTING UNDERGROUND UTILITIES, WHETHER INDICATED OR NOT ON THE DRAWINGS, PRIOR TO ANY CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL PROTECT ALL EXISTING OR NEWLY PLACED UTILITY STRUCTURES AND LINES FROM DAMAGE OR DISRUPTION OF SERVICE DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE NECESSARY TEMPORARY UTILITY SERVICES AND SHALL RESTORE PERMANENT UTILITY SERVICES DISRUPTED BY CONSTRUCTION ACTIVITY.

5. THE CONTRACTOR SHALL EXPOSE ALL EXISTING UTILITY LINES AT LEAST ONE WORKING DAY AHEAD OF PIPE LAYING OPERATION TO VERIFY LOCATION AND DEPTH OF EXISTING UTILITIES. ANY CONFLICTS WILL BE RESOLVED BY THE FORA REPRESENTATIVE PRIOR TO PIPE INSTALLATION. WHILE NO EXISTING UTILITIES ARE EXPECTED TO BE ENCOUNTERED, IF ANY ARE DISCOVERED, THE CONTRACTOR SHALL SUBMIT ACCURATE STAMPED, SIGNED AND DATED DOCUMENTS DESCRIBING THE QUANTITY, SIZE, LOCATION, DEPTH, AND TYPE OF MATERIAL OF FOUND BURIED UTILITIES.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MONITORING FOR THE PRESENCE OF CONTAMINATED SOIL AND/OR GROUNDWATER DURING THE COURSE OF THE WORK. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE FORA REPRESENTATIVE IF ANY SUSPECT MATERIALS ARE ENCOUNTERED. CONTACT SHALL BE MADE IMMEDIATELY BY TELEPHONE, WITH WRITTEN NOTIFICATION WITHIN 3 WORKING DAYS.

7. ALL TRENCHING OPERATIONS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF TITLE 8 (CAL/OSHA).

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE ON OR OFF THE PROJECT SITE AS A RESULT OF CONSTRUCTION ACTIVITIES INCLUDING THE LACK OF DUST CONTROL AND TRAFFIC CONTROL.

9. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL CERTIFY THAT ALL WORK WAS PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. VARIATIONS SHALL BE DECLARED AND PRESENTED TO THE ENGINEER IN WRITING UPON COMPLETION OF CONSTRUCTION, IN THE FORM OF MARKED UP PLANS SHOWING ALL CHANGES.

10. THE ENGINEER AND/OR THE FORA REPRESENTATIVE WILL NOT DIRECTLY CONTROL THE PHYSICAL ACTIVITIES OF THE CONTRACTOR OR ANY SUBCONTRACTORS. CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR WORKING CONDITIONS ON THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

11. CONTRACTOR SHALL VERIFY WORK IN FIELD AND SHALL SATISFY HIMSELF AS TO THE ACCURACY BETWEEN WORK SET FORTH ON THESE PLANS AND THE WORK REQUIRED IN THE FIELD. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE FORA REPRESENTATIVE PRIOR TO START OF CONSTRUCTION.

12. EXCEPT WHEN A LANE CLOSURE IS IN EFFECT IN ACCORDANCE WITH THE CONTRACTOR'S APPROVED TRAFFIC CONTROL PLAN, NO VEHICLES, EQUIPMENT OR MACHINERY ARE ALLOWED TO PARK ON THE SHOULDER OF SOUTH BOUNDARY ROAD AT ANY TIME.

13. ANY AREAS DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED TO ORIGINAL CONDITIONS AND HYDROSEEDED SO AS TO RESTORE NATURAL GROWTH, THIS INCLUDES ALL CUT OR FILL SLOPES.

14. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TEMPORARY CONSTRUCTION WATER APPLICATION FOR WATER USE AND METERING FROM MARINA COAST WATER DISTRICT – 11 RESERVATION RD, MARINA, CA 93933.
PHONE (831)384-6131

15. CONSTRUCTION ON SOUTH BOUNDARY ROAD SHALL COMPLY WITH MAY 2006 STANDARD PLANS AND SPECIFICATIONS OF THE CALIFORNIA DEPARTMENT OF TRANSPORTATION, STATE OF CALIFORNIA, AND INCORPORATE THE CITY OF SEASIDE STANDARD PLANS AS NOTED BELOW:
STORM DRAIN MANHOLES PER MARINA COAST WATER DISTRICT STANDARD PLAN S-1 "MANHOLE DETAILS".
STORM DRAIN CATCH BASIN PER CITY OF SEASIDE STANDARD PLAN S-452 "FLAT GRATE INLET".
CURB, GUTTER AND SIDEWALK PER CITY OF SEASIDE STANDARD PLAN S-101 "NEW CURB, GUTTER & SIDEWALK".

16. WATER LINES, VALVES, AND WATER APPURTENANCES SHALL CONFORM TO THE STANDARD SPECIFICATIONS AND STANDARD PLANS OF THE MARINA COAST WATER DISTRICT, ADOPTED NOVEMBER 2007 (AVAILABLE AT WWW.MCWD.ORG).

17. ALL CONCRETE, REGARDLESS OF USE, SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.

18. ALL EARTHWORK AND FOUNDATION CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE GEOTECHNICAL INVESTIGATION PREPARED BY PACIFIC CREST ENGINEERING INC., DATED FEBRUARY 26, 2004. CONTACT THE GEOTECHNICAL ENGINEER AT LEAST 48 HOURS PRIOR TO REQUESTING ON-SITE OBSERVATION OR TESTING SERVICES AT 831-722-9446.

19. CONTRACTOR SHALL CONFORM TO CONDITIONS CONTAINED IN THE CONTRACT DOCUMENTS SECTION 00100 NO.17 REGARDING MUNITIONS AND EXPLOSIVES OF CONCERN (MEC).

EROSION CONTROL NOTES

1. A CONSTRUCTION ENTRANCE SHALL BE INSTALLED PRIOR TO COMMENCEMENT OF GRADING. LOCATION OF THE ENTRANCE MAY BE ADJUSTED BY THE CONTRACTOR TO FACILITATE GRADING OPERATIONS. ALL CONSTRUCTION TRAFFIC ENTERING THE PAVED ROAD MUST CROSS THE CONSTRUCTION ENTRANCE.

2. THE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE OPERABLE DURING YEAR ROUND BMPs AND ESC SHALL BE COMPLETED BY OCTOBER 15th OR BEFORE AN NWS PREDICTION 40% CHANCE OF RAIN. NO GRADING SHALL OCCUR BETWEEN OCTOBER 15th AND APRIL 15th WITHOUT WRITTEN APPROVAL FROM THE RWQCB.

3. CHANGES TO THIS EROSION AND SEDIMENT CONTROL PLAN TO MEET FIELD CONDITIONS SHALL BE MADE ONLY BY AN AUTHORIZED AGENT OF THE PARTY RESPONSIBLE FOR IMPLEMENTATION OF THE SWPPP, AND SUBMITTED TO THE RWQCB WITHIN 5 DAYS OF CHANGE.

4. PUBLIC ROADWAY SHALL BE KEPT CLEAR OF EARTH MATERIAL AND DEBRIS AT ALL TIMES. SHOULD DIRT BE CARRIED ON TO THE PUBLIC ROADWAY, DAILY SWEEPING WILL BE NECESSARY. THE SITE SHALL BE MAINTAINED SO THAT NO SEDIMENT LADEN RUNOFF ENTERS THE STORM DRAINAGE SYSTEM AND PUBLIC ROADWAY. THIS PLAN COVERS ONLY THE FIRST WINTER FOLLOWING GRADING. PLANS SHALL BE RESUBMITTED TO THE RWQCB FOR APPROVAL PRIOR TO SEPTEMBER 1st OF EACH SUBSEQUENT YEAR UNTIL THE PROPOSED IMPROVEMENTS ARE COMPLETED.

5. CONTRACTOR SHALL RETAIN A COPY OF EROSION AND SEDIMENT CONTROL FIELD MANUAL, 4th EDITION, BY CRWQCB SAN FRANCISCO BAY REGION ALONG WITH THE CDs.

MAINTENANCE NOTES

1. DURING CONSTRUCTION, ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AND REPAIRED IMMEDIATELY AND, AT A MINIMUM, AT THE END OF EACH WORKING DAY AND, IN ADDITION, BEFORE, DURING (EVERY 24 HOURS MIN.) AND AFTER EACH STORM.

EROSION CONTROL HYDROSEED

1. FINISHED SLOPES AND AREAS DISTURBED BY GRADING SHALL BE HYDROSEEDED PER SPECIFICATION WITH EROSION CONTROL MATERIALS.

STORM WATER POLLUTION PREVENTION PLAN:

A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) SHALL BE PREPARED AND IMPLEMENTED BY THE CONTRACTOR FOR THIS PROJECT.

FORA HAS SUBMITTED A MASTER SWPPP FOR THE PROJECT AREA. THE CONTRACTOR MUST PREPARE AN UPDATED SWPPP PRIOR TO COMMENCEMENT OF WORK.

WITH THE EXCEPTION OF PROPERLY DESILTED WATER FROM SITE DEWATERING, THE CONTRACTOR SHALL NOT DISCHARGE ANY MATERIALS AND/OR LIQUIDS TO THE STORM DRAINAGE SYSTEM. ACTIVITIES OF PARTICULAR CONCERN ARE:

CONTRACTOR SHALL DESIGNATE A CONCRETE TOOL & TRUCK CLEAN-OUT AREA. FORA APPROVED BEST MANAGEMENT PRACTICES SHALL AT ALL TIMES BE FULLY IMPLEMENTED AT AND AROUND THE CLEAN-OUT AREA.

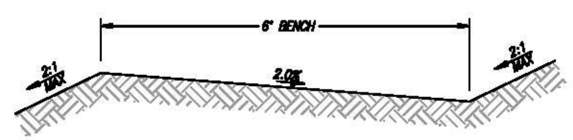
TACK COAT AND PRIME COAT ASPHALTS SHALL BE CAREFULLY SPRAYED AND ANY EXCESS MATERIAL SPILLED SHALL BE CLEANED UP IMMEDIATELY BY PROPER METHODS.

ALL EQUIPMENT REFUELING IN THE PROJECT AREA SHALL BE CAREFULLY DONE TO AVOID SPILLAGE. ANY SPILLS SHALL BE CONTAINED AND CLEANED UP IMMEDIATELY IN ACCORDANCE WITH STATE AND LOCAL REQUIREMENTS. ALL FUELING VEHICLES SHALL BE EQUIPPED WITH SPILL CLEANUP MATERIALS AND EQUIPMENT.

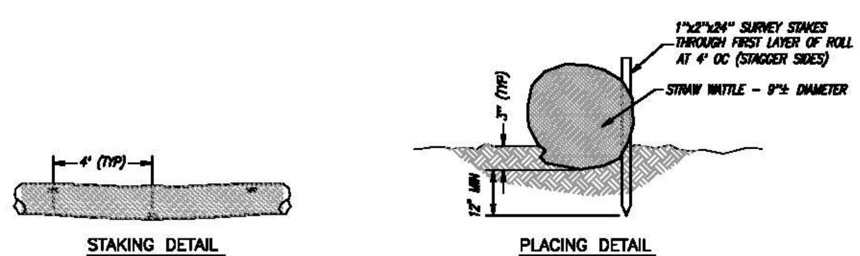
CONTRACTOR SHALL CONTROL AND PROPERLY DISPOSE OF ALL LIQUIDS DURING SAWCUTTING ACTIVITIES. METHOD OF INSTALLATION OF SILT FENCE WILL BE DETERMINED BY THE REGULATIONS OF THE RWQCB.

UTILITY MATERIAL TABLE

UTILITY	MATERIAL
STORM DRAIN	REINFORCED CONCRETE PIPE (RCP) CLASS IV
WATER	24"– DIP AWWA C150 CLASS 52
WATER VALVE	24"– GATE VALVE 24 – BUTTERFLY VALVE



1 EARTHEN BENCH
NTS



STRAW WATTLE NOTES:

FINE GRADE THE SUBGRADE BY HAND DRESSING WHERE NECESSARY TO REMOVE LOCAL DEVIATIONS AND TO REMOVE LARGER STONES OR DEBRIS THAT WILL INHIBIT INTIMATE CONTACT OF THE FIBER ROLL WITH THE SUBGRADE

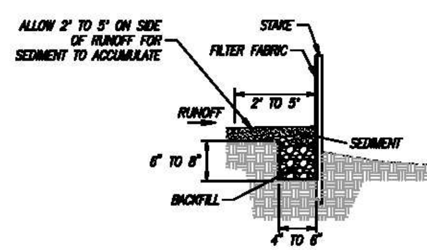
PRIOR TO ROLL INSTALLATION CONTOUR A CONCAVE KEY TRENCH 3" DEEP ALONG THE PROPOSED INSTALLATION ROUTE.

SOIL EXCAVATED IN TRENCHING SHOULD BE PLACED ON THE UPHILL OR FLOW SIDE OF THE ROLL TO PREVENT WATER FROM UNDERCUTTING THE ROLL.

PLACE FIBER ROLLS INTO THE KEY TRENCH AND STAKE ON BOTH SIDES OF THE ROLL WITHIN 6 FEET OF EACH END AND THEN 3-5 FEET WITH 1"x2" STAKES OR AS SUGGESTED BY MANUFACTURER

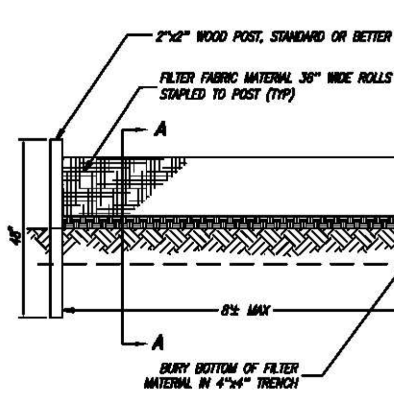
STAKES ARE TYPICALLY DRIVEN IN ON ALTERNATING SIDES OF THE ROLL. WHEN MORE THAT ONE FIBER ROLL IS PLACED IN A ROW, THE ROLLS SHOULD BE ABUTTED SECURELY TO ON ANOTHER TO PROVIDE A TIGHT JOINT, NOT OVERLAPPED.

2 STRAW WATTLE
NTS

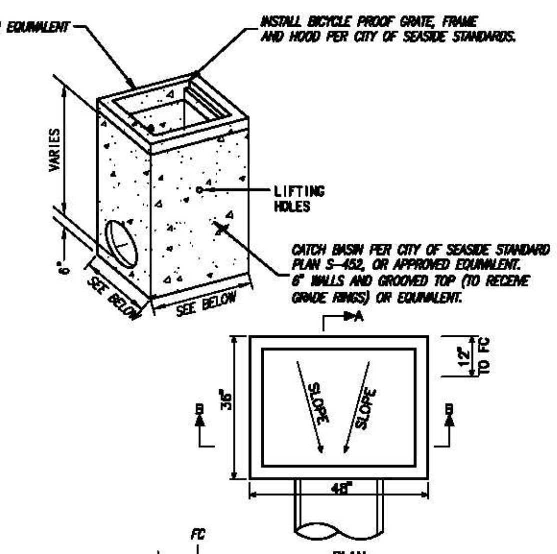


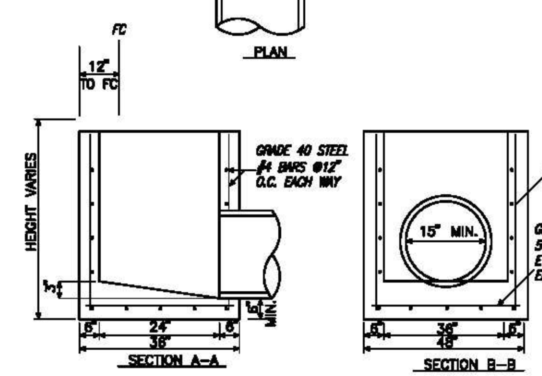
SECTION A-A

KEY IN FILTER FABRIC A MINIMUM OF 6" BELOW THE GROUND SURFACE AND 6" ACROSS, THEN BACKFILL WITH DIRT OR GRAVEL.



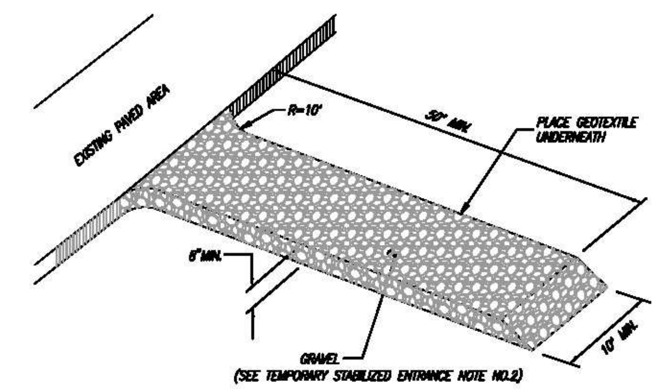
3 SILT FENCE DETAIL
NTS





NOTES:
1. ALL CONCRETE SHALL BE 6-SACK, 3/4" AGGREGATE, 4,000 PSI IN 28 DAYS.

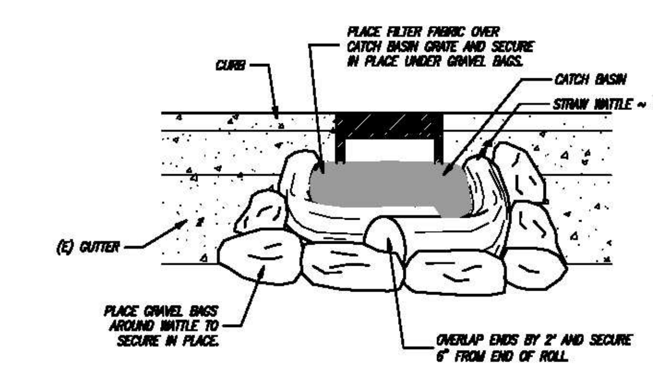
4 FULL CATCH BASIN
NTS



TEMPORARY STABILIZED CONSTRUCTION ENTRANCE

1. CONTRACTOR TO INSTALL AT ALL ENTRANCES AND EXITS TO WORK AREA. CONTRACTOR SHALL PROVIDE A CONCRETE WASH OUT BASIN ON JOB SITE.
2. THE MATERIAL FOR CONSTRUCTION OF THE PAD SHALL BE 3"-4" ANGULAR ROCK.
3. THE THICKNESS OF THE PAD SHALL NOT BE LESS THAN 8 INCHES.
4. THE WIDTH OF THE PAD SHALL NOT BE LESS THAN 10 FEET WIDTH OF ALL POINTS OF INGRESS AND EGRESS.
5. THE LENGTH OF THE PAD SHALL BE AS REQUIRED, BUT NOT LESS THAN 50 FEET.
6. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY WILL BE REMOVED IMMEDIATELY.
7. WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY.

5 TEMPORARY STABILIZED CONSTRUCTION ENTRANCE
NTS



6 CATCH BASIN SEDIMENT BARRIER
NTS

REV.	DATE	DESCRIPTION	APPR'D	SCH.	DATE	DESCRIPTION

DESIGNED BY: C+D
DRAWN BY: DR
CHECKED BY: RGS
DATE: JUNE 2008
SCALE: AS NOTED

RICHARD G. SIMONITCH No. 46670 EXP. 6-30-09 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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INFRASTRUCTURE ENGINEERS
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www.cdengineers.com

FORT ORD REUSE AUTHORITY
SOUTH BOUNDARY ROAD
EROSION CONTROL,
GENERAL NOTES AND DETAILS
Del Rey Oaks/Monterey Monterey County California

SHEET NUMBER
C2
OF 14 SHEETS

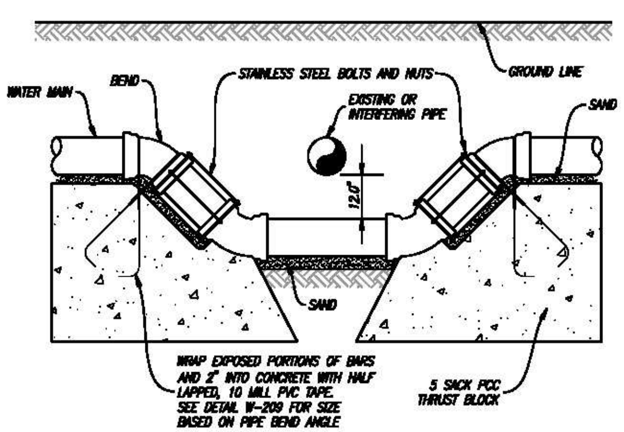
DRAWING NO.
707011

JUNE 18, 2008 1:46:42 p.m.
XREFS: TX24X36-P1
DRAWING: S:\LAND PROJECTS\707011.00\DWG\P1\C02 GENERAL NOTES & DETAILS.DWG

JANUARY 22, 2009 4:18:51 p.m.

XREFS: TX24X36-P1

DRAWING: S:\LAND PROJECTS\707011.00\DWG\P1\C07-WATER SYSTEM DETAILS & NOTES.DWG



NOTES:

1- ALL MATERIAL SHALL BE DUCTILE IRON.

2- ALL STIRRUPS NOT IN CONCRETE SHALL HAVE A BITUMINOUS COATING.

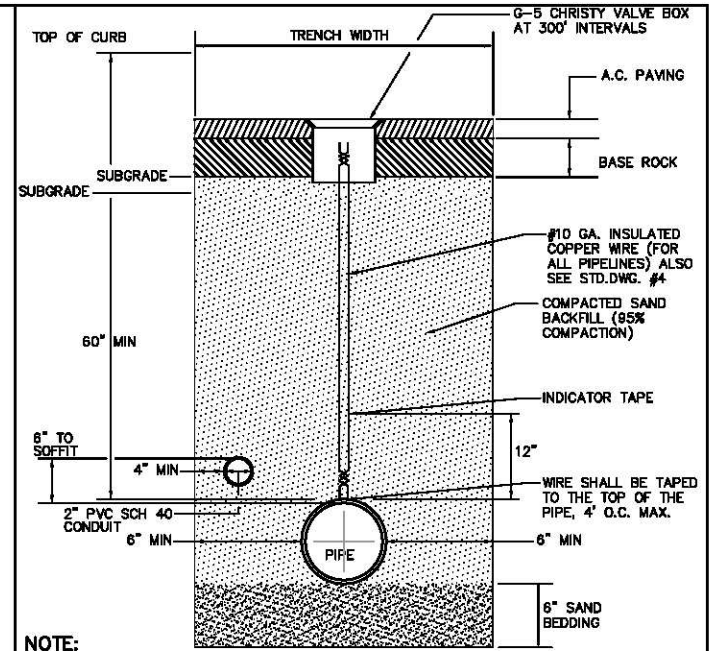
3- CONCRETE SHALL ONLY COME IN CONTACT WITH BENDS.

4- CONCRETE SHALL NOT COME IN CONTACT WITH PVC PIPE.

5- RESTRAINED JOINT PIPE MAY BE USED INSTEAD OF THRUST BLOCKS.

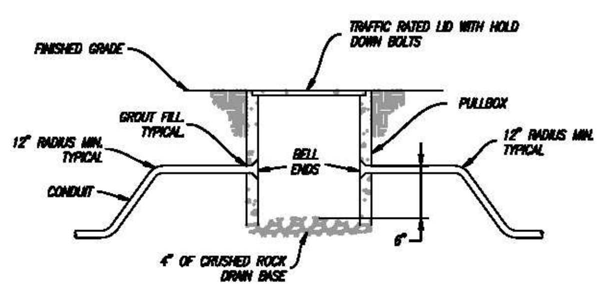
6- WATER MAIN OFFSET MAY BE ACCOMPLISHED USING ALLOWABLE DEFLECTION AT PIPE JOINTS.

1 CROSSING DETAIL
NTS



NOTE:
- MINIMUM TRENCH WIDTH TO BE 12" LARGER THAN O.D. OF PIPE UP TO 16" O.D. PIPE. ALL OTHER SIZES ABOVE 16" O.D. SHALL BE 18" LARGER THAN THE O.D. OF PIPE.
- 2" PVC SCH 40 CONDUIT TO BE PLACED ONLY IN LOCATION SPECIFIED PER SHEET 1 CONDUIT IS TO CONTAIN 3/16" POLLY PULL ROPE ALL BENDS ARE TO BE 12" RADIUS MIN

2 REQUIRED TRENCH WIDTH FOR WATER MAINS
NTS



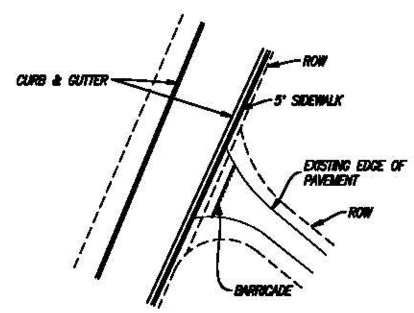
NOTES:

1- PULL BOX TO BE REINFORCED CONCRETE WITH EXTENSION RINGS AS REQUIRED. SIZES AND TYPES AS NOTED ON DRAWINGS.

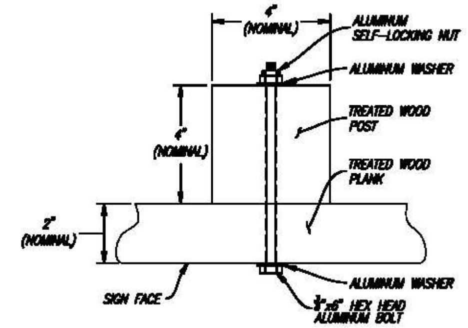
2- PULL BOXES TO BE PLACED AT EVERY 300' ALONG CONDUIT AS SHOWN IN PLAN VIEW.

3- CONDUIT IS TO CONTAIN 3/16" POLY PULL ROPE

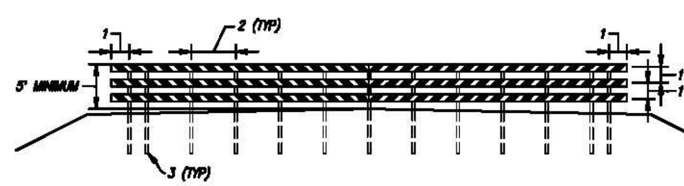
3 CONCRETE PULLBOX
NTS



PLAN VIEW

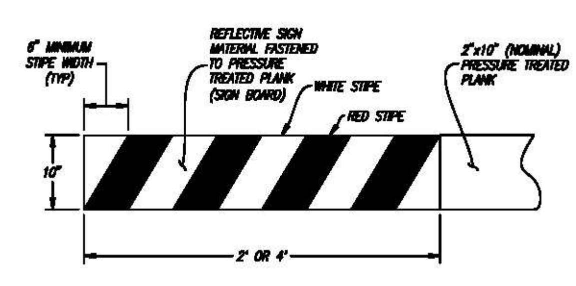


TOP VIEW



1- 2' FROM EDGE (MAXIMUM)
2- EVENLY SPACED (MAXIMUM 5')
3- 4"x4"x10' (NOMINAL)PRESSURE TREATED WOOD POST

APPROACH VIEW



DETAIL

4 ROAD CLOSURE BARRICADE
NTS

GENERAL WATER FACILITIES NOTES - MCWD

1. THE WATER SYSTEM AS SHOWN ON THESE PLANS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD PLANS AND SPECIFICATIONS OF THE MARINA COAST WATER DISTRICT. CONTRACTOR SHALL KEEP A COPY OF THE STANDARD SPECIFICATIONS AND DRAWINGS ON THE JOBSITE AT ALL TIMES.

2. THE MARINA COAST WATER DISTRICT SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO COMMENCING WORK ON THE WATER SYSTEM. PHONE (831) 384-6131 FOR INSPECTION. A PRECONSTRUCTION MEETING SHALL BE HELD AT LEAST 24 HOURS BEFORE STARTING CONSTRUCTION.

3. THE WATER SYSTEM IS TO BE INSTALLED BY THE APPLICANT. ALL WATER SYSTEM WORK SHALL CONFORM TO THE DISTRICT'S "STANDARD PLANS AND SPECIFICATIONS," AS LAST REVISED. THE CONTRACTOR SHALL HAVE A COPY OF THESE PLANS AND STANDARD SPECIFICATIONS ON THE JOB AT ALL TIMES.

4. THE DISTRICT SHALL BE FURNISHED WITH THREE (3) COPIES OF APPROVED CONSTRUCTION PLANS PRIOR TO STARTING CONSTRUCTION. A PRECONSTRUCTION CONFERENCE OF REPRESENTATIVES FROM AFFECTED AGENCIES AND THE CONTRACTOR SHALL BE HELD ON THE JOB SITE 24 HOURS PRIOR TO START OF WORK.

5. DOMESTIC WATER MAINS SHALL BE INSTALLED AFTER THE INSTALLATION OF CURB AND GUTTER AT SIX FEET OFF OF CURB ACE, OR AS STAKED BY THE APPLICANT'S SURVEYOR AT A MINIMUM 50-FOOT STATIONING, IF THERE ARE NO EXISTING CURBS.

6. ALL NUTS AND BOLTS, SHALL BE GRADE 316 STAINLESS STEEL. ALL BURIED FLANGES, VALVES AND FITTINGS SHALL BE WRAPPED WITH 10-MIL POLYETHYLENE SHEET.

7. ANY WATER SERVICE FOUND TO BE WITHIN A DRIVEWAY OR SIDEWALK SHALL BE REMOVED AT CORPORATION VALVE AND REINSTALLED AT THE PROPER LOCATION, AT NO COST TO THE DISTRICT.

8. ALL MAIN LINE VALVES SHALL BE MAINTAINED SO AS TO BE ACCESSIBLE DURING TRACT DEVELOPMENT, AND ALL VALVE STEM TOPS HAVING OVER 48 INCHES OF COVER MAY REQUIRE AN EXTENSION AS PER MCWD STANDARD PLAN W-7.

9. THE TOP OF THE PIPE SHALL BE A MINIMUM OF 42 INCHES OF COVER FROM THE FINISHED GRADE IN PAVED SECTIONS, UNLESS INDICATED OTHERWISE ON THE JOB PLANS OR DIRECTED OTHERWISE BY THE DISTRICT BECAUSE OF UNUSUAL CONDITIONS. PIPE SHALL BE BEDDED AND BACKFILLED PER MCWD STANDARD PLAN W-12.

10. FIRE HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROPRIATE DETAILS HEREIN AND INSTALLED BEHIND CURBS AND SIDEWALKS WHERE THE SIDEWALKS ARE ADJACENT TO THE CURBS. FIRE HYDRANTS SHALL BE PER THE DISTRICT'S SPECIFICATIONS AND SHALL HAVE A CONCRETE PAD POURED AROUND THEM. ALL FIRE HYDRANTS SHALL BE SET WITH THE BOTTOM FLANGE 4 INCHES ABOVE THE CONCRETE PAD OR SIDEWALK.

11. NO FACILITY IS TO BE BACKFILLED UNTIL INSPECTED BY THE DISTRICT.

12. SHUT DOWN OR TAPPING OF EXISTING DOMESTIC WATERLINES TO FACILITATE CONNECTION TO EXISTING FACILITIES SHALL BE COORDINATED WITH THE DISTRICT AT LEAST 24 HOURS IN ADVANCE. ANY RELOCATION OF EXISTING FACILITIES IS SUBJECT TO APPROVAL OF THE DISTRICT ENGINEER.

13. NO TAPS OR OTHER CONNECTIONS SHALL BE MADE TO EXISTING DISTRICT WATER MAINS PRIOR TO CONDUCTING AN APPROVED PRESSURE AND BACTERIOLOGICAL TEST ON THE NEW WATER DISTRIBUTION SYSTEM. TAPPING SLEEVES SHALL BE PRESSURE TESTED IN AN APPROVED MANNER IN THE FIELD IN THE PRESENCE OF THE DISTRICT INSPECTOR, PRIOR TO TAPPING THE MAIN LINE. TAPPING OF THE MAIN LINE SHALL NOT PROCEED UNLESS A DISTRICT INSPECTOR IS PRESENT.

14. ALL WATER SERVICES SHALL BE INSTALLED PER THE DISTRICT'S STANDARD SPECIFICATIONS. ALL METERS SHALL BE INSTALLED IN GRASS OR PLANTER AREAS AND ACCESSIBLE BY VEHICLE. ANY SERVICES LOCATED IN SIDEWALKS ARE SUBJECT TO THE APPROPRIATE GOVERNING AGENCY AND DISTRICT APPROVAL. ANY METERS LOCATED IN BANKS OF 4 SHALL BE MANIFOLDED PER MCWD STANDARD PLAN W-3. ALL METER REGISTERS AND LIDS SHALL BE MARKED WITH ADDRESS IDENTIFICATION.

15. WHERE METERS AND METER BOXES ARE LOCATED WITHIN SLOPES, THE ANGLE METER STOPS SHALL BE SO LOCATED THAT THE METERS AND BOXES WILL BE PARALLEL AND FLUSH, RESPECTIVELY, WITH THE FINISHED STREET SURFACE. A RETAINING WALL MAY BE REQUIRED AROUND THE METER BOX.

16. THE APPLICANT SHALL FURNISH AND INSTALL THE SERVICE CONNECTIONS BETWEEN WATER MAINS AND METERS AND METER BOXES. WATER SERVICES SHALL BE INSTALLED TO THE PROPERTY LINE PRIOR TO PAVING OF THE STREET.

17. CURB FACE SHALL BE INSCRIBED WITH "W" INDICATING LOCATIONS OF ALL DOMESTIC WATER SERVICES.

18. WATER LOW-FLOW DEVICES SHALL BE PROVIDED FOR ALL UNITS WITHIN THIS DEVELOPMENT IN ACCORDANCE WITH RULES AND REGULATIONS OF THE DISTRICT.

19. ALL VALVES SHALL BE LOCATED OFF THE TEE UNLESS OTHERWISE APPROVED BY THE DISTRICT. AT INTERSECTIONS AND BUS STOPS WITH CONCRETE PADS, THE MAIN LINE SHALL BE ROPED TO AVOID CROSS GUTTER CONFLICT.

20. INDIVIDUAL PRESSURE REGULATORS WILL BE REQUIRED BY THE PLUMBING CODES OF THE CITY HAVING JURISDICTION IF STATIC PRESSURE REACHES 80 PSI OR MORE.

21. ALL WATER METERS WILL BE FURNISHED BY THE MARINA COAST WATER DISTRICT FOLLOWING RECEIPT OF APPLICATION AND DEPOSIT. THE DISTRICT WILL INSTALL WATER METERS UP TO 2 INCHES. THE CONTRACTOR SHALL INSTALL WATER METERS 3 INCHES AND GREATER. THE CONTRACTOR SHALL PLACE ALL PIPING PER DISTRICT PLANS AND PROPERLY LOCATE THE METER BOXES TO GRADE PRIOR TO INSTALLATION OF THE METERS BY THE DISTRICT.

22. ANY DISTRICT WATER USED FOR CONSTRUCTION SHALL BE METERED WITH A CONSTRUCTION METER OBTAINED FROM THE DISTRICT.

23. AN ENCROACHMENT PERMIT FROM THE COUNTY OR CITY HAVING JURISDICTION IS REQUIRED PRIOR TO ANY WORK WITHIN PUBLIC RIGHT-OF-WAY OR EASEMENT.

24. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. APPROVAL OF THESE PLANS BY THE DISTRICT DOES NOT GUARANTEE THE ACCURACY, COMPLETENESS, LOCATION, OR THE EXISTENCE OR NON-EXISTENCE OF ANY UTILITY PIPE OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THE CONTRACTOR IS REQUIRED TO TAKE ALL DUE PRECAUTIONARY MEANS NECESSARY TO PROTECT THOSE UTILITY LINES NOT SHOWN ON THESE PLANS.

25. THE APPLICANT SHALL REMOVE TO THE SATISFACTION OF THE MCWD INSPECTOR ALL UNUSED WATER STUBS AND/OR SERVICES THAT WAS PROVIDED TO THE PROJECT SITE.

TITLE 22 CALIFORNIA CODE OF REGULATIONS

SECTION 64572. WATER MAIN SEPARATION
(A) NEW WATER MAINS AND NEW SUPPLY LINES SHALL BE INSTALLED AT LEAST 10 FEET HORIZONTALLY FROM, AND ONE FOOT VERTICALLY ABOVE, ANY PARALLEL PIPELINE CONVEYING:
(1) UNTREATED SEWAGE,
(2) PRIMARY OR SECONDARY TREATED SEWAGE,
(3) DISINFECTED SECONDARY-2.2 RECYCLED WATER (DEFINED IN SECTION 60301.220),
(4) DISINFECTED SECONDARY-23 RECYCLED WATER (DEFINED IN SECTION 60301.225), AND
(5) HAZARDOUS FLUIDS SUCH AS FUELS, INDUSTRIAL WASTES, AND WASTEWATER SLUDGE.
(B) NEW WATER MAINS AND NEW SUPPLY LINES SHALL BE INSTALLED AT LEAST 4 FEET HORIZONTALLY FROM, AND ONE FOOT VERTICALLY ABOVE, ANY PARALLEL PIPELINE CONVEYING:
(1) DISINFECTED TERTIARY RECYCLED WATER (DEFINED IN SECTION 60301.230), AND
(2) STORM DRAINAGE.
(C) NEW SUPPLY LINES CONVEYING RAW WATER TO BE TREATED FOR DRINKING PURPOSES SHALL BE INSTALLED AT LEAST 4 FEET HORIZONTALLY FROM, AND ONE FOOT VERTICALLY BELOW, ANY WATER MAIN.
(D) IF CROSSING A PIPELINE CONVEYING A FLUID LISTED IN SUBSECTION (A) OR (B), A NEW WATER MAIN SHALL BE CONSTRUCTED PERPENDICULAR TO AND AT LEAST ONE FOOT ABOVE THAT PIPELINE. NO CONNECTION JOINTS SHALL BE MADE IN THE WATER MAIN WITHIN EIGHT HORIZONTAL FEET OF FLUID PIPELINE.
(E) THE VERTICAL SEPARATION SPECIFIED IN SUBSECTIONS (A), (B), AND (C) IS REQUIRED ONLY WHEN THE HORIZONTAL DISTANCE BETWEEN A WATER MAIN AND PIPELINE IS ELEVEN FEET OR LESS.
(F) NEW WATER MAINS AND NEW SUPPLY LINES SHALL NOT BE INSTALLED WITHIN 100 HORIZONTAL FEET OF ANY SANITARY LANDFILL, WASTEWATER DISPOSAL POND, OR HAZARDOUS WASTE DISPOSAL SITE, OR WITHIN 25 FEET OF ANY CESSPOOL, SEPTIC TANK, SEWAGE LEACH FIELD, SEEPAGE PIT, OR GROUNDWATER RECHARGE PROJECT SITE.
(G) THE MINIMUM SEPARATION DISTANCES SET FORTH IN THIS SECTION SHALL BE MEASURED FROM THE NEAREST OUTSIDE EDGE OF EACH PIPE.

ALTERNATIVE CRITERIA FOR CONSTRUCTION
WATER MAINS, AND SEWERS AND OTHER NON-POTABLE FLUID-CARRYING PIPELINES
WHEN NEW WATER MAINS, NEW SANITARY SEWER MAINS, OR OTHER NON-POTABLE FLUID-CARRYING PIPELINES ARE BEING INSTALLED IN EXISTING DEVELOPED AREAS, LOCAL CONDITIONS (E.G., AVAILABLE SPACE, LIMITED SLOPE, EXISTING STRUCTURES) MAY CREATE A SITUATION IN WHICH THERE IS NO ALTERNATIVE BUT TO INSTALL WATER MAINS, SANITARY SEWER MAINS, OR OTHER NON-POTABLE PIPELINES AT A DISTANCE LESS THAN THAT REQUIRED BY THE REGULATIONS [EXISTING SECTION 64630 (PROPOSED SECTION 64572)]. IN SUCH CASES, THROUGH PERMIT ACTION, THE DEPARTMENT MAY APPROVE ALTERNATIVE CONSTRUCTION CRITERIA. THE ALTERNATIVE APPROACH IS ALLOWED UNDER THE PROPOSED REGULATION SECTION 64551(C):
"A WATER SYSTEM THAT PROPOSES TO USE AN ALTERNATIVE TO THE REQUIREMENTS IN THIS CHAPTER SHALL DEMONSTRATE TO THE DEPARTMENT HOW IT WILL INSTITUTE ADDITIONAL MITIGATION MEASURES TO ENSURE THAT THE PROPOSED ALTERNATIVE WOULD NOT RESULT IN AN INCREASED RISK TO PUBLIC HEALTH."
APPROPRIATE ALTERNATIVE CONSTRUCTION CRITERIA FOR TWO DIFFERENT CASES IN WHICH THE REGULATORY CRITERIA FOR SANITARY SEWER MAIN AND WATER MAIN SEPARATION CANNOT BE MET ARE SHOWN IN FIGURES 1 AND 2.

CASE 1 - NEW SANITARY SEWER MAIN AND A NEW OR EXISTING WATER MAIN; ALTERNATIVE CONSTRUCTION CRITERIA APPLY TO THE SANITARY SEWER MAIN.
CASE 2 - NEW WATER MAIN AND AN EXISTING SANITARY SEWER MAIN; ALTERNATIVE CONSTRUCTION CRITERIA MAY APPLY TO EITHER OR BOTH THE WATER MAIN AND SANITARY SEWER MAIN.

CASE 1: NEW SANITARY SEWER MAIN INSTALLATION (FIGURES 1 AND 2)
ZONE SPECIAL CONSTRUCTION REQUIRED FOR SANITARY SEWER MAIN
A) SANITARY SEWER MAINS PARALLEL TO WATER MAINS SHALL NOT BE PERMITTED IN THIS ZONE WITHOUT PRIOR WRITTEN APPROVAL FROM THE DEPARTMENT AND PUBLIC WATER SYSTEM.
B) IF THE WATER MAIN PARALLELING THE SANITARY SEWER MAIN DOES NOT MEET THE CASE 2 ZONE B REQUIREMENTS, THE SANITARY SEWER MAIN SHOULD BE CONSTRUCTED OF ONE OF THE FOLLOWING:
1. PVC SEWER PIPE WITH RUBBER RING JOINTS (PER ASTM D3034) OR EQUIVALENT;
2. CAST OR DUCTILE IRON PIPE WITH COMPRESSION JOINTS; OR
3. REINFORCED CONCRETE PRESSURE PIPE WITH COMPRESSION JOINTS (PER AWWA C302-95).
C) IF THE WATER MAIN CROSSING BELOW THE SANITARY SEWER MAIN DOES NOT MEET THE CASE 2 ZONE C REQUIREMENTS, THE SANITARY SEWER MAIN SHOULD HAVE NO JOINTS WITHIN 10 FEET FROM EITHER SIDE OF THE WATER MAIN (IN ZONE C) AND SHOULD BE CONSTRUCTED OF ONE OF THE FOLLOWING:
1. A CONTINUOUS SECTION OF DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING; OR
2. ONE OF THE ZONE C OPTIONS 1, 2, 3, OR 4 BELOW.
D) IF THE WATER MAIN CROSSING ABOVE THE SANITARY SEWER MAIN DOES NOT MEET THE REQUIREMENTS FOR CASE 2 ZONE D, THE SANITARY SEWER MAIN SHOULD HAVE NO JOINTS WITHIN FOUR FEET FROM EITHER SIDE OF THE WATER MAIN (IN ZONE D) AND SHOULD BE CONSTRUCTED OF ONE OF THE FOLLOWING:
1. DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING AND MECHANICAL JOINTS (GASKETED, BOLTED JOINTS);
2. A CONTINUOUS SECTION OF CLASS 200 (DR 14 PER AWWA C900-97) PVC PIPE OR EQUIVALENT, CENTERED OVER THE PIPE BEING CROSSED;
3. A CONTINUOUS SECTION OF REINFORCED CONCRETE PRESSURE PIPE (PER AWWA C302-95) CENTERED OVER THE PIPE BEING CROSSED; OR
4. ANY SANITARY SEWER MAIN WITHIN A CONTINUOUS SLEEVE.

CASE 2: NEW WATER MAINS INSTALLATION (FIGURES 1 AND 2)
ZONE SPECIAL CONSTRUCTION REQUIRED FOR WATER MAIN
A) NO WATER MAINS PARALLEL TO SANITARY SEWER MAINS SHALL BE CONSTRUCTED WITHOUT PRIOR WRITTEN APPROVAL FROM THE DEPARTMENT.
B) IF THE SANITARY SEWER MAIN PARALLELING THE WATER MAIN DOES NOT MEET THE CASE 1 ZONE B REQUIREMENTS, THE WATER MAIN SHOULD BE CONSTRUCTED OF ONE OF THE FOLLOWING:
1. DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING;
2. CLASS 200 PRESSURE RATED PVC WATER PIPE (DR 14 PER AWWA C900-97) OR EQUIVALENT; OR
3. REINFORCED CONCRETE PRESSURE PIPE, STEEL CYLINDER TYPE, PER AWWA (C300-97 OR C302-95 OR C303-95).
C) IF THE SANITARY SEWER MAIN CROSSING ABOVE THE WATER MAIN DOES NOT MEET THE CASE 1 ZONE C REQUIREMENTS, THE WATER MAIN SHOULD HAVE NO JOINTS WITHIN TEN FEET FROM EITHER SIDE OF THE SANITARY SEWER MAIN (IN ZONE C) AND BE CONSTRUCTED OF ONE OF THE FOLLOWING:
1. DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING;
2. CLASS 200 PRESSURE RATED PVC WATER PIPE (DR 14 PER AWWA C900-97); OR
3. REINFORCED CONCRETE PRESSURE PIPE, STEEL CYLINDER TYPE, PER AWWA (C300-97 OR C301-99 OR C303-95).
D) IF THE SANITARY SEWER MAIN CROSSING BELOW THE WATER MAIN DOES NOT MEET THE REQUIREMENTS FOR ZONE D CASE 1, THE WATER MAIN SHOULD HAVE NO JOINTS WITHIN EIGHT FEET FROM EITHER SIDE OF THE SANITARY SEWER MAIN AND SHOULD BE CONSTRUCTED AS FOR ZONE C.

WATER MAINS AND PIPELINES CONVEYING NON-POTABLE FLUIDS
WHEN THE BASIC SEPARATION CRITERIA CANNOT BE MET BETWEEN WATER MAINS AND PIPELINES CONVEYING NON-POTABLE FLUIDS, THE REQUIREMENTS DESCRIBED ABOVE FOR SANITARY SEWER MAINS SHOULD APPLY. THIS INCLUDES THE REQUIREMENTS FOR SELECTING SPECIAL CONSTRUCTION MATERIALS AND THE SEPARATION REQUIREMENTS SHOWN IN FIGURES 1 AND 2. NOTE THAT NOT ALL CONSTRUCTION MATERIALS ALLOWED FOR SANITARY SEWER MAINS WILL BE APPROPRIATE FOR OTHER NON-POTABLE FLUID LINES. FOR EXAMPLE, CERTAIN PLASTIC LINES MAY NOT BE APPROPRIATE FOR THE TRANSPORT OF SOME FUEL PRODUCTS. THE SELECTION OF COMPATIBLE MATERIALS OF CONSTRUCTION FOR NON-POTABLE FLUIDS IS A DECISION TO BE MADE BY THE PROJECT ENGINEER.

WATER MAINS AND SEWAGE FORCE MAINS
- SEWAGE FORCE MAINS SHALL NOT BE INSTALLED WITHIN TEN FEET (HORIZONTALLY) OF A WATER MAIN.
- WHEN A SEWAGE FORCE MAIN MUST CROSS A WATER MAIN, THE CROSSING SHOULD BE AS CLOSE AS PRACTICAL TO THE PERPENDICULAR. THE SEWAGE FORCE MAIN SHOULD BE AT LEAST ONE FOOT BELOW THE WATER MAIN.
- WHEN A NEW SEWAGE FORCE MAIN CROSSES UNDER AN EXISTING WATER MAIN, AND A ONE FOOT VERTICAL SEPARATION CANNOT BE PROVIDED, ALL PORTIONS OF THE SEWAGE FORCE MAIN WITHIN EIGHT FEET (HORIZONTALLY) OF THE OUTSIDE WALLS OF THE WATER MAIN SHOULD BE ENCLOSED IN A CONTINUOUS SLEEVE. IN THESE CASES, A MINIMUM VERTICAL SEPARATION DISTANCE OF 4 INCHES SHOULD BE MAINTAINED BETWEEN THE OUTSIDE EDGE OF THE BOTTOM OF THE WATER MAIN AND THE TOP OF THE CONTINUOUS SLEEVE.
- WHEN A NEW WATER MAIN CROSSES OVER AN EXISTING SEWAGE FORCE MAIN, THE WATER MAIN SHOULD BE CONSTRUCTED OF PIPE MATERIALS WITH A MINIMUM RATED WORKING PRESSURE OF 200 PSIG OR THE EQUIVALENT.

WATER MAINS AND TERTIARY TREATED RECYCLED WATER OR NEW SUPPLY LINES
- THE BASIC SEPARATION CRITERIA FOR WATER MAINS AND PIPELINES CONVEYING TERTIARY TREATED RECYCLED WATER OR SUPPLY LINES ARE A 4-FOOT HORIZONTAL SEPARATION WHERE LINES ARE RUNNING PARALLEL AND A 1-FOOT VERTICAL SEPARATION (WATER LINE ABOVE RECYCLED OR SUPPLY LINE) WHERE THE LINES CROSS EACH OTHER.
- WHEN THESE CRITERIA CANNOT BE MET, THE ZONE A CRITERIA APPLY WHERE LINES ARE RUNNING PARALLEL, AND THE ZONE C AND ZONE D CRITERIA APPLY WHERE THE LINES CROSS EACH OTHER AS SHOWN ON FIGURES 1 AND 2. FOR THESE SITUATIONS, THE ZONE "P" CRITERIA ARE IN EFFECT AND PROHIBIT CONSTRUCTION LESS THAN 1 FOOT IN PARALLEL INSTALLATIONS AND LESS THAN 4 INCHES IN VERTICAL (CROSSING) SITUATIONS.
- FOR TERTIARY TREATED RECYCLED WATER AND NEW SUPPLY LINES, THE ZONE B CRITERIA (REQUIREMENTS FOR SPECIAL PIPE) DO NOT APPLY AS THE BASIC SEPARATION CRITERIA IS A FOUR-FOOT HORIZONTAL SEPARATION CRITERIA FOR PARALLEL LINES. THE TERTIARY TREATED RECYCLED WATER LINES SHOULD BE CONSTRUCTED IN ACCORDANCE WITH THE COLOR-CODING, AND LABELING REQUIREMENTS PER SECTION 116815, CALIFORNIA HEALTH AND SAFETY CODE OF REGULATIONS.

MISCELLANEOUS GUIDANCE
- MORE STRINGENT REQUIREMENTS MAY BE NECESSARY IF CONDITIONS SUCH AS HIGH GROUNDWATER EXIST. HDPE OR SIMILAR PIPE MAY BE REQUIRED TO PROVIDE FLEXIBILITY TO MOVE WITHOUT POTENTIAL JOINT LEAKS.
- SANITARY SEWER MAINS SHOULD NOT BE INSTALLED WITHIN 25 FEET HORIZONTALLY OF A LOW HEAD (5 PSIG OR LESS PRESSURE) WATER MAIN.
- NEW WATER MAINS AND SANITARY SEWER MAINS SHOULD BE PRESSURE TESTED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
- WHEN INSTALLING WATER MAINS, SEWERS, OR OTHER PIPELINES, MEASURES SHOULD BE TAKEN TO PREVENT OR MINIMIZE DISTURBANCES OF EXISTING PIPELINES. DISTURBANCE OF THE CONDUIT'S SUPPORTING BASE COULD EVENTUALLY RESULT IN PIPELINE FAILURE.
- SPECIAL CONSIDERATION SHOULD BE GIVEN TO THE SELECTION OF PIPE MATERIALS IF CORROSIVE CONDITIONS ARE LIKELY TO EXIST. THESE CONDITIONS MAY BE DUE TO SOIL TYPE AND/OR THE NATURE OF THE FLUID CONVEYED IN THE CONDUIT, SUCH AS A SEPTIC SEWAGE PRODUCING CORROSIVE HYDROGEN SULFIDE.

NOTE: DIMENSIONS ARE FROM THE OUTSIDE OF THE WATER MAIN TO THE OUTSIDE OF THE OTHER PIPELINE, MANHOLE, OR SLEEVE.

REV.	DATE	DESCRIPTION	APPR'D	SCH.	DATE	DESCRIPTION

DESIGNED BY: C-D
DRAWN BY: DR
CHECKED BY: RGS
DATE: JUNE 2009
SCALE: AS NOTED

REGISTERED PROFESSIONAL ENGINEER RICHARD G. SIMONITCH No. 48070 EXP. 6-30-10 CIVIL STATE OF CALIFORNIA

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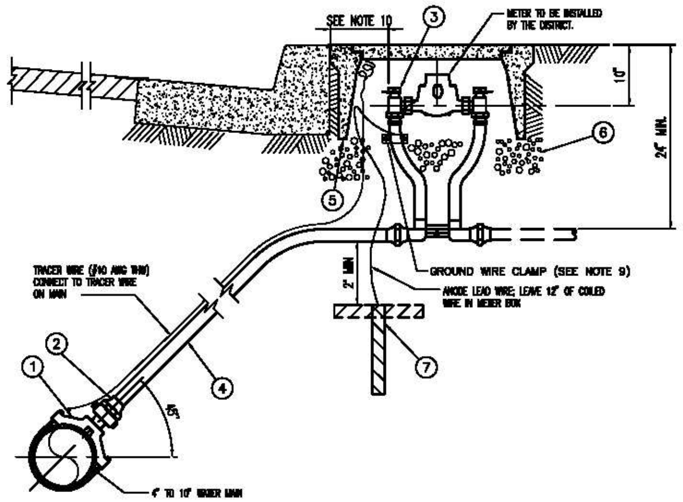
FORT ORD REUSE AUTHORITY
SOUTH BOUNDARY ROAD PHASE 1
NOTES & DETAILS
Del Rey Oaks/Monterey Monterey County California

SHEET NUMBER C3 OF 14 SHEETS

DRAWING NO. 707011

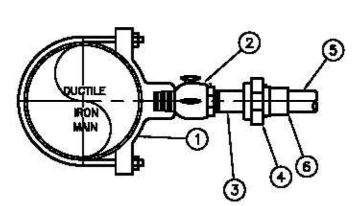


MATERIALS

ITEM NO.	SIZE & DESCRIPTION*
1	DOUBLE STRAP IRON BODY SERVICE SADDLE 1" I.P. OUTLET (FOR DUCTILE IRON PIPE MAINS) CAST BRONZE SERVICE SADDLE WITH 1" I.P. OUTLET (FOR C900 PVC PIPE MAIN)
2	3/4" BRONZE CORPORATION STOP I.P. THREAD X COMPRESSION (FOR DUCTILE IRON PIPE MAIN)
3	1" METER SIZE COPPERSETTER W/ 3/4" TO 1" METER SIZE MALE ADAPTOR (REQUIRED FOR 3/4" METERS), 15" HIGH, 1" INLET/OUTLET
4	1" COPPER OR POLYETHYLENE TUBING
5	METER BOX W/ CONCRETE LID CHRISTY BOX OR EQUAL
6	6" BASE OF 3/4" ROCK
7	ZINC ANODE AND LEAD WIRE. ANODE TO BE PLACED VERTICALLY OR HORIZONTALLY AT A MINIMUM SEPARATION OF 2 FEET FROM THE COPPER SERVICE. ANODE SHALL BE SIZED BASED ON METAL SURFACE AREA. ANODE SHALL BE BAGGED IN GYPSUM, BENTONITE AND SODIUM SULFATE.

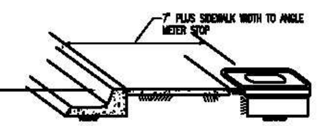
* SEE SPECFICIATIONS FOR APPROVED MANUFACTURERS & MODELS.

DIALECTRICAL INSULATION FOR DIP MAINS



MATERIALS*

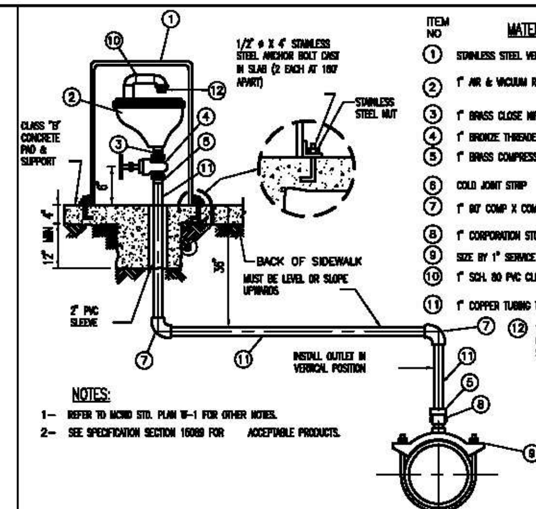
1. SERVICE SADDLE AND CORPORATION STOP
2. BRONZE CORPORATION STOP MALE I.P. X F.I.P.
3. NIPPLE MALE I.P. X MALE I.P., BRONZE
4. DIELECTRIC UNION F.I.P. X SWEAT
5. TYPE K COPPER SERVICE TUBING
6. COMPRESSION ADAPTER



NOTES:

1. SERVICE SADDLE SHALL NOT BE INSTALLED WITHIN 18" OF VALVE, COUPLING, JOINT OR FITTING. TAPPED COUPLINGS ARE NOT PERMITTED.
2. INSTALL CORPORATION STOP WITH KEY IN OPEN POSITION.
3. SET TOP OF METER BOX FLUSH WITH SIDEWALK OR CURB AS SHOWN.
4. THE CORPORATION STOP TAP SHALL BE MADE AS SPECIFIED PER MANUFACTURER'S RECOMMENDATION. ALL TAPS SHALL BE MADE WITH MACHINE GUIDE OR PILOT TAP.
5. THE WATER SERVICE SHALL EXTEND PERPENDICULAR TO THE CENTERLINE OF THE STREET FROM THE WATER MAIN TO THE METER STOP.
6. METER BOX SHALL BE SET BEHIND SIDEWALK WHERE SIDEWALK IS ADJACENT TO CURB, OR IN PARKWAY BETWEEN CURB AND SIDEWALK.
7. ALL SPLICES OF COPPER TUBING SHALL BE COMPRESSION CONNECTIONS.
8. METER BOX LID FOR ALL RECYCLE WATER SERVICES SHALL BE PURPLE IN COLOR PER SPECIFICATIONS.
9. ANODE LEAD WIRE SHALL BE CLAMPED TO COPPER TUBING. CLAMP SHALL BE DIRECT BURIAL TYPE OF RED BRASS WITH BRASS SCREWS AS MANUFACTURED BY DOTTIE, OR APPROVED EQUAL.
10. COPPERSETTER SHALL BE CENTERED IN THE METER BOX. DISTANCE FROM THE CURB SHALL BE SPECIFIED IN THE CONTRACT DRAWINGS.
11. ANODE(S) SHALL BE INSTALLED WHEN REQUIRED BY CORROSION STUDY REPORT (SEE MASTER PLAN REQUIREMENT IN DEVELOPMENT PROCEDURE SECTION100).

APPROVED BY DISTRICT ENGINEER	MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD W-1
DATE 11/2007	1" WATER SERVICE INSTALLATION	SHEET 1 OF 1



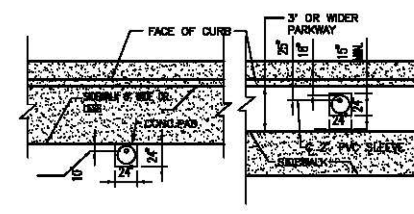
MATERIALS

ITEM NO	
1	STAINLESS STEEL VENTED COVER (PIPELINE VCSP-1530)
2	1" AIR & VACUUM RELIEF VALVE SEE NOTES 2 & 3
3	1" BRASS CLOSE NIPPLE
4	1" BRONZE THREADED GATE VALVE
5	1" BRASS COMPRESSION FITTING WITH IP & CTS ADAPTER
6	COLD JOINT STRIP
7	1" 90° COMP X COMP COPPER OR BRASS ELL
8	1" CORPORATION STOP
9	SIZE BY 1" SERVICE SADDLE, SEE W-1
10	1" SCH. 80 PVC CLOSE NIPPLES AND 90° BENDS
11	1" COPPER TUBING TYPE "K" RIGID
12	THREADED PRE-FAB. PVC SCREEN OUTLET WITH RIGID STAINLESS STEEL SCREEN.

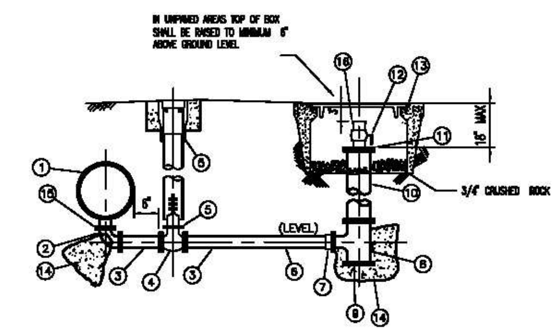
NOTES:

1. REFER TO MCWD STD. PLAN W-1 FOR OTHER NOTES.
2. SEE SPECIFICATION SECTION 15089 FOR ACCEPTABLE PRODUCTS.

VALVE ASSEMBLY LOCATION



APPROVED BY DISTRICT ENGINEER	MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD W-10
DATE 11/2007	1" AIR RELEASE & VACUUM RELIEF VALVE ASSEMBLY	SHEET 1 OF 1



MATERIALS

1. PIPE DIA. x 4" D.I. OR WSP TEE, FLANGED
2. 4" D.I. 90° ELL, FLG. x FLG.
3. 4" x AS REQ'D D.I. SPOOL
4. 4" RW GATE VALVE, FLG. x FLG. ONE VALVE REQUIRED FOR MAINS LESS THAN 24-INCHES IN DIAMETER. TWO VALVES ARE REQUIRED, AS SHOWN, FOR MAINS 24-INCHES IN DIAMETER AND LARGER.
5. VALVE AND VALVE BOX INSTALLATION PER M.C.W.D. STD. PLAN W-7
6. 4" x AS REQ'D FLG. x PE D.I. PIPE
7. 4" D.I. FLANGE COUPLING ADAPTER
8. 8" x 4" D.I. TEE
9. 8" D.I. BLIND FLANGE
10. 8" x AS REQ'D D.I. PIPE
11. 8" BLIND FLANGE W/ 2 1/2" TAP
12. 2 1/2" BRASS NIPPLE AND 2 1/2" BALL VALVE, IP THREAD
13. 8" MINIMUM DIAMETER VALVE BOX
14. THRUST BLOCKS PER MCWD STD. PLAN W-13
15. INSULATING KIT SHALL BE PROVIDED AS REQUIRED BY CORROSION STUDY & DISTRICT.
16. 2 1/2" BRASS NIPPLE, I.P. THREAD X FH THREAD, WITH PROTECTIVE CAP

APPROVED BY DISTRICT ENGINEER	MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD W-11
DATE 11/2007	4 INCH LINE DRAIN BLOWOFF ASSEMBLY (FOR >12" MAINS)	SHEET 1 OF 1

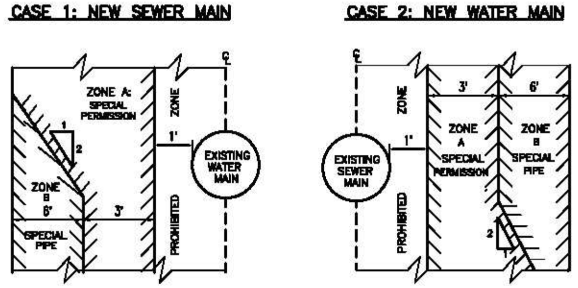


FIGURE 1

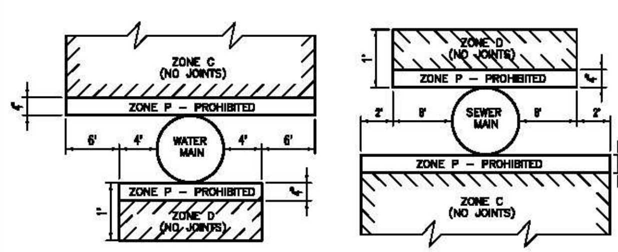
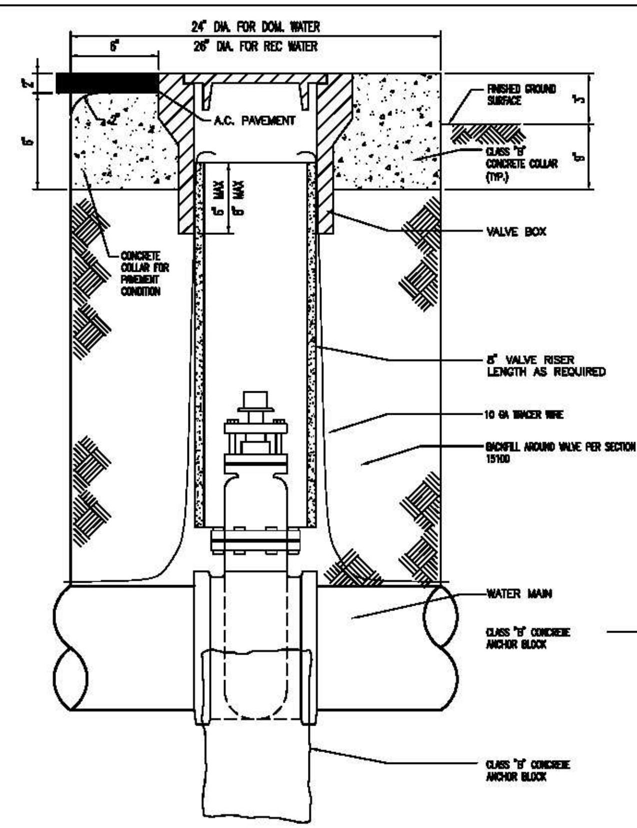
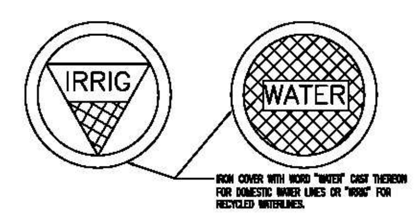


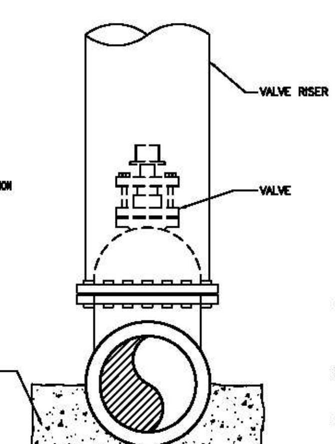
FIGURE 2

NOTE:
SEE TITLE 22 CALIFORNIA CODE OF REGULATIONS

APPROVED BY DISTRICT ENGINEER	MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD W-16
DATE 11/2007	STATE HEALTH DEPT. EXCEPTIONS TO BASIC SEPARATION AND STANDARDS FOR WATER MAINS AND NON-POTABLE PIPELINES	SHEET 1 OF 1







NOTES:

1. PROVIDE VALVE STEM EXTENSION IF DEPTH TO VALVE NUT EXCEEDS 4 FEET.
   IN NEW TRACT DEVELOPMENTS EXTEND VALVE WELL PIPE 2' ABOVE GROUND ON "KEY VALVES" FOR EMERGENCY SHUTOFFS.
2. BUTTERFLY VALVE OPERATORS SHALL BE LOCATED ON THE LEFT-HAND SIDE OF THE VALVE (AT THE TEE OR CROSS), LOOKING THROUGH THE VALVE TOWARD THE PIPE END.
3. WHERE CONCRETE CROSS GUTTERS AT STREET INTERSECTIONS WILL INTERFERE WITH VALVE BOXES, THE PIPELINE SHALL BE MOVED TO A POSITION 7 FEET OFF THE CURB FACE TO CLEAR THE CROSS GUTTER.
4. VALVES TO BE LOCATED ADJACENT TO FITTINGS WHEREVER POSSIBLE.
5. VALVES BOLTED TO FITTINGS WILL NOT REQUIRE ANCHOR BLOCKS.

APPROVED BY DISTRICT ENGINEER	MARINA COAST WATER DISTRICT STANDARD PLAN	STANDARD W-7
DATE 11/2007	VALVE & VALVE BOX INSTALLATION	SHEET 1 OF 1

REV.	DATE	DESCRIPTION	APPR'D	SCH.	DATE	DESCRIPTION

DESIGNED BY: C-HD
DRAWN BY: DR
CHECKED BY: RGS
DATE: JUNE 2008
SCALE: AS NOTED

RICHARD G. SIMONITCH No. 48070 EXP. 6-30-0 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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FORT ORD REUSE AUTHORITY
SOUTH BOUNDARY ROAD PHASE 1
MARINA COAST WATER DISTRICT STANDARD DETAILS
Del Rey Oaks/Monterey Monterey County California

SHEET NUMBER C4 OF 14 SHEETS
DRAWING NO. 707011

JANUARY 22, 2009 4:29:31 p.m.
XREFS: TX24X36-P1 8.5X11_BOR 04-2005 rev 8.5X11_BOR 11X17_BOR
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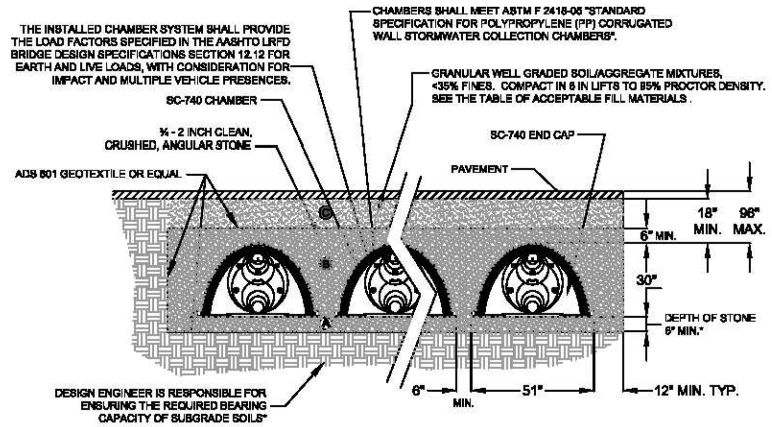
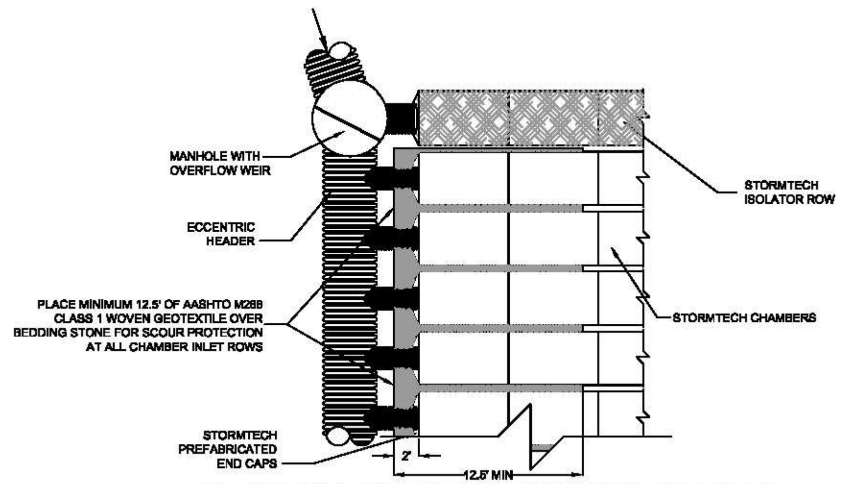


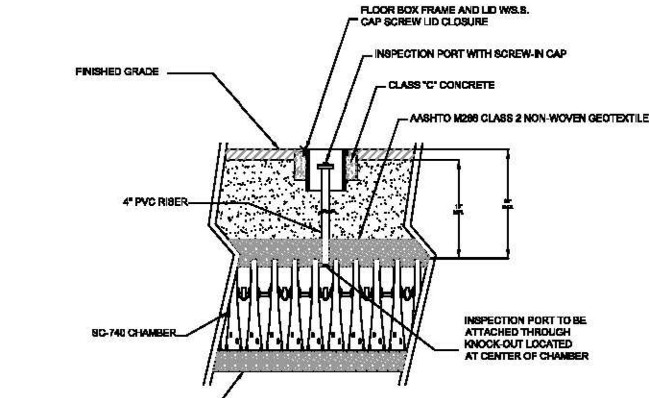
THIS CROSS SECTION DETAILS THE REQUIREMENTS NECESSARY TO SATISFY THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 12.12 FOR EARTH AND LIVE LOADS USING STORMTECH CHAMBERS

*SEE STORMTECH DESIGN MANUAL

1 SC-740 TYPICAL CROSS SECTION
NTS



2 STORMTECH ISOLATOR ROW MANIFOLD DETAIL
NTS



NOTE: INSPECTION PORT SHALL BE INSTALLED ON THE THRID TO LAST CHAMBER OF THE ISOLATION ROW AT THE FARTHEST POINT FROM INLET WIER.

3 STORMTECH INSPECTION PORT DETAIL
NTS

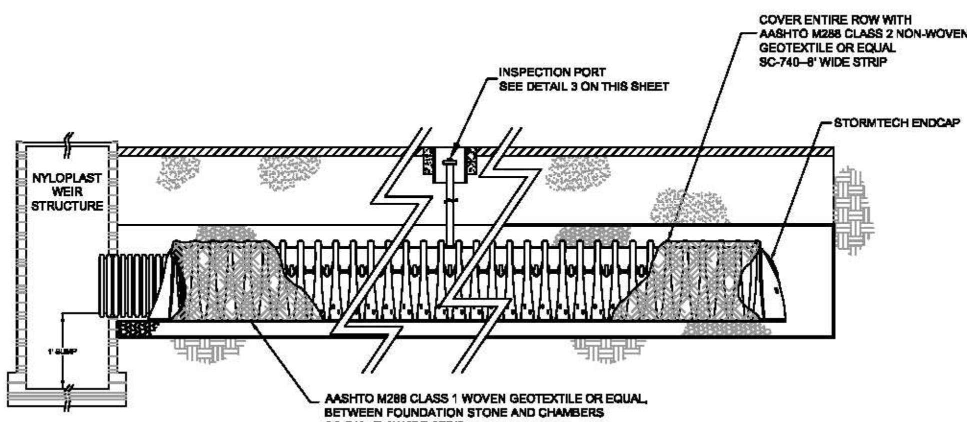
NOTES:

1. ALL DESIGN SPECIFICATIONS FOR STORMTECH CHAMBERS SHALL BE IN ACCORDANCE WITH THE STORMTECH DESIGN MANUAL.

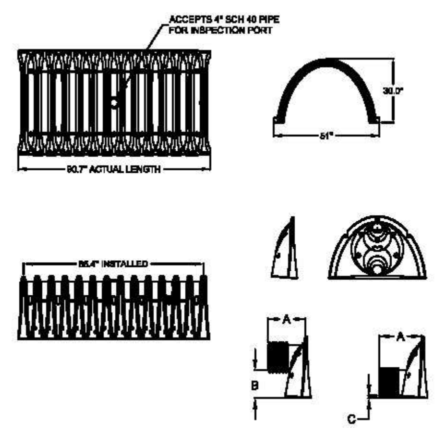
2. THE INSTALLATION OF STORMTECH CHAMBERS SHALL BE IN ACCORDANCE WITH THE LATEST STORMTECH INSTALLATION INSTRUCTIONS.

3. THE CONTRACTOR IS ADVISED TO REVIEW AND UNDERSTAND THE INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLATION. CALL **1-888-892-2694** OR VISIT **WWW.STORMTECH.COM** TO RECEIVE A COPY OF THE LATEST STORMTECH INSTALLATION INSTRUCTIONS.

4. CHAMBERS SHALL MEET THE DESIGN REQUIREMENTS AND LOAD FACTORS SPECIFIED IN SECTION 12.12 OF THE LATEST EDITION OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS LOADS SHALL BE CALCULATED IN ACCORDANCE WITH SECTION 3 AND SHALL INCLUDE H20 DESIGN TRUCK, IMPACT FACTOR, MULTIPLE PRESENCE, AND LANE LOAD.



4 STORMTECH ISOLATOR ROW DETAIL
NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W x H x INSTALLED LENGTH) -	51.0" x 30.0" x 85.4"
CHAMBER STORAGE -	45.9 CUBIC FEET
MINIMUM INSTALLED STORAGE -	74.9 CUBIC FEET
WEIGHT -	75 LBS.

STUBS AT TOP OF END CAP FOR PARTS NUMBERS ENDING WITH "T"

STUBS AT BOTTOM OF END CAP FOR PARTS NUMBERS ENDING WITH "B"

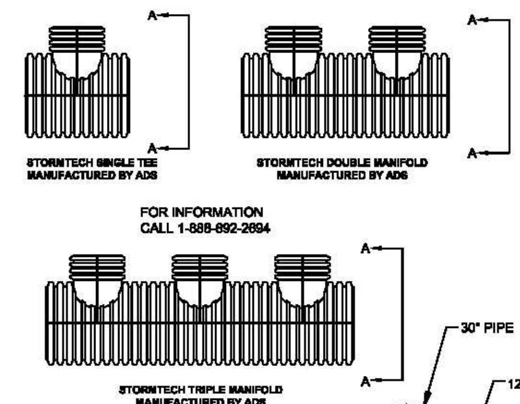
PART #	CHAMBER	PIPE SIZE	A	B	D
SC740EPE06T	SC-740	6 in (150 mm)	10.90 in (277 mm)	18.50 in (470 mm)	N/A
SC740EPE06B	SC-740	6 in (150 mm)	10.90 in (277 mm)	N/A	0.50 in (13 mm)
SC740EPE08T	SC-740	8 in (200 mm)	12.20 in (310 mm)	16.50 in (419 mm)	N/A
SC740EPE08B	SC-740	8 in (200 mm)	12.20 in (310 mm)	N/A	0.60 in (15 mm)
SC740EPE10T	SC-740	10 in (250 mm)	13.40 in (340 mm)	14.50 in (368 mm)	N/A
SC740EPE10B	SC-740	10 in (250 mm)	13.40 in (340 mm)	N/A	0.70 in (18 mm)
SC740EPE12T	SC-740	12 in (300 mm)	14.70 in (373 mm)	12.50 in (318 mm)	N/A
SC740EPE12B	SC-740	12 in (300 mm)	14.70 in (373 mm)	N/A	1.20 in (30 mm)
SC740EPE15T	SC-740	15 in (375 mm)	16.40 in (417 mm)	9.00 in (229 mm)	N/A
SC740EPE15B	SC-740	15 in (375 mm)	16.40 in (417 mm)	N/A	1.30 in (33 mm)
SC740EPE18T	SC-740	18 in (450 mm)	19.70 in (500 mm)	5.00 in (127 mm)	N/A
SC740EPE18B	SC-740	18 in (450 mm)	19.70 in (500 mm)	N/A	1.60 in (41 mm)
* SC740EPE24B	SC-740	24 in (600 mm)	18.50 in (470 mm)	N/A	0.10 in (3 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL

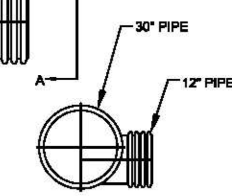
ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC740EPE24B THE 24" STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75". BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SETS LEVEL.

5 TECHNICAL DETAILS
NTS

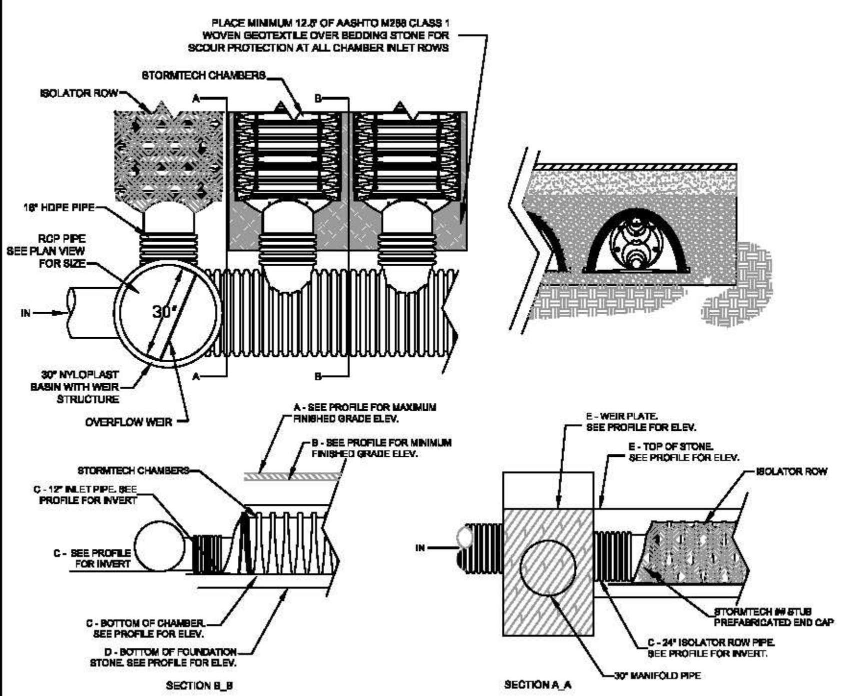


MANIFOLDS ARE DESIGNED TO BE COUPLED TO STORMTECH PREFABRICATED END CAPS. WHEN USING STANDARD END CAPS, CORRUGATED PIPE UP TO 18 INCHES CAN BE INSERTED DIRECTLY INTO THE END CAP. FOR 24" INLET PIPES, A CORRUGATED TO SMOOTH PIPE ADAPTER IS REQUIRED.



ECCENTRIC MANIFOLD SECTION A_A

6 ADS MANIFOLD DETAILS
NTS



7 STORMTECH ELEVATIONS
NTS

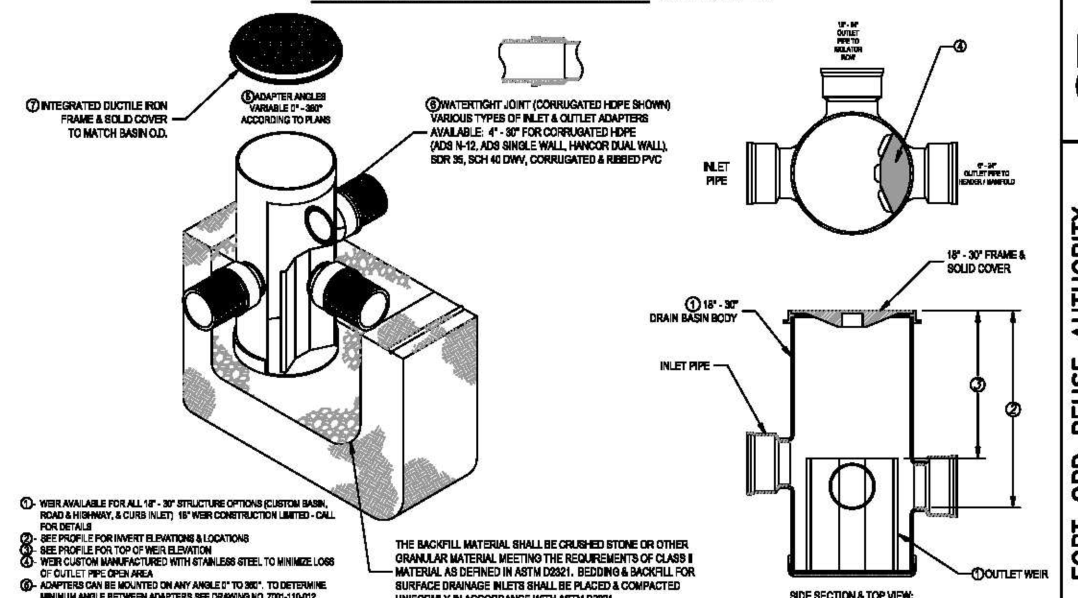
ACCEPTABLE FILL MATERIALS
STORMTECH SC-740 CHAMBER SYSTEMS

MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION	AASHTO M145 DESIGNATION	COMPACTION/DENSITY REQUIREMENT
FILL MATERIAL FROM 18" TO GRADE ABOVE CHAMBERS	ANY SOIL/ROCK MATERIALS, NATIVE SOILS OR PER GEOTECHNICAL REPORT.	N/A	N/A	PREPARE PER GEOTECHNICAL REPORT.
Ⓒ FILL MATERIAL FOR 6" TO 18" ELEVATION ABOVE CHAMBERS (24" FOR UNPAVED INSTALLATIONS)	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES.	3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	A-1 A-2 A-3	COMPACT IN 6" LIFTS TO A MINIMUM 95% STANDARD PROCTOR DENSITY. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 LBS. DYNAMIC FORCE NOT TO EXCEED 20,000 LBS.
Ⓑ EMBEDMENT STONE SURROUNDING AND TO A 6" ELEVATION ABOVE CHAMBERS	CLEAN ANGULAR STONE WITH THE MAJORITY OF PARTICLES BETWEEN ¾ - 2 INCH	3, 357, 4, 467, 5, 56, 57	N/A	NO COMPACTION REQUIRED
Ⓐ FOUNDATION STONE BELOW CHAMBERS	CLEAN ANGULAR STONE WITH THE MAJORITY OF PARTICLES BETWEEN ¾ - 2 INCH	3, 357, 4, 467, 5, 56, 57	N/A	PLATE COMPACT OR ROLL TO ACHIEVE A 95% STANDARD PROCTOR DENSITY

PLEASE NOTE: THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN CRUSHED ANGULAR. FOR EXAMPLE, THE STONE MUST BE SPECIFIED AS CLEAN, CRUSHED, ANGULAR NO. 4 STONE.

8 STORMTECH ACCEPTABLE FILL MATERIALS
NTS

NYLOPLAST DRAIN BASIN WITH WEIR: 5199AGWEIR



①- WEIR AVAILABLE FOR ALL 18" - 30" STRUCTURE OPTIONS (CUSTOM BASIN, ROAD & HIGHWAY, & CURB INLET) 18" WEIR CONSTRUCTION LIMITED - CALL FOR DETAILS
②- SEE PROFILE FOR INVERT ELEVATIONS & LOCATIONS
③- SEE PROFILE FOR TOP OF WEIR ELEVATION
④- WEIR CUSTOM MANUFACTURED WITH STAINLESS STEEL TO MINIMIZE LOSS OF OUTLET PIPE OPEN AREA
⑤- ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012, 7001-110-013, & 7001-110-014
⑥- DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
⑦- FRAMES, GRATES, HOODS, & BASE PLATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05

9 DRAIN BASIN WITH OUTLET WEIR FOR STORMTECH
NTS

REV.	DATE	DESCRIPTION	APPR'D	SCH.	DATE	DESCRIPTION

DESIGNED BY: C-D
DRAWN BY: DR
CHECKED BY: RGS
DATE: JUNE 2008
SCALE: AS NOTED

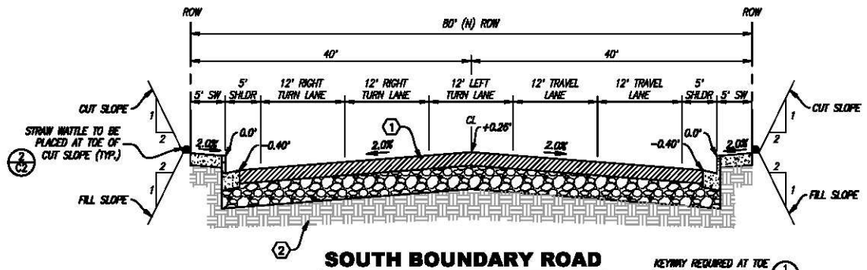
REGISTERED PROFESSIONAL ENGINEER RICHARD G. SIMONITCH No. 46570 EXP. 6-30-0 CIVIL STATE OF CALIFORNIA

Creegan+D'Angelo INFRASTRUCTURE ENGINEERS
225 Cannery Row, Suite H
Monterey, CA 93940
Tel (831) 373-1333
Fax (831) 373-0733
www.cdengineers.com

FORT ORD REUSE AUTHORITY
SOUTH BOUNDARY ROAD INFILTRATION SYSTEM
Del Rey Oaks/Monterey Monterey County California

SHEET NUMBER C5 OF 14 SHEETS
DRAWING NO. 707011

JANUARY 14, 2009 4:34:10 p.m.
XREFS: TX24X36–P1
DRAWING: S:\LAND PROJECTS\707011.00\DWG\P1\C03–INFILTRATION SYSTEM.DWG



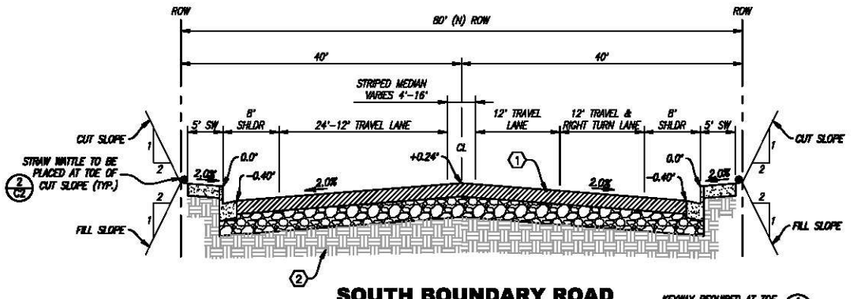
SOUTH BOUNDARY ROAD

NTS

STA. 1+60± - STA. 6+15± (TI=8.0)

IN CUT AND FILL AREAS, REMOVE AND RECOMPACT AS ENGINEERED FILL THE UPPER 18 INCHES OF SOILS.

KEYWAY REQUIRED AT TOE OF ALL FILL SLOPES PER (1/C6)



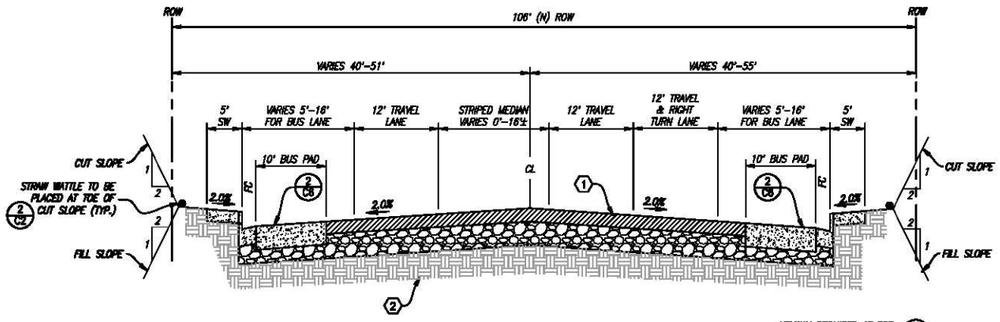
SOUTH BOUNDARY ROAD

NTS

STA. 14+00 - 16+55± (TI=8.0)

IN CUT AND FILL AREAS, REMOVE AND RECOMPACT AS ENGINEERED FILL THE UPPER 18 INCHES OF SOILS.

KEYWAY REQUIRED AT TOE OF ALL FILL SLOPES PER (1/C6)



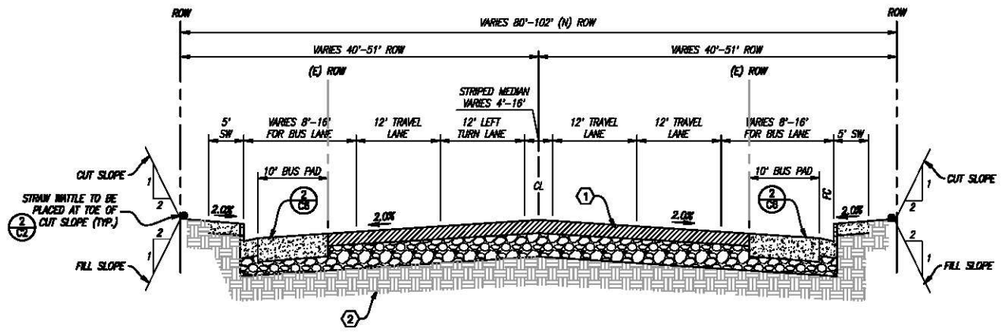
SOUTH BOUNDARY ROAD

NTS

STA. 6+15± - 11+05± (TI=8.0)

IN CUT AND FILL AREAS, REMOVE AND RECOMPACT AS ENGINEERED FILL THE UPPER 18 INCHES OF SOILS.

KEYWAY REQUIRED AT TOE OF ALL FILL SLOPES PER (1/C6)



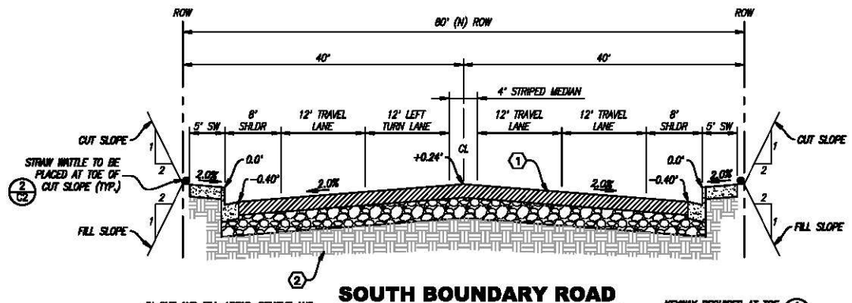
SOUTH BOUNDARY ROAD

NTS

STA. 17+33± - 22+78± (TI=8.0)

IN CUT AND FILL AREAS, REMOVE AND RECOMPACT AS ENGINEERED FILL THE UPPER 18 INCHES OF SOILS.

KEYWAY REQUIRED AT TOE OF ALL FILL SLOPES PER (1/C6)



SOUTH BOUNDARY ROAD

NTS

STA. 11+74± - 14+00 (TI=8.0)

IN CUT AND FILL AREAS, REMOVE AND RECOMPACT AS ENGINEERED FILL THE UPPER 18 INCHES OF SOILS.

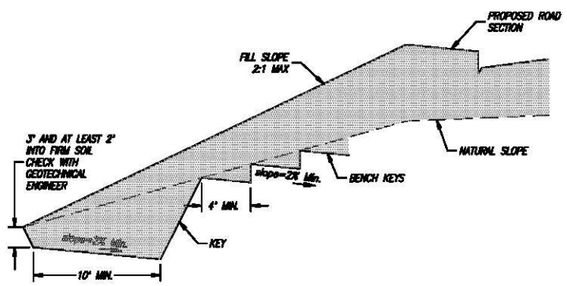
KEYWAY REQUIRED AT TOE OF ALL FILL SLOPES PER (1/C6)

RECOMMENDED FUTURE PAVEMENT SECTIONS (PER GEOTECHNICAL REPORT)

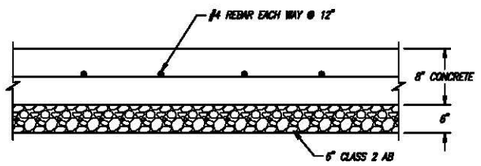
MATERIAL	TRAFFIC INDEX			
	5	6	8	10
ASPHALT CONCRETE	3.0 INCHES	3.5 INCHES	5.0 INCHES	6.0 INCHES
CLASS 2 AGGREGATE BASE, R=78 MIN.	6.0 INCHES	6.0 INCHES	6.0 INCHES	6.0 INCHES

(1) PAVEMENT SECTION:
SOUTH BOUNDARY ROAD TRAFFIC INDEX (TI)=8.0

(2) NATIVE SOIL (SUBGRADE PREPARED PER GEOTECHNICAL REPORT RECOMMENDATIONS)



(1) KEYWAY DETAIL
NTS



(2) BUS PAD APRON AT STREET CROSS GUTTER
NTS

REV.	DATE	DESCRIPTION	APPRD	DATE	DESCRIPTION

DESIGNED BY: DR
DRAWN BY: DR
CHECKED BY: RDS
DATE: JUNE, 2006
SCALE: AS NOTED

RICHARD D. SWITCH — No. 45870 — EXP. 6-30-10 — REGISTERED CIVIL ENGINEER — STATE OF CALIFORNIA

Creegan+D'Angelo
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235 Cannery Row, Suite H
Monterey, CA 93940
Tel (831) 373-1333
Fax (831) 373-0753
www.cdengineers.com

FORT ORD REUSE AUTHORITY
SOUTH BOUNDARY ROAD
TYPICAL SECTIONS
Del Rey Oaks/Monterey Monterey County California

SHEET NUMBER
C6
OF 14 SHEETS

DRAWING NO.
707011

JANUARY 14, 2009 4:37:11 p.m.
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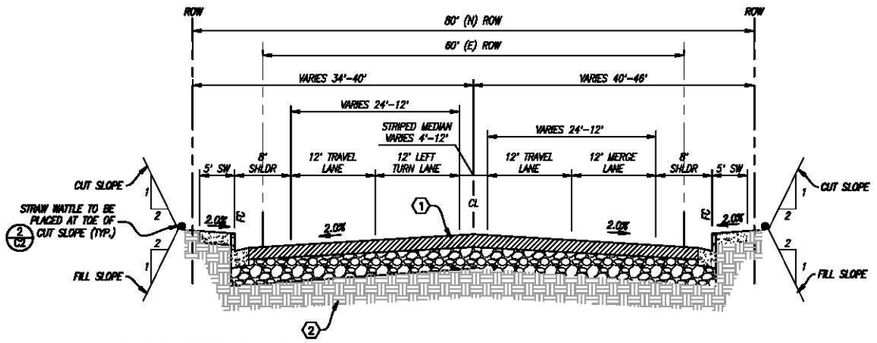
DRAWING IS:\JOB PROJECTS\707011.00\DWG\PLOT\C04-TYPICAL SECTIONS.DWG



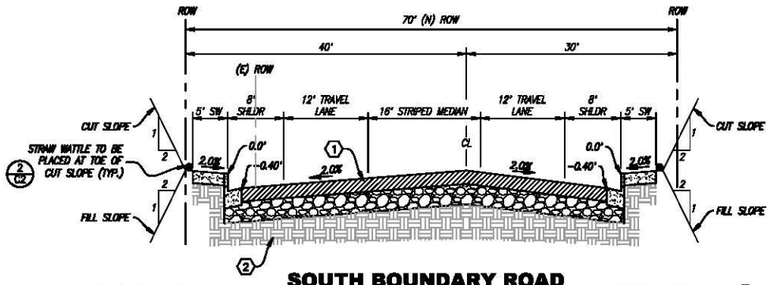
IN CUT AND FILL AREAS, REMOVE AND RECOMPACT AS ENGINEERED FILL THE UPPER 18 INCHES OF SOILS.

SOUTH BOUNDARY ROAD

NTS

STA. 23+59± - 30+72±

KEYWAY REQUIRED AT TOE OF ALL FILL SLOPES PER 1/C6



IN CUT AND FILL AREAS, REMOVE AND RECOMPACT AS ENGINEERED FILL THE UPPER 18 INCHES OF SOILS.

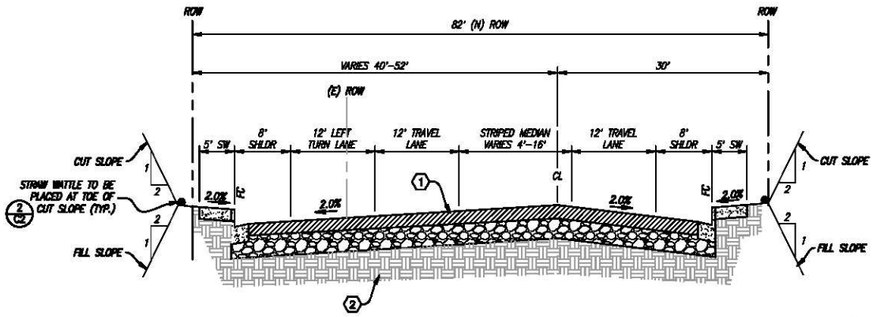
SOUTH BOUNDARY ROAD

NTS

STA. 30+72± - 47+09± (TI=8.0)

STA. 57+69± - 69+00 (TI=8.0)

KEYWAY REQUIRED AT TOE OF ALL FILL SLOPES PER 1/C6



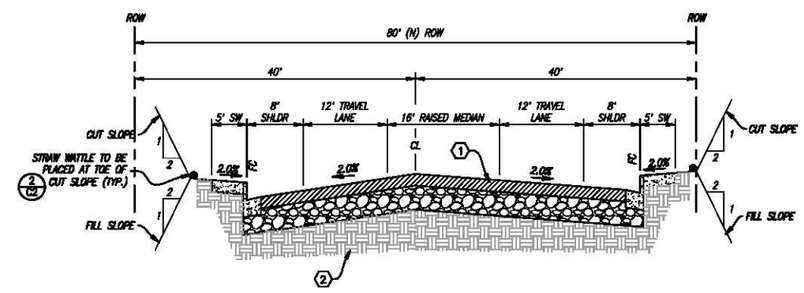
IN CUT AND FILL AREAS, REMOVE AND RECOMPACT AS ENGINEERED FILL THE UPPER 18 INCHES OF SOILS.

SOUTH BOUNDARY ROAD

NTS

STA. 53+77± - 57+69± (TI=8.0)

KEYWAY REQUIRED AT TOE OF ALL FILL SLOPES PER 1/C6



IN CUT AND FILL AREAS, REMOVE AND RECOMPACT AS ENGINEERED FILL THE UPPER 18 INCHES OF SOILS.

SOUTH BOUNDARY ROAD

NTS

STA. 69+00 - 73+97± (TI=8.0)

KEYWAY REQUIRED AT TOE OF ALL FILL SLOPES PER 1/C6

RECOMMENDED FUTURE PAVEMENT SECTIONS (PER GEOTECHNICAL REPORT)

MATERIAL	TRAFFIC INDEX			
	5	6	8	10
ASPHALT CONCRETE	3.0 INCHES	3.5 INCHES	5.0 INCHES	6.0 INCHES
CLASS 2 AGGREGATE BASE, R=78 MIN.	6.0 INCHES	6.0 INCHES	6.0 INCHES	6.0 INCHES

1. PAVEMENT SECTION:
   SOUTH BOUNDARY ROAD TRAFFIC INDEX: (TI)=8.0
2. NATIVE SOIL (SUBGRADE PREPARED PER GEOTECHNICAL REPORT RECOMMENDATIONS)

REV.	DATE	DESCRIPTION	APPR'D	SCH.	DATE	DESCRIPTION
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						

DESIGNED BY: DL
DRAWN BY: DR
CHECKED BY: RGS
DATE: JUNE 2008
SCALE: AS NOTED

REGISTERED PROFESSIONAL ENGINEER RICHARD G. SIMONITCH No. 48570 EXP. 6-30-10 CIVIL STATE OF CALIFORNIA

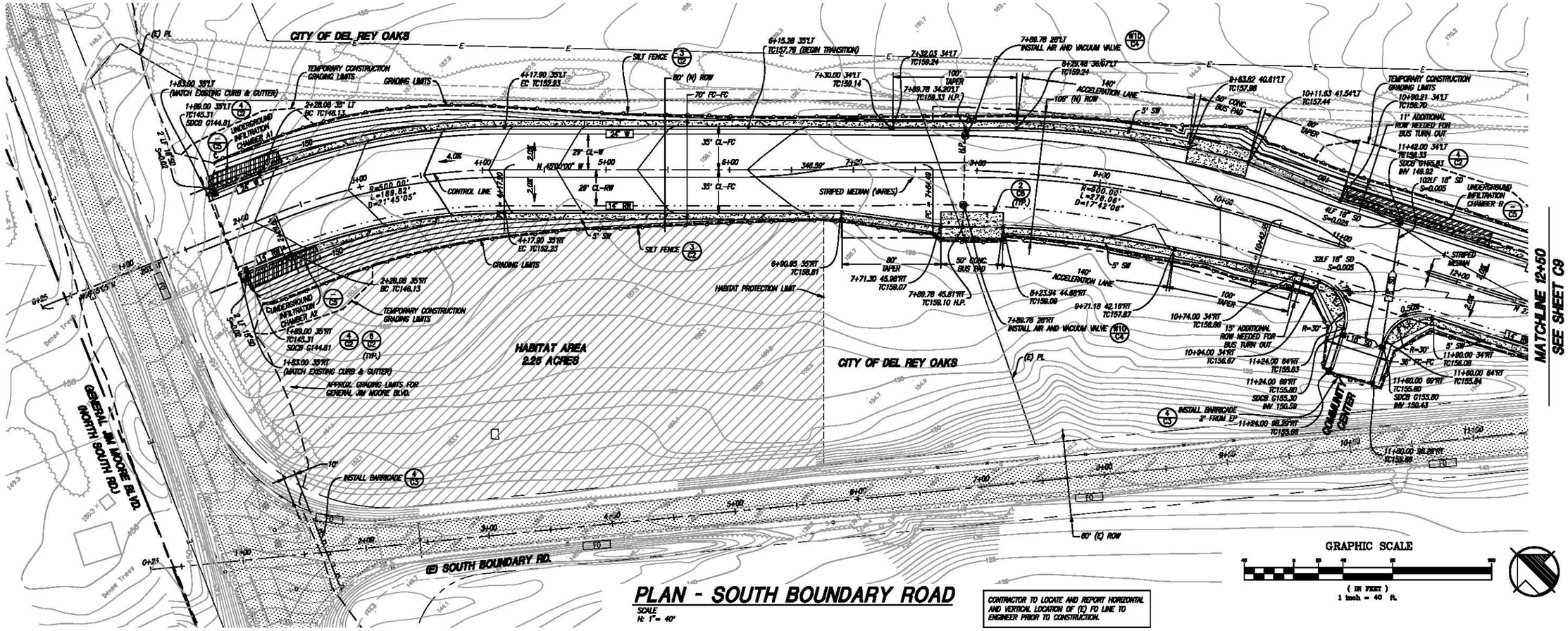
Creegan+D'Angelo INFRASTRUCTURE ENGINEERS
225 Cannery Row, Suite H
Monterey, CA 93940
Tel (831) 373-1333
Fax (831) 373-0733
www.cdengineers.com

FORT ORD REUSE AUTHORITY
SOUTH BOUNDARY ROAD
TYPICAL SECTIONS
Del Rey Oaks/Monterey Monterey County California

SHEET NUMBER
C7
OF 14 SHEETS

DRAWING NO.
707011

JANUARY 14, 2009 4:37:11 p.m.
XREFS: TX24X36-P1
DRAWING: S:\LAND PROJECTS\707011.00\DWG\P1\C04-TYPICAL SECTIONS.DWG

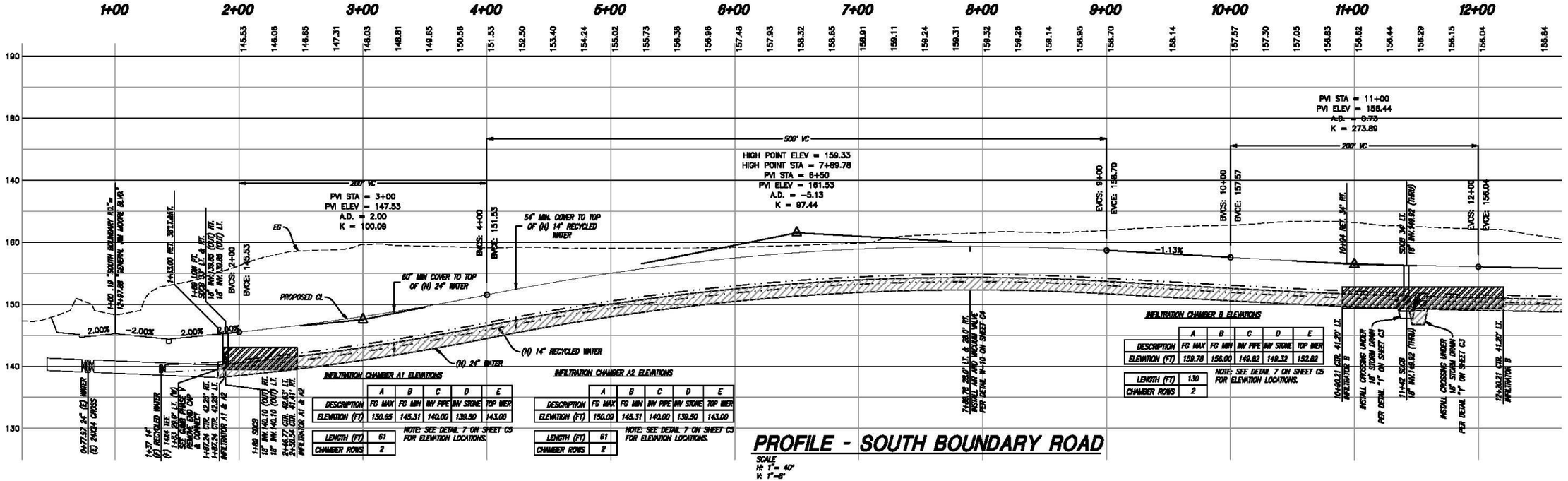


PLAN - SOUTH BOUNDARY ROAD

SCALE
H: 1"= 40'

CONTRACTOR TO LOCATE AND REPORT HORIZONTAL AND VERTICAL LOCATION OF (E) FO LINE TO ENGINEER PRIOR TO CONSTRUCTION.

GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.



INFILTRATION CHAMBER A1 ELEVATIONS

DESCRIPTION	A	B	C	D	E
	FG MAX	FG MIN	INV PIPE	INV STONE	TOP WEB
ELEVATION (FT)	150.65	145.31	140.00	139.50	143.00

LENGTH (FT)	61
CHAMBER ROWS	2

NOTE: SEE DETAIL 7 ON SHEET C5 FOR ELEVATION LOCATIONS.

INFILTRATION CHAMBER A2 ELEVATIONS

DESCRIPTION	A	B	C	D	E
	FG MAX	FG MIN	INV PIPE	INV STONE	TOP WEB
ELEVATION (FT)	150.09	145.31	140.00	139.50	143.00

LENGTH (FT)	61
CHAMBER ROWS	2

NOTE: SEE DETAIL 7 ON SHEET C5 FOR ELEVATION LOCATIONS.

INFILTRATION CHAMBER B ELEVATIONS

DESCRIPTION	A	B	C	D	E
	FG MAX	FG MIN	INV PIPE	INV STONE	TOP WEB
ELEVATION (FT)	159.78	156.00	149.82	149.32	152.82

LENGTH (FT)	130
CHAMBER ROWS	2

NOTE: SEE DETAIL 7 ON SHEET C5 FOR ELEVATION LOCATIONS.

PROFILE - SOUTH BOUNDARY ROAD

SCALE
H: 1"= 40'
V: 1"=8'

NO.	DESCRIPTION	DATE	APPRD	NO.	DESCRIPTION	DATE

DESIGNED BY: CJ
DRAWN BY: CJ
CHECKED BY: DR
RDS
DATE: JUNE, 2008
SCALE: AS NOTED

RICHARD D. SWANITCH — No. 45570 — EXP. 6-30-10 — REGISTERED CIVIL ENGINEER — STATE OF CALIFORNIA

Creegan+D'Angelo
INFRASTRUCTURE ENGINEERS
225 Cannery Row, Suite H
Monterey, CA 93940
Tel (831) 373-1333
Fax (831) 373-0753
www.cdengineers.com

FORT ORD REUSE AUTHORITY
SOUTH BOUNDARY ROAD
PLAN AND PROFILE
STA. 1+00–12+50
Del Rey Oaks/Monterey Monterey County California

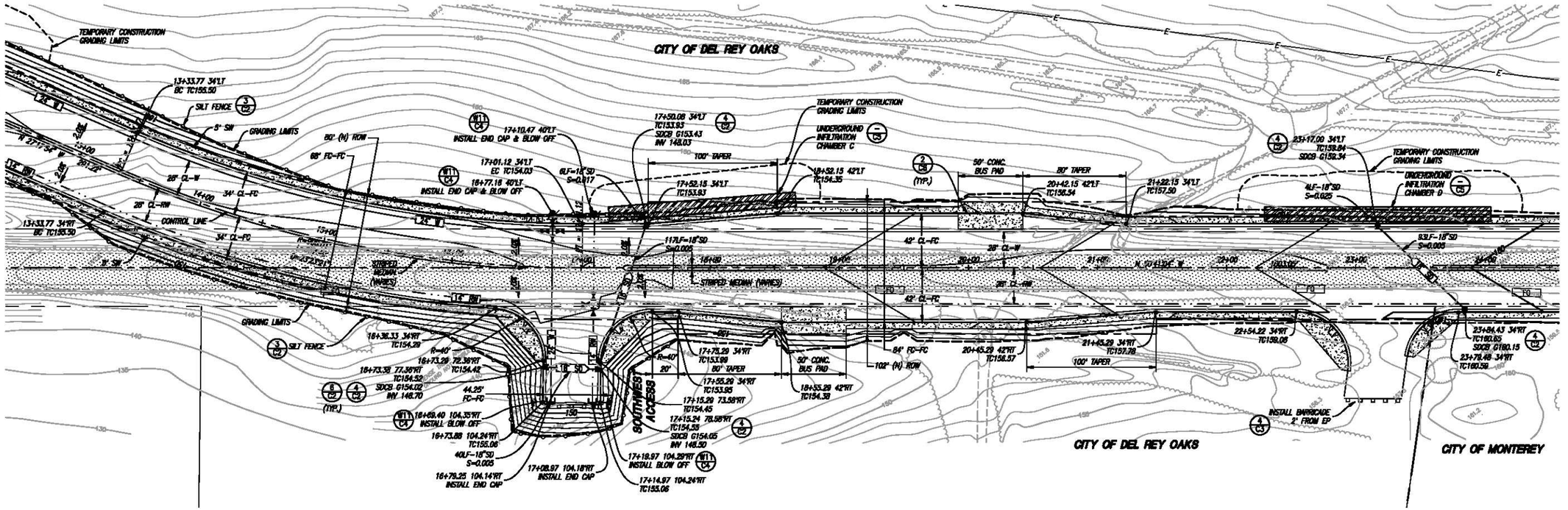
SHEET NUMBER
C8
OF 14 SHEETS

DRAWING NO.
707011

JULY 28, 2008 15:07:37 p.m.
DRAWING: S:\LAND PROJECTS\707011\LD\DWG\V1\C08-SB_BKRY-PROF.DWG

MATCHLINE 12+50
SEE SHEET C8

MATCHLINE 24+50
SEE SHEET C10

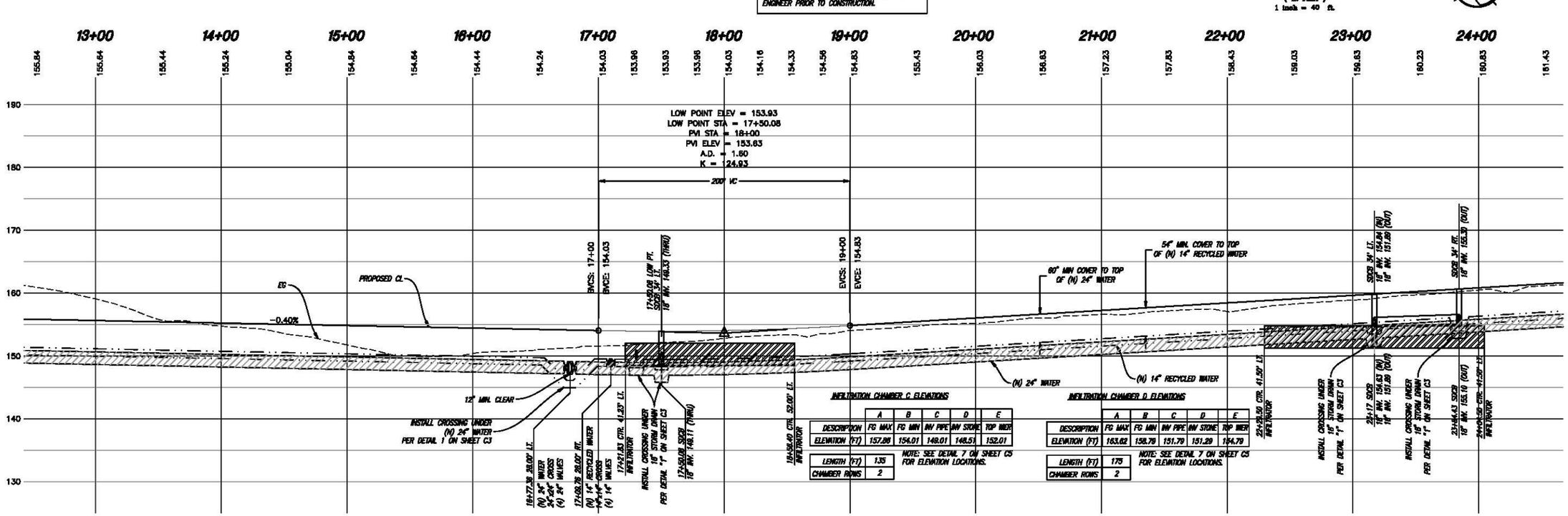


PLAN - SOUTH BOUNDARY ROAD

SCALE
H: 1"=40'
V: 1"=8'

CONTRACTOR TO LOCATE AND REPORT HORIZONTAL AND VERTICAL LOCATION OF (E) FO LINE TO ENGINEER PRIOR TO CONSTRUCTION.

GRAPHIC SCALE
0 20 40 80 120
(IN FEET)
1 inch = 40 ft.



INFILTRATION CHAMBER C ELEVATIONS

DESCRIPTION	A	B	C	D	E
	FG MAX	FG MIN	INV PIPE	INV STONE	TOP WEIR
ELEVATION (FT)	157.88	154.01	148.01	148.51	152.01

LENGTH (FT)	135
CHAMBER ROWS	2

NOTE: SEE DETAIL 7 ON SHEET C5 FOR ELEVATION LOCATIONS.

INFILTRATION CHAMBER D ELEVATIONS

DESCRIPTION	A	B	C	D	E
	FG MAX	FG MIN	INV PIPE	INV STONE	TOP WEIR
ELEVATION (FT)	163.62	158.78	151.79	151.29	154.79

LENGTH (FT)	175
CHAMBER ROWS	2

NOTE: SEE DETAIL 7 ON SHEET C5 FOR ELEVATION LOCATIONS.

PROFILE - SOUTH BOUNDARY ROAD

SCALE
H: 1"=40'
V: 1"=8'

NO.	DESCRIPTION	DATE	APPRD	NO.	DESCRIPTION	DATE

DESIGNED BY: CTO
DRAWN BY: DR
CHECKED BY: RDS
DATE: JUNE, 2006
SCALE: AS NOTED

REGISTERED CIVIL ENGINEER — RICHARD D. SIMONITCH — No. 45570 — EXP. 6-30-10 — STATE OF CALIFORNIA

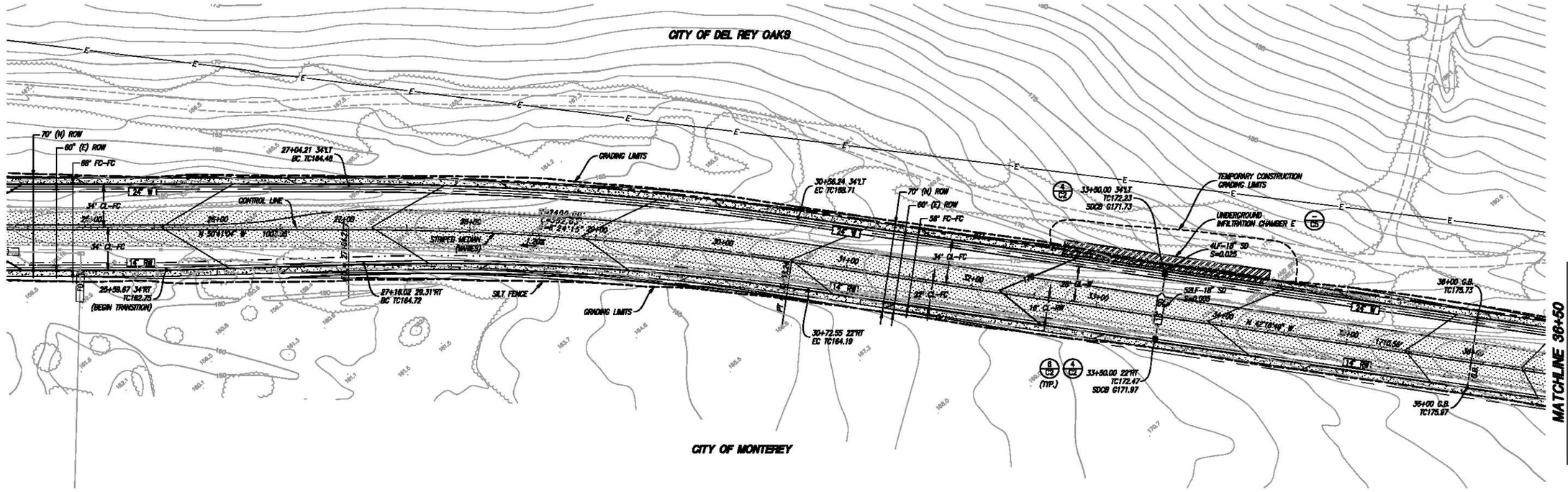
Creegan+D'Angelo INFRASTRUCTURE ENGINEERS
225 Canner Row, Suite H
Monterey, CA 93940
Tel (831) 373-1333
Fax (831) 373-0733
www.cdengineers.com

FORT ORD REUSE AUTHORITY
SOUTH BOUNDARY ROAD
PLAN AND PROFILE
STA. 12+50–24+50
Del Rey Oaks/Monterey County California

SHEET NUMBER
C9
OF 14 SHEETS

DRAWING NO.
707011

DRAWING IS LAND PROJECTS\707011\DGN\707011-SB_BDRY-PROFILE.DGN
XREFs: 707011-ALTA_TOPO.DGN 707011-GRADING PLAN 707011-XTOPO 707011-MAPS 707011-MASTER 707011-SEDIM
JULY 06, 2009 12:15:58 p.m.



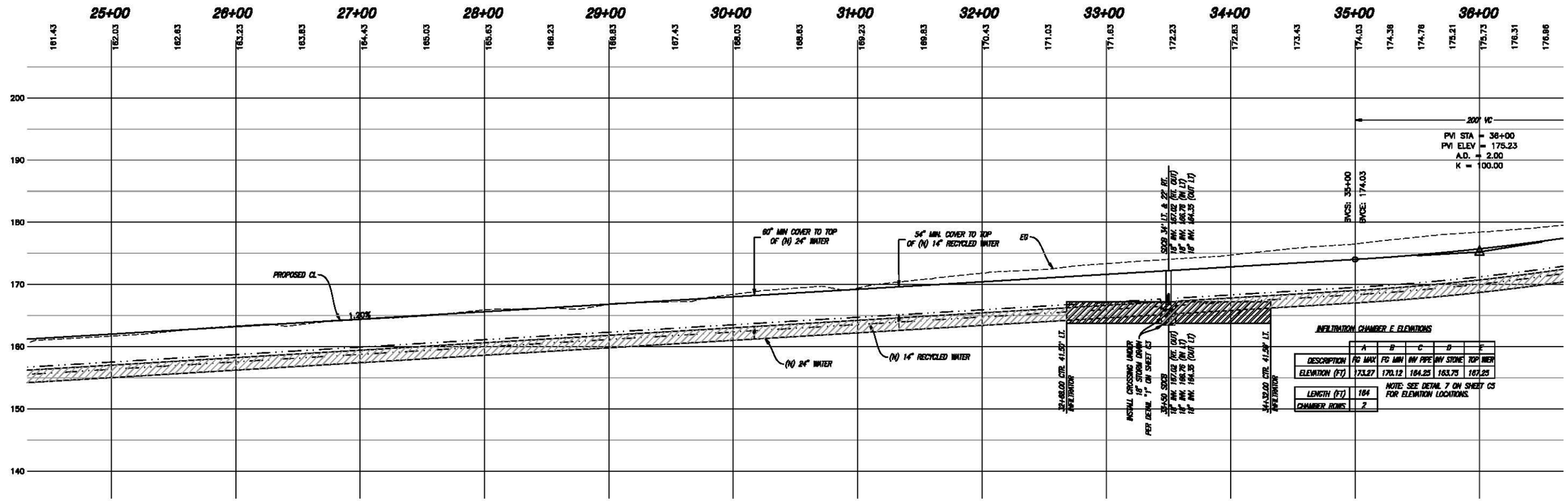
PLAN - SOUTH BOUNDARY ROAD

SCALE
H: 1"=40'

CONTRACTOR TO LOCATE AND REPORT HORIZONTAL AND VERTICAL LOCATION OF (E) FO LINE TO ENGINEER PRIOR TO CONSTRUCTION.

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.



INFILTRATION CHAMBER E ELEVATIONS

DESCRIPTION	A FG MAX	B FG MIN	C INV PIPE	D INV STONE	E TOP INSERT
ELEVATION (FT)	173.27	170.12	164.25	163.75	167.25

LENGTH (FT)	164
CHAMBER ROWS	2

NOTE: SEE DETAIL 7 ON SHEET C5 FOR ELEVATION LOCATIONS.

PROFILE - SOUTH BOUNDARY ROAD

SCALE
H: 1"=40'
V: 1"=8'

NO.	DESCRIPTION	APPRD	DATE

DESIGNED BY: CTD
DRAWN BY: DR
CHECKED BY: RDS
DATE: JUNE, 2008
SCALE: AS NOTED

RICHARD D. SIMONITCH — No. 45570 — EXP. 6-30-10 — REGISTERED CIVIL ENGINEER — STATE OF CALIFORNIA

Creegan+D'Angelo
INFRASTRUCTURE ENGINEERS
225 Canner Row, Suite H
Monterey, CA 93940
Tel (831) 373-1333
Fax (831) 373-0733
www.cdengineers.com

FORT ORD REUSE AUTHORITY
SOUTH BOUNDARY ROAD
PLAN AND PROFILE
STA. 24+50–36+50
Del Rey Oaks/Monterey Monterey County California

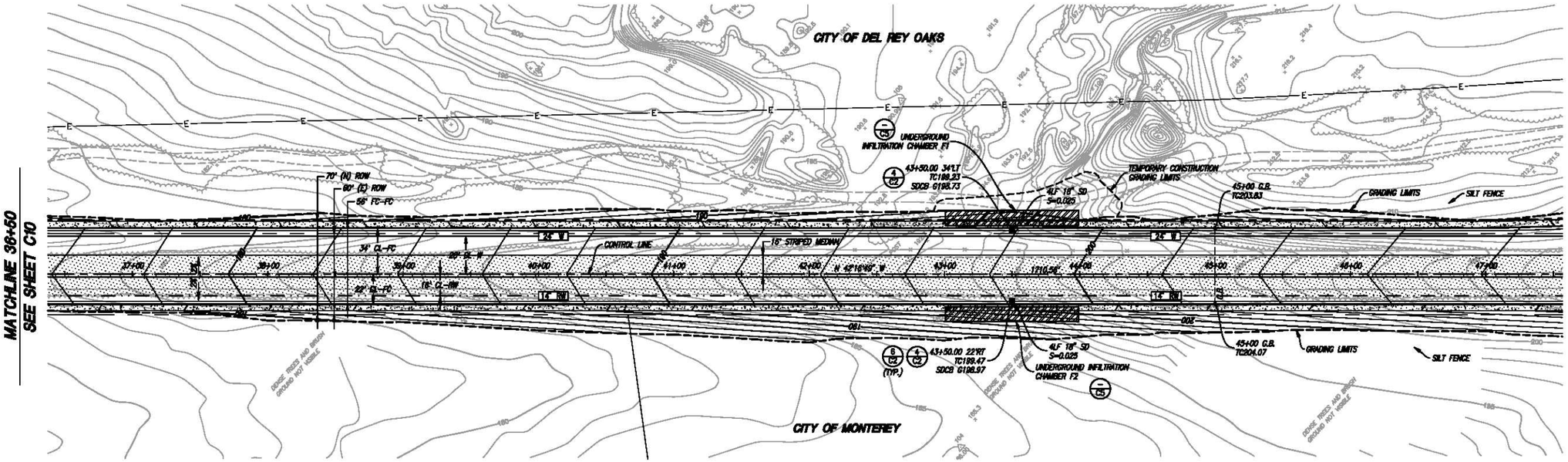
SHEET NUMBER
C10
OF 14 SHEETS

DRAWING NO.
707011

JULY 31, 2008 2:23:55 p.m.

XREFs: 707011-ALTA, TOPO50-P1 707011-GRADING PLAN 707011-XSUPB 707011-YTOPO 707011-MASTER 707011-SESSION

DRAWING S:\LAND PROJECTS\707011\DWG\PLYC10-SB, BNDRY-PROFILE.DWG



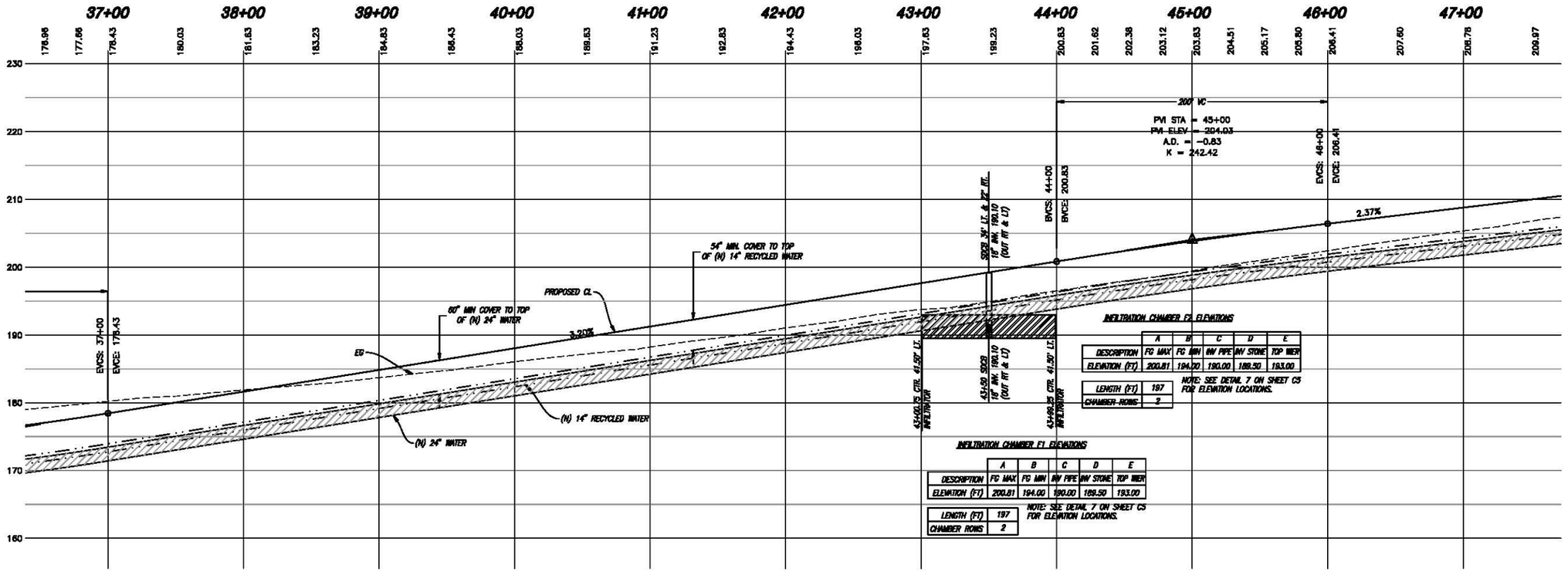
PLAN - SOUTH BOUNDARY ROAD

SCALE
H: 1"=40'

CONTRACTOR TO LOCATE AND REPORT HORIZONTAL AND VERTICAL LOCATION OF (E) FO LINE TO ENGINEER PRIOR TO CONSTRUCTION.

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.



	A	B	C	D	E
DESCRIPTION	FG MAX	FG MIN	INV PIPE	INV STONE	TOP WEIR
ELEVATION (FT)	200.81	194.00	190.00	189.50	193.00

LENGTH (FT)	197
CHAMBER ROWS	2

PROFILE - SOUTH BOUNDARY ROAD

SCALE
H: 1"=40'
V: 1"=8'

Creegan+D'Angelo
INFRASTRUCTURE ENGINEERS
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Monterey, CA 93940
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www.cdengineers.com

FORT ORD REUSE AUTHORITY
SOUTH BOUNDARY ROAD
PLAN AND PROFILE
STA. 36+50-47+50
Del Rey Oaks/Monterey Monterey County California

SHEET NUMBER
C11
OF 14 SHEETS

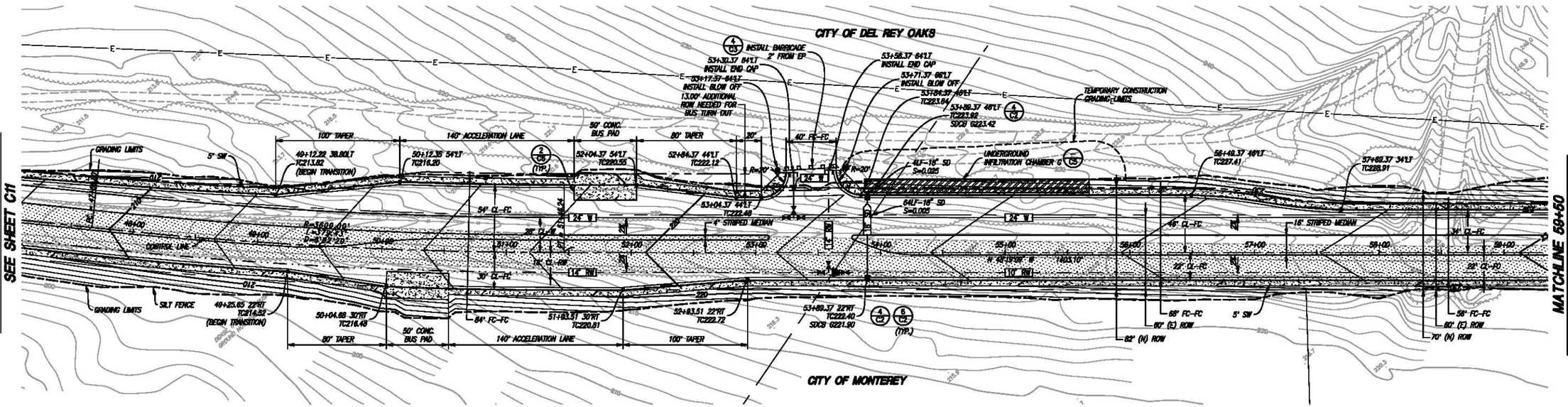
DRAWING NO.
707011

DESIGNED BY: C.D.
DRAWN BY: DR
CHECKED BY: RDS
DATE: JUNE, 2008
SCALE: AS NOTED

REGISTERED CIVIL ENGINEER RICHARD D. SWANITCH No. 45570 EXP: 6-30-10 STATE OF CALIFORNIA

REV.	DATE	DESCRIPTION	APPRD	DATE	DESCRIPTION

DRAWING: S:\LAND PROJECTS\707011.00\CIVIL\C11-SD_BNDRY-PROF.DWG
XREFS: 707011-XUTIL TOXREF-PI 707011-GRADING PRLM 707011-XGAPE 707011-XTOPO 707011-MASTER 707011-XSBDR
JULY 31, 2008 2:57:39 p.m.



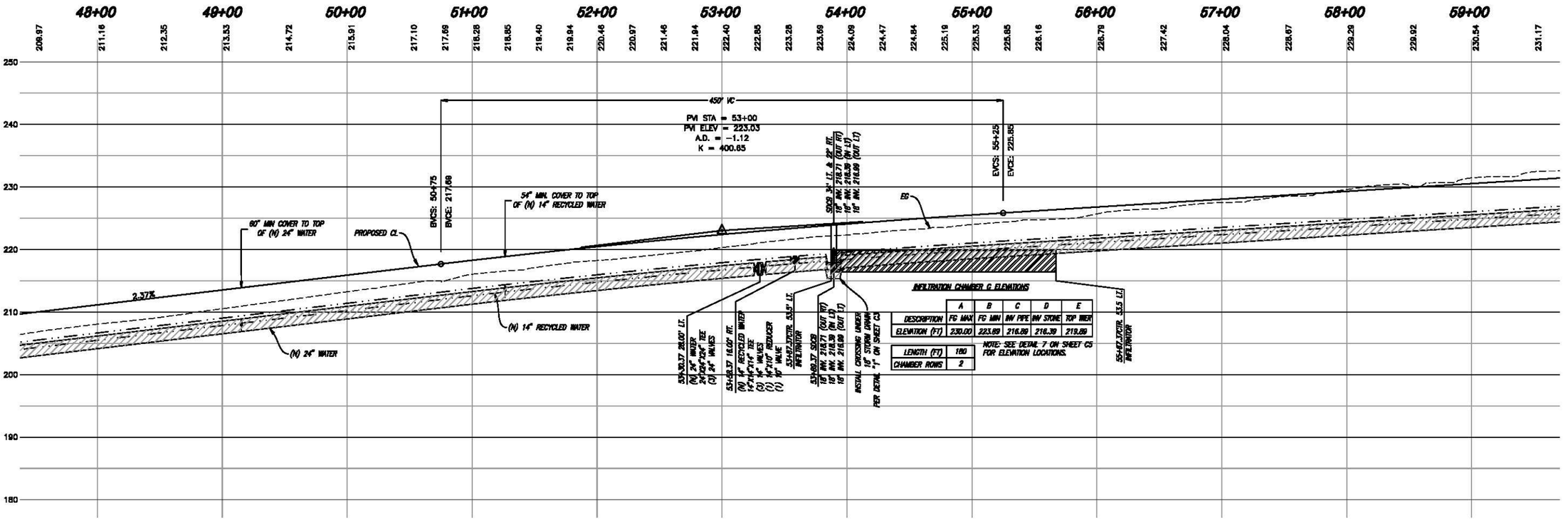
PLAN - SOUTH BOUNDARY ROAD

SCALE
H: 1"=40'

CONTRACTOR TO LOCATE AND REPORT HORIZONTAL AND VERTICAL LOCATION OF (E) FO LINE TO ENGINEER PRIOR TO CONSTRUCTION.

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.



INFILTRATION CHAMBER G ELEVATIONS

DESCRIPTION	A FG MAX	B FG MIN	C INV PIPE	D INV STONE	E TOP WEB
ELEVATION (FT)	230.00	223.89	216.89	216.39	219.89

LENGTH (FT)	160
CHAMBER ROWS	2

NOTE: SEE DETAIL 7 ON SHEET C5 FOR ELEVATION LOCATIONS.

PROFILE - SOUTH BOUNDARY ROAD

SCALE
H: 1"=40'
V: 1"=8'

DESIGNED BY: C.D. SMONTICH
DRAWN BY: DR
CHECKED BY: RDS
DATE: JUNE, 2008
SCALE: AS NOTED

REGISTERED CIVIL ENGINEER RICHARD D. SMONTICH No. 45570 EXP. 6-30-10 STATE OF CALIFORNIA

NO.	DESCRIPTION	DATE	APPRD	NO.	DESCRIPTION	DATE

Creegan+D'Angelo
INFRASTRUCTURE ENGINEERS
225 Canner Row, Suite H
Monterey, CA 93940
Tel (831) 373-1333
Fax (831) 373-0733
www.cdengineers.com

FORT ORD REUSE AUTHORITY
SOUTH BOUNDARY ROAD
PLAN AND PROFILE
STA. 47+50–59+50
Del Rey Oaks/Monterey Monterey County California

SHEET NUMBER
C12
OF 14 SHEETS

DRAWING NO.
707011

DRAWING: G:\LAND PROJECTS\707011.00\ENGV\V1\C11 - SO. BNDRY - PROFILE.DWG
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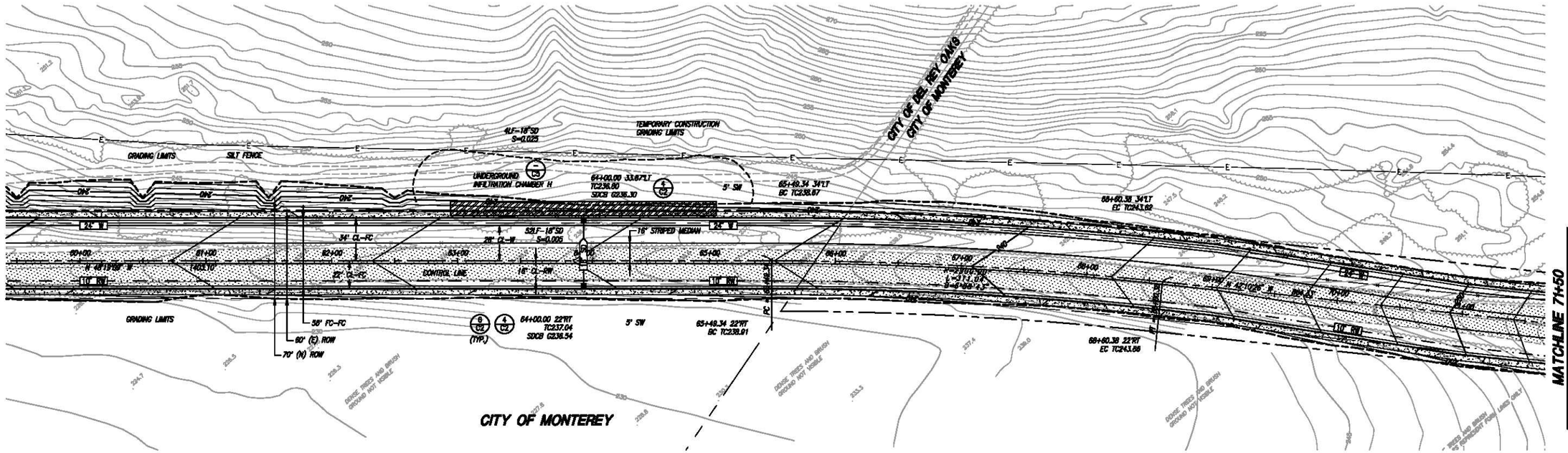
JUNE 19, 2008 11:38:06 a.m.

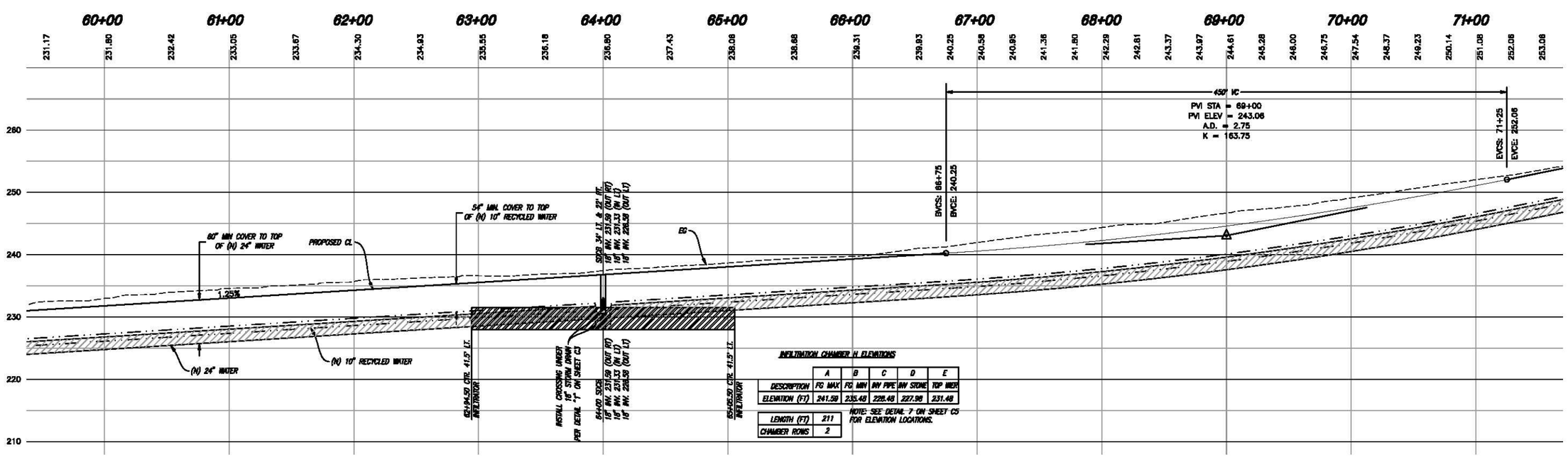


PLAN - SOUTH BOUNDARY ROAD

SCALE
H: 1"=40'
V:

CONTRACTOR TO LOCATE AND REPORT HORIZONTAL AND VERTICAL LOCATION OF (E) FO LINE TO ENGINEER PRIOR TO CONSTRUCTION.

GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.



INFILTRATION CHAMBER H ELEVATIONS

	A	B	C	D	E
DESCRIPTION	FG MAX	FG MIN	INV PIPE	INV STONE	TOP WEIR
ELEVATION (FT)	241.59	235.48	228.48	227.98	231.48

LENGTH (FT)	211
CHAMBER ROWS	2

NOTE: SEE DETAIL 7 ON SHEET C5 FOR ELEVATION LOCATIONS.

PLAN - SOUTH BOUNDARY ROAD

SCALE
H: 1"=40'
V: 1"=8'

NO.	DESCRIPTION	DATE	APPRD	BCH	DATE	DESCRIPTION

DESIGNED BY: CVD
DRAWN BY: DR
CHECKED BY: RDS
DATE: JUNE 2006
SCALE: AS NOTED

REGISTERED CIVIL ENGINEER — RICHARD D. SIMONITCH — No. 45570 — EXP. 6-30-10 — STATE OF CALIFORNIA

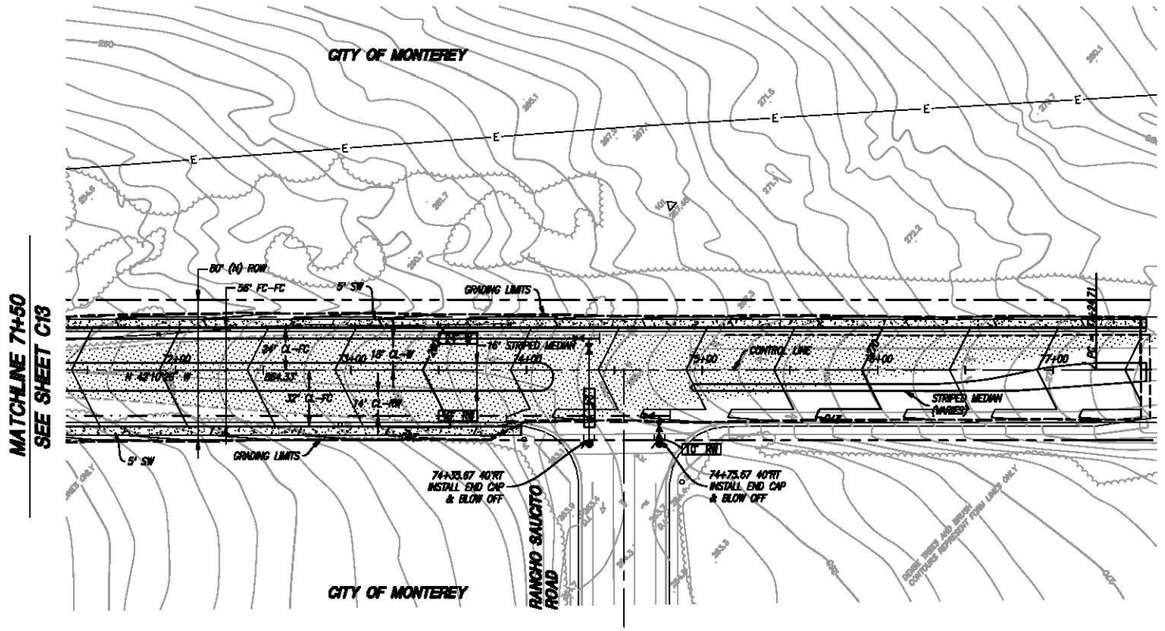
Creegan+D'Angelo
INFRASTRUCTURE ENGINEERS
235 Cannery Row, Suite H
Monterey, CA 93940
Tel (831) 373-1333
Fax (831) 373-0753
www.cdengineers.com

FORT ORD REUSE AUTHORITY
SOUTH BOUNDARY ROAD
PLAN AND PROFILE
STA. 59+50–71+50
Del Rey Oaks/Monterey Monterey County California

SHEET NUMBER
C13
OF 14 SHEETS

DRAWING NO.
707011

XREFS: 707011-XSTL 707011-GRADING PLAN 707011-XUPS 707011-XTOPO 707011-MASTER TOPMOD
DRAWING: S:\LAND PROJECTS\707011\GV\PVI\C13-SBS_BNDRY-PROFILE
JULY 31, 2009 8:31:55 p.m.



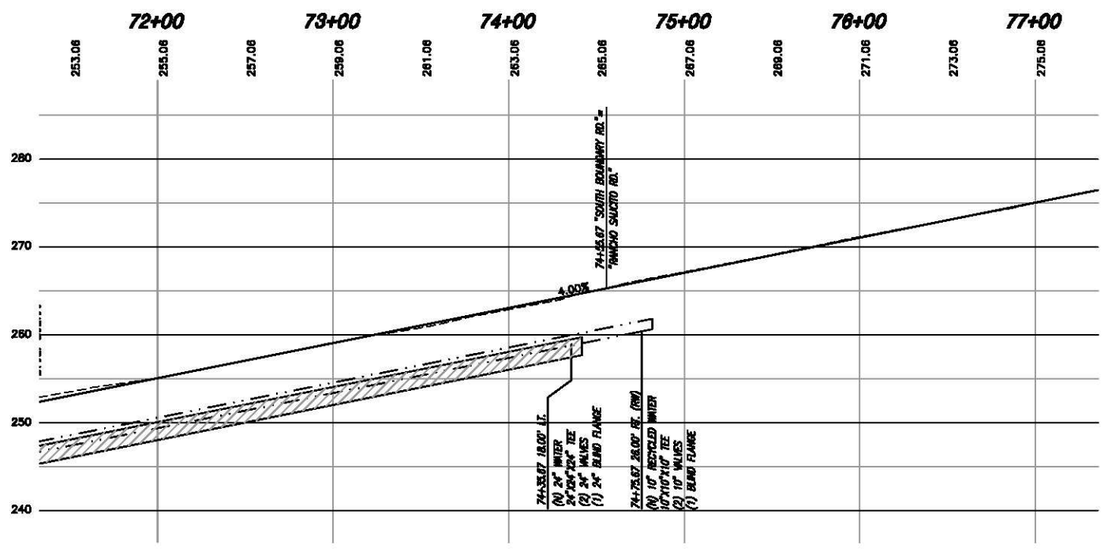
PLAN - SOUTH BOUNDARY ROAD

SCALE
H: 1"=40'

CONTRACTOR TO LOCATE AND REPORT HORIZONTAL AND VERTICAL LOCATION OF (E) FD LINE TO ENGINEER PRIOR TO CONSTRUCTION.

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.



PLAN - SOUTH BOUNDARY ROAD

SCALE
H: 1"=40'
V: 1"=8'

REV.	DATE	DESCRIPTION	APPR'D	SCH.	DATE	DESCRIPTION
1				1		
2				2		
3				3		
4				4		
5				5		
6				6		
7				7		
8				8		
9				9		
10				10		
11				11		
12				12		
13				13		
14				14		

DESIGNED BY: C+D
DRAWN BY: DR
CHECKED BY: RDS
DATE: JUNE 2009
SCALE: AS NOTED

REGISTERED PROFESSIONAL ENGINEER RICHARD G. SIMONITCH No. 46570 EXP. 6-30-10 CIVIL STATE OF CALIFORNIA

Creegan+D'Angelo INFRASTRUCTURE ENGINEERS
225 Cannery Row, Suite H
Monterey, CA 93940
Tel (831) 373-1333
Fax (831) 373-0733
www.cdengineers.com

FORT ORD REUSE AUTHORITY
SOUTH BOUNDARY ROAD
PLAN AND PROFILE
STA. 71+50 TO END
Del Rey Oaks/Monterey Monterey County California

SHEET NUMBER
C14
OF 14 SHEETS

DRAWING NO.
707011

Appendix C

Air Quality Modeling (PMC)

AMBAG
ASSOCIATION OF MONTEREY BAY AREA GOVERNMENTS

Pamela Lapham
Pacific Municipal Consultants
585 Cannery Row, Suite 304
Monterey, CA 93940

October 23rd, 2009

Dear Ms. Pamela Lapham:

This letter is in response to your October 20th, 2009 request for a reconsideration of the inconsistent determination issued to PMC from AMBAG on August 31st, 2009. The project in question is the Gigling Road and South Boundary Road Improvement Project.

In your letter, you clarified how this project applies to the following existing transportation projects in the 2005 Project List and TAMC's Approved Draft 2010 Project List:

- *MYC095 South Boundary Bike Lanes (2005 Project List); MYC090 South Boundary Road Bikeway (2010 Draft)*
- *FRA027 South Boundary Road Improvements (2005 Project List);DRO003 South Boundary Road Upgrade (2010 Draft Project List)*
- *FRA018 Gigling Road (2005 Project List); SEA023 Gigling Roadway Improvements, SEA010 Gigling Roadway Improvements (2010 Draft Project List)*

Based on this clarification, the Gigling Road and South Boundary Road improvement project is indeed deemed CONSISTENT with the Air Quality Management Plan.

Thank you for following up with a thorough response; the table you provided was very helpful in reconsidering the consistency determination.

Sincerely,

Steph A. Nelson
Planner, Association of Monterey Bay Area Governments

cc: Jean Getchell, MBUAPCD

Road Construction Emissions Model, Version 6.3.2

Emission Estimates for -> Gigling Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	4.7	20.5	36.1	23.6	1.6	22.0	6.1	1.5	4.6	3,447.6
Grading/Excavation	7.3	44.4	54.4	24.6	2.6	22.0	7.0	2.4	4.6	5,815.5
Drainage/Utilities/Sub-Grade	4.7	19.0	33.2	23.8	1.8	22.0	6.3	1.7	4.6	3,218.3
Paving	3.3	11.3	15.7	1.4	1.4	-	1.3	1.3	-	1,439.5
Maximum (pounds/day)	7.3	44.4	54.4	24.6	2.6	22.0	7.0	2.4	4.6	5,815.5
Total (tons/construction project)	0.5	2.5	3.5	1.8	0.2	1.6	0.5	0.2	0.3	357.5

Notes:

Project Start Year ->	2010
Project Length (months) ->	8
Total Project Area (acres) ->	16
Maximum Area Disturbed/Day (acres) ->	2
Total Soil Imported/Exported (yd^3/day)->	307

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> Gigling Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	2.1	9.3	16.4	10.7	0.7	10.0	2.8	0.7	2.1	1,567.1
Grading/Excavation	3.3	20.2	24.7	11.2	1.2	10.0	3.2	1.1	2.1	2,643.4
Drainage/Utilities/Sub-Grade	2.2	8.6	15.1	10.8	0.8	10.0	2.8	0.8	2.1	1,462.9
Paving	1.5	5.1	7.1	0.6	0.6	-	0.6	0.6	-	654.3
Maximum (kilograms/day)	3.3	20.2	24.7	11.2	1.2	10.0	3.2	1.1	2.1	2,643.4
Total (megagrams/construction project)	0.4	2.3	3.2	1.7	0.2	1.5	0.5	0.2	0.3	324.3

Notes:

Project Start Year ->	2010
Project Length (months) ->	8
Total Project Area (hectares) ->	6
Maximum Area Disturbed/Day (hectares) ->	1
Total Soil Imported/Exported ($meters^3$/day)->	235

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

Road Construction Emissions Model, Version 6.3.2

Emission Estimates for -> Both Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	6.2	25.5	39.8	24.0	2.0	22.0	6.4	1.8	4.6	3,942.9
Grading/Excavation	10.4	67.5	70.8	25.5	3.5	22.0	7.7	3.1	4.6	7,886.6
Drainage/Utilities/Sub-Grade	6.3	24.0	36.9	24.2	2.2	22.0	6.6	2.0	4.6	3,713.6
Paving	4.8	16.2	19.4	1.8	1.8	-	1.6	1.6	-	1,934.8
Maximum (pounds/day)	10.4	67.5	70.8	25.5	3.5	22.0	7.7	3.1	4.6	7,886.6
Total (tons/construction project)	0.7	3.6	4.3	1.9	0.2	1.6	0.6	0.2	0.3	456.5

Notes:

Project Start Year ->	2010
Project Length (months) ->	8
Total Project Area (acres) ->	35
Maximum Area Disturbed/Day (acres) ->	2
Total Soil Imported/Exported (yd^3/day)->	562

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> Both Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	2.8	11.6	18.1	10.9	0.9	10.0	2.9	0.8	2.1	1,792.2
Grading/Excavation	4.7	30.7	32.2	11.6	1.6	10.0	3.5	1.4	2.1	3,584.8
Drainage/Utilities/Sub-Grade	2.9	10.9	16.8	11.0	1.0	10.0	3.0	0.9	2.1	1,688.0
Paving	2.2	7.4	8.8	0.8	0.8	-	0.7	0.7	-	879.5
Maximum (kilograms/day)	4.7	30.7	32.2	11.6	1.6	10.0	3.5	1.4	2.1	3,584.8
Total (megagrams/construction project)	0.6	3.2	3.9	1.7	0.2	1.5	0.5	0.2	0.3	414.1

Notes:

Project Start Year ->	2010
Project Length (months) ->	8
Total Project Area (hectares) ->	14
Maximum Area Disturbed/Day (hectares) ->	1
Total Soil Imported/Exported ($meters^3$/day)->	430

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

Road Construction Emissions Model, Version 6.3.2

Emission Estimates for -> South Boundary Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	5.2	22.3	37.4	23.8	1.8	22.0	6.2	1.6	4.6	3,626.4
Grading/Excavation	7.5	42.6	53.2	24.7	2.7	22.0	7.0	2.4	4.6	5,673.8
Drainage/Utilities/Sub-Grade	5.3	20.8	34.5	24.0	2.0	22.0	6.4	1.8	4.6	3,397.2
Paving	3.8	13.1	17.0	1.5	1.5	-	1.4	1.4	-	1,618.4
Maximum (pounds/day)	7.5	42.6	53.2	24.7	2.7	22.0	7.0	2.4	4.6	5,673.8
Total (tons/construction project)	0.5	2.5	3.5	1.8	0.2	1.6	0.5	0.2	0.3	361.9

Notes:

Project Start Year ->	2010
Project Length (months) ->	8
Total Project Area (acres) ->	20
Maximum Area Disturbed/Day (acres) ->	2
Total Soil Imported/Exported (yd^3/day)->	255

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> South Boundary Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	2.4	10.1	17.0	10.8	0.8	10.0	2.8	0.7	2.1	1,648.4
Grading/Excavation	3.4	19.3	24.2	11.2	1.2	10.0	3.2	1.1	2.1	2,579.0
Drainage/Utilities/Sub-Grade	2.4	9.4	15.7	10.9	0.9	10.0	2.9	0.8	2.1	1,544.2
Paving	1.7	5.9	7.7	0.7	0.7	-	0.6	0.6	-	735.6
Maximum (kilograms/day)	3.4	19.3	24.2	11.2	1.2	10.0	3.2	1.1	2.1	2,579.0
Total (megagrams/construction project)	0.5	2.3	3.2	1.7	0.2	1.5	0.5	0.2	0.3	328.3

Notes:

Project Start Year ->	2010
Project Length (months) ->	8
Total Project Area (hectares) ->	8
Maximum Area Disturbed/Day (hectares) ->	1
Total Soil Imported/Exported ($meters^3$/day)->	195

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

Road Construction Emissions Model, Version 6.3.2

Emission Estimates for -> Gigling Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	4.7	20.5	36.1	51.6	1.6	50.0	11.9	1.5	10.4	3,447.6
Grading/Excavation	7.4	45.0	55.3	52.7	2.7	50.0	12.9	2.5	10.4	5,896.1
Drainage/Utilities/Sub-Grade	4.7	19.0	33.2	51.8	1.8	50.0	12.1	1.7	10.4	3,218.3
Paving	3.9	13.4	19.4	1.7	1.7	-	1.6	1.6	-	1,786.4
Maximum (pounds/day)	7.4	45.0	55.3	52.7	2.7	50.0	12.9	2.5	10.4	5,896.1
Total (tons/construction project)	0.5	2.5	3.6	3.9	0.2	3.7	1.0	0.2	0.8	364.9

Notes:

Project Start Year ->	2010
Project Length (months) ->	8
Total Project Area (acres) ->	16
Maximum Area Disturbed/Day (acres) ->	5
Total Soil Imported/Exported (yd^3/day)->	307

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> Gigling Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	2.1	9.3	16.4	23.5	0.7	22.7	5.4	0.7	4.7	1,567.1
Grading/Excavation	3.4	20.4	25.1	24.0	1.2	22.7	5.8	1.1	4.7	2,680.1
Drainage/Utilities/Sub-Grade	2.2	8.6	15.1	23.6	0.8	22.7	5.5	0.8	4.7	1,462.9
Paving	1.8	6.1	8.8	0.8	0.8	-	0.7	0.7	-	812.0
Maximum (kilograms/day)	3.4	20.4	25.1	24.0	1.2	22.7	5.8	1.1	4.7	2,680.1
Total (megagrams/construction project)	0.5	2.3	3.2	3.6	0.2	3.4	0.9	0.2	0.7	331.0

Notes:

Project Start Year ->	2010
Project Length (months) ->	8
Total Project Area (hectares) ->	6
Maximum Area Disturbed/Day (hectares) ->	2
Total Soil Imported/Exported ($meters^3$/day)->	235

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

Road Construction Emissions Model, Version 6.3.2

Emission Estimates for -> both Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	6.2	25.5	39.8	52.0	2.0	50.0	12.2	1.8	10.4	3,942.9
Grading/Excavation	10.6	68.1	71.6	53.6	3.6	50.0	13.6	3.2	10.4	7,967.2
Drainage/Utilities/Sub-Grade	6.3	24.0	36.9	52.2	2.2	50.0	12.4	2.0	10.4	3,713.6
Paving	5.5	18.4	23.1	2.1	2.1	-	1.9	1.9	-	2,281.7
Maximum (pounds/day)	10.6	68.1	71.6	53.6	3.6	50.0	13.6	3.2	10.4	7,967.2
Total (tons/construction project)	0.7	3.6	4.3	4.0	0.2	3.7	1.0	0.2	0.8	464.0

Notes:

Project Start Year ->	2010
Project Length (months) ->	8
Total Project Area (acres) ->	35
Maximum Area Disturbed/Day (acres) ->	5
Total Soil Imported/Exported (yd^3/day)->	562

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> both Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	2.8	11.6	18.1	23.6	0.9	22.7	5.6	0.8	4.7	1,792.2
Grading/Excavation	4.8	30.9	32.6	24.3	1.6	22.7	6.2	1.5	4.7	3,621.4
Drainage/Utilities/Sub-Grade	2.9	10.9	16.8	23.7	1.0	22.7	5.6	0.9	4.7	1,688.0
Paving	2.5	8.3	10.5	1.0	1.0	-	0.9	0.9	-	1,037.1
Maximum (kilograms/day)	4.8	30.9	32.6	24.3	1.6	22.7	6.2	1.5	4.7	3,621.4
Total (megagrams/construction project)	0.6	3.3	3.9	3.6	0.2	3.4	0.9	0.2	0.7	420.8

Notes:

Project Start Year ->	2010
Project Length (months) ->	8
Total Project Area (hectares) ->	14
Maximum Area Disturbed/Day (hectares) ->	2
Total Soil Imported/Exported ($meters^3$/day)->	430

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

Road Construction Emissions Model, Version 6.3.2

Emission Estimates for -> South Boundary Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	5.2	22.3	37.4	51.8	1.8	50.0	12.0	1.6	10.4	3,626.4
Grading/Excavation	7.6	43.1	54.0	52.8	2.8	50.0	12.9	2.5	10.4	5,754.4
Drainage/Utilities/Sub-Grade	5.3	20.8	34.5	52.0	2.0	50.0	12.2	1.8	10.4	3,397.2
Paving	4.5	15.2	20.8	1.9	1.9	-	1.7	1.7	-	1,965.2
Maximum (pounds/day)	7.6	43.1	54.0	52.8	2.8	50.0	12.9	2.5	10.4	5,754.4
Total (tons/construction project)	0.5	2.6	3.6	3.9	0.2	3.7	1.0	0.2	0.8	369.4

Notes:

Project Start Year ->	2010
Project Length (months) ->	8
Total Project Area (acres) ->	20
Maximum Area Disturbed/Day (acres) ->	5
Total Soil Imported/Exported (yd^3/day)->	255

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> South Boundary Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	2.4	10.1	17.0	23.5	0.8	22.7	5.5	0.7	4.7	1,648.4
Grading/Excavation	3.5	19.6	24.6	24.0	1.3	22.7	5.9	1.1	4.7	2,615.6
Drainage/Utilities/Sub-Grade	2.4	9.4	15.7	23.6	0.9	22.7	5.5	0.8	4.7	1,544.2
Paving	2.0	6.9	9.4	0.8	0.8	-	0.8	0.8	-	893.3
Maximum (kilograms/day)	3.5	19.6	24.6	24.0	1.3	22.7	5.9	1.1	4.7	2,615.6
Total (megagrams/construction project)	0.5	2.3	3.3	3.6	0.2	3.4	0.9	0.2	0.7	335.0

Notes:

Project Start Year ->	2010
Project Length (months) ->	8
Total Project Area (hectares) ->	8
Maximum Area Disturbed/Day (hectares) ->	2
Total Soil Imported/Exported ($meters^3$/day)->	195

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sume of exhaust and fugitive dust emissions shown in columns K and L.

Appendix D

Biological Resources Assessment (PMC)

CREEGAN + D'ANGELO

FORT ORD REUSE AUTHORITY (FORA) ROADWAY IMPROVEMENT PROJECT

BIOLOGICAL RESOURCE ASSESSMENT

Prepared for:

CREEGAN + D'ANGELO
225 CANNERY ROW, SUITE H
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2729 PROSPECT PARK DRIVE, SUITE 220
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AUGUST 2009

CREEGAN + D'ANGELO

FORA ROADWAY IMPROVEMENT PROJECT

BIOLOGICAL RESOURCE ASSESSMENT

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AUGUST 2009

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INTRODUCTION

The Fort Ord Reuse Authority (FORA) Roadway Improvement Project (hereinafter "proposed project") involves the design and construction of roadway improvements on South Boundary Road and Gigling Road on the former Fort Ord. The two roadway improvement project sites are located within the cities of Del Rey Oaks, Monterey and Seaside on the former Fort Ord in Monterey County, California (**Figure 1, Regional Location** and **Figure 2, Project Vicinity**). The proposed project is located on land that was owned by the United States Department of the Army (U.S. Army) and transferred to the cities of Seaside,Del Rey Oaks, and Monterey. The South Boundary Road improvement area is located within the cities of Del Rey Oaks and Monterey. The Gigling Road improvement area is located within the City of Seaside. The South Boundary Road improvement area corresponds to the City Lands of Monterey Land Grant on the USGS *Seaside, California* 7.5-minute topographic quadrangle (USGS 1947). The Gigling improvement area location corresponds to the City Lands of Monterey and the Noche Buena Land Grants on the U.S. Geological Survey (USGS) *Marina, California* 7.5-minute U.S. Geologic Survey (USGS) topographic quadrangle (USGS 1947).

The proposed project involves the design and construction of roadway improvements on South Boundary Road and Gigling Road. The South Boundary Road improvement area consists approximately 7,593 linear feet (1.44 miles) of roadway improvements, extending 6,433 feet within the City of Del Rey Oaks and 1,160 feet within the City of Monterey. The Gigling Road improvement area consists of approximately 4,858 linear feet (0.92 mile) that are entirely within the City of Seaside. The two project sites are hereinafter referred to as the Project Study Area (PSA) unless stated otherwise. In addition to the project footprint (the area of permanent impact at each roadway site as described below), the PSA also includes a 20-foot buffer or Temporary Construction Zone (TCZ) for the analysis of potential indirect and/or temporary impacts. The proposed project involves the following improvements:

- Gigling Road. Gigling Road would be improved as a four lane arterial from General Jim Moore Boulevard to a point before 7th Street, a distance of approximately 4,858 feet (0.92 mile). The proposed roadway improvements would include construction of a four-lane collector with an 18-foot median for a 115-foot minimum right-of-way and would include the installation of street lights and landscaping.

- South Boundary Road. South Boundary Road would be improved as a two-lane roadway from General Jim Moore Boulevard for approximately 7,593 linear feet (1.44 miles) east towards York Road. The western end of the proposed alignment travels through a portion of the 321-acre Del Rey Oaks property (parcels 31a-b and 29a-e).

The proposed project is located within parcels designated as "Development" in the *Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord* (HMP) (U.S. Army Corps of Engineers [USACE] 1997). Lands designated "Development" have no habitat management restrictions placed upon them and according to the HMP, the biological resources found in these parcels are not considered essential to the long-term preservation of sensitive species at the former Fort Ord. Impacts to sensitive species were anticipated and accommodated by the policies of the HMP for "Development" areas. Large tracts of habitat have been set aside by the HMP as conservation areas to mitigate for the loss of habitat for the affected species in the designated "Development" areas on the former Fort Ord.

The purpose of this biological resources assessment is to describe vegetative communities, identify sensitive habitats, including potentially jurisdictional wetlands and waters of the U.S., and to assess the potential for occurrence of special-status plant and wildlife species within the PSA.
Regulatory Framework

The following describes federal, state, and local environmental laws and policies that are relevant to the California Environmental Quality Act (CEQA) review process. The CEQA significance criteria are also included in this section.

FEDERAL

Endangered Species Act

Provisions of the federal Endangered Species Act (FESA), as amended (16 USC 1531), protect federally listed threatened and endangered species and their habitats from unlawful take. "Take" under the FESA includes activities such as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." U.S. Fish and Wildlife Service (USFWS) regulations define harm to include some types of "significant habitat modification or degradation." In the case of *Babbitt, Secretary Of Interior, et al., Petitioners v. Sweet Home Chapter Of Communities For A Great Oregon, et al.* (No. 94-859) (U.S. Supreme Court 1995), the United States Supreme Court ruled on June 29, 1995, that "harm" may include habitat modification "...where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."

For projects with a federal nexus, Section 7 of the FESA requires that federal agencies, in consultation with the USFWS or National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries), use their authorities to further the purpose of the FESA and to ensure that their actions are not likely to jeopardize the continued existence of listed species or result in destruction or adverse modification of critical habitat. Section 10(a)(1)(B) allows non-federal entities to obtain permits for incidental taking of threatened or endangered species through consultation with USFWS or NOAA Fisheries. In general, NOAA Fisheries is responsible for protection of federally listed marine species and anadromous fish while other listed species come under USFWS jurisdiction.

Migratory Bird Treaty Act

Migratory birds are protected under the Migratory Bird Treat Act (MBTA) of 1918 (16 USC 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). The vast majority of birds found in the Planning Area are protected under the MBTA.

STATE

California Endangered Species Act

Under the California Endangered Species Act (CESA), the California Department of Fish and Game (CDFG) has the responsibility for maintaining a list of endangered and threatened species (California Fish and Game Code 2070). CDFG maintains a list of "candidate species" which are species that CDFG formally notices as being under review for addition to the list of endangered or threatened species. CDFG also maintains lists of "species of special concern" which serve as species "watch lists." Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project site and determine whether the proposed project will have a potentially significant impact on such species. In addition, CDFG encourages informal consultation on any proposed project that may impact a candidate species.

Figure 1
Regional Location Map

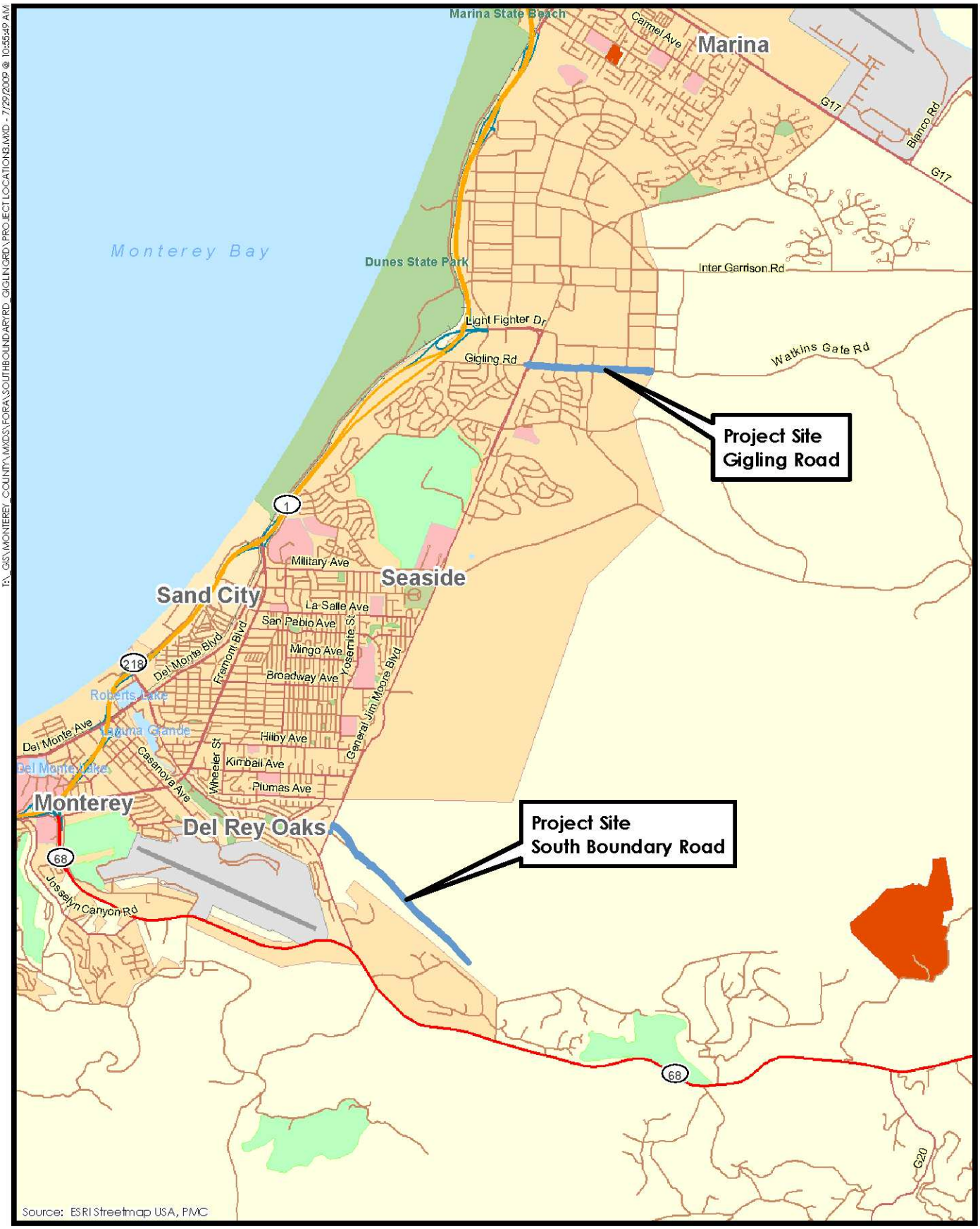

Figure 2
Project Location Map

PMC

Project-related impacts to species on the CESA endangered or threatened list would be considered significant. State-listed species are fully protected under the mandates of CESA. "Take" of protected species incidental to otherwise lawful management activities may be authorized under California Fish and Game Code Section 206.591. Authorization from the CDFG would be in the form of an Incidental Take Permit.

California Department of Fish and Game

Native Plant Protection Act

The Native Plant Protection Act (California Fish and Game Code Sections 1900-1913) prohibits the taking, possessing, or sale within the state of any plants with a state designation of rare, threatened, or endangered (as defined by CDFG). An exception to this prohibition in the Act allows landowners, under specified circumstances, to take listed plant species, provided that the owners first notify CDFG and give that state agency at least 10 days to come and retrieve (and presumably replant) the plants before they are plowed under or otherwise destroyed (Fish and Game Code Section 1913 exempts from "take" prohibition "the removal of endangered or rare native plants from a canal, lateral ditch, building site, or road, or other right of way"). Project impacts to these species are not considered significant unless the species are known to have a high potential to occur within the area of disturbance associated with construction of the proposed project.

Birds of Prey

Under Section 3503.5 of the California Fish and Game Code it is unlawful to take, possess, or destroy any birds in the orders of Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.

"Fully Protected" Species

Sections 3500 to 5500 of the Fish and Game Code outline protection for fully protected species of mammals, birds, reptiles, amphibians, and fish. Species that are fully protected by these sections may not be taken or possessed at any time. The CDFG cannot issue permits or licenses that authorize the take of any fully protected species, except under certain circumstances such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock.

Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project study area and determine whether the proposed project will have a potentially significant impact on such species. In addition, CDFG encourages informal consultation on any proposed project that may impact a candidate species.

Project-related impacts to species on the CESA endangered or threatened list would be considered significant. State-listed species are fully protected under the mandates of the CESA. Take of protected species incidental to otherwise lawful management activities may be authorized under Fish and Game Code Section 206.591. Authorization from CDFG would be in the form of an Incidental Take Permit.

NON-GOVERNMENTAL AGENCY

California Native Plant Society

The California Native Plant Society (CNPS) is a non-governmental agency that classifies native plant species according to current population distribution and threat-level, in regards to extinction. The following description of the CNPS classification system is relevant to identifying potential impacts to biological resources due to implementation of the project.

The CNPS maintains a list of plant species native to California that has low numbers, limited distribution, or are otherwise threatened with extinction. This information is published in the *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2001). Potential impacts to populations of CNPS-listed plants receive consideration under CEQA review.

The following identifies the definitions of the CNPS listings:

- List 1A: Plants believed to be extinct
- List 1B: Plants that are rare, threatened, or endangered in California and elsewhere
- List 2: Plants that are rare, threatened, or endangered in California, but are more numerous elsewhere

All of the plant species on List 1 and List 2 meet the requirements of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (CESA) of the California Fish and Game Code and are eligible for state listing. Plants appearing on List 1 or List 2 are considered to meet the criteria of CEQA Section 15380 and effects on these species are considered "significant" in this EIR. Classifications for plants listed under "List 3: Plants about which we need more information (a review list)" and/or "List 4: Plants of limited distribution (a watch list)," as defined by CNPS, are not currently protected under state or federal law. Therefore, no detailed descriptions or impact analysis was performed for qualifying species under these classifications.

Local

Former Fort Ord Habitat Management Plan

The *Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord* (USACE 1997) establishes a habitat conservation area corridor system, and parcel-specific land use categories and management requirements for all lands on former Fort Ord. Four general categories of parcel-specific land use are identified: "Habitat Reserve," "Habitat Corridor," "Development with Reserve Areas or Restrictions," and "Development with no Restrictions." Resource conservation and management requirements and responsible parties for each parcel or group of parcels with habitat designations are discussed in Chapter 4 of the HMP.

A general goal of the HMP is to promote preservation, enhancement, and restoration of habitat while allowing implementation of a community-based reuse plan that supports economic recovery after closure of Fort Ord. The HMP assumes a reuse development scenario for the entire base that will result in the removal of up to 6,300 acres of existing vegetation and wildlife habitat. Losses to up to 18 special-status species (HMP Species) are also accounted for by the HMP. The establishment of approximately 16,000 acres of habitat reserves with about 400 additional acres of connecting habitat corridors is the primary measure to minimize the impacts

of reuse on HMP Species. The HMP further conditions development on approximately 2,200 additional acres by requiring reserve areas or restrictions on those lands.

The USFWS found that the HMP for the former Fort Ord fulfills reasonable and prudent measures in its October 19, 1993 Biological Opinion (BO) title, *Biological Opinion for the Disposal and Reuse of Fort Ord, Monterey County, California*; however, the HMP does not authorize incidental take by entities acquiring land at the former Fort Ord of any species listed as threatened or endangered under the federal ESA of 1973, as amended. Entities would submit the HMP in combination with additional documentation, including an implementation agreement by all parties receiving lands that are to be managed for wildlife values, to the USFWS to receive authorization for incidental take through Section 10(a)(1)(B) permits.

The proposed project is located within parcels designated as "Development" in the HMP. These parcels have no management restrictions placed upon them and according to the HMP, the biological resources found in these parcels are not considered essential to the long-term preservation of sensitive species at former Fort Ord.

Fort Ord Reuse Plan

The Conservation Element of the *Fort Ord Reuse Plan* (EMC Planning Group Inc. and EDAW, Inc. 1997) contains several policies related to biological resources within the City of Seaside and the County of Monterey. The locations of these jurisdictions in relation to the PSA are depicted on **Figure 3**. The *Fort Ord Reuse Plan* and these municipality's plans contain parallel policies concerning biological resources within the project vicinity. The following *Fort Ord Reuse Plan* policies are applicable to the Gigling Road improvement area, which is located within the City of Seaside:

- **Biological Resources Policy A-1 (City of Seaside):** The City shall ensure that the habitat management areas are protected from degradation due to development in, or use of, adjacent parcels within its jurisdiction.

- **Biological Resources Policy A-4 (City of Seaside):** The City shall encourage the preservation of small pockets of habitat and populations of HMP species within and around developed areas.

- **Biological Resources Policy B-1 (City of Seaside):** The City shall strive to avoid or minimize the loss of (non-HMP species) that are known or expected to occur in areas planned for development.

- **Biological Resources Policy C-1 (City of Seaside):** The City shall encourage that grading for projects in undeveloped lands be planned to complement surrounding topography and minimize habitat disturbance.

- **Biological Resources Policy C-2 (City of Seaside):** The City shall encourage the preservation and enhancement of oak woodland elements in the natural and built environments.

- **Biological Resources Policy C-3 (City of Seaside):** Lighting of outdoor areas shall be minimized and carefully controlled to maintain habitat quality for wildlife in undeveloped natural lands. Street lighting shall be as unobtrusive as practicable and shall be consistent in intensity throughout development areas adjacent to undeveloped natural lands.

- **Biological Resources Policy D-1 (City of Seaside):** The applicant shall implement a contractor education program that instructs construction workers on the sensitivity of biological resources in the vicinity and provides specifics for certain species that may be recovered and relocated from particular development areas.

- **Biological Resources Policy D-2 (City of Seaside):** The City shall encourage and participate in the preparation of educational materials through various media sources, which describe the biological resources on the former Fort Ord, discuss the importance of the HMP and emphasize the need to maintain and manage the biological resources to maintain the uniqueness and biodiversity of the former Fort Ord.

City of Seaside Tree Ordinance

The Gigling Road improvement area is located in the City of Seaside. Chapter 8.54 of the City of Seaside Municipal Code provides regulations that control the removal, protection, and preservation of trees within the City. Under Section 8.54.020, trees that are protected by this ordinance include all trees with a circumference of at least 20 inches (approximately six inches in diameter) measured at 24 inches above the ground (diameter at breast height [DBH]). Under Section 8.54.070, all removed trees must be replaced with a minimum 5-gallon approved specimen tree of a species and in an approved location. Section 8.54.080 requires protection of trees during construction activities.

City of Del Rey Oaks

As the northwestern 6,433 feet of the proposed South Boundary Road improvement area is located within the boundaries of the City of Del Rey Oaks, the following City of Del Rey Oaks General Plan policies are applicable to this portion of the proposed project:

General Plan Policies

- **General Plan Policy C/OS-3:** Wildlife habitat and wildlife corridors shall be preserved.

- **General Plan Policy C/OS-4:** Significant strands of riparian vegetation shall be subject to only minimal cutting and removal and then only when proven unavoidable.

- **General Plan Policy C/OS-5a:** Encourage the conservation and preservation of irreplaceable natural resources and open space at former Fort Ord.

- **General Plan Policy C/OS-5e:** The City shall ensure that all habitat conservation and corridor areas identified in the Fort Ord Habitat Management Plan (HMP) area protected from degradation due to development within or adjacent to these areas. This shall be accomplished by assuring that all new development in the Fort Ord Reuse Area adheres to the management requirements of the HMP and the policies of the Fort Ord Reuse Area Plan.

- **General Plan Policy C/OS-5f:** The City shall encourage the preservation of small pockets of habitat and population of special status species within and around developed areas, in accordance with the recommendations of the HMP and Fort Ord Reuse Area Plan. This shall be accomplished by requiring project applicants to conduct surveys to verify sensitive species and/or habitat on the site and developing a plan for avoiding or salvaging these resources, where feasible.

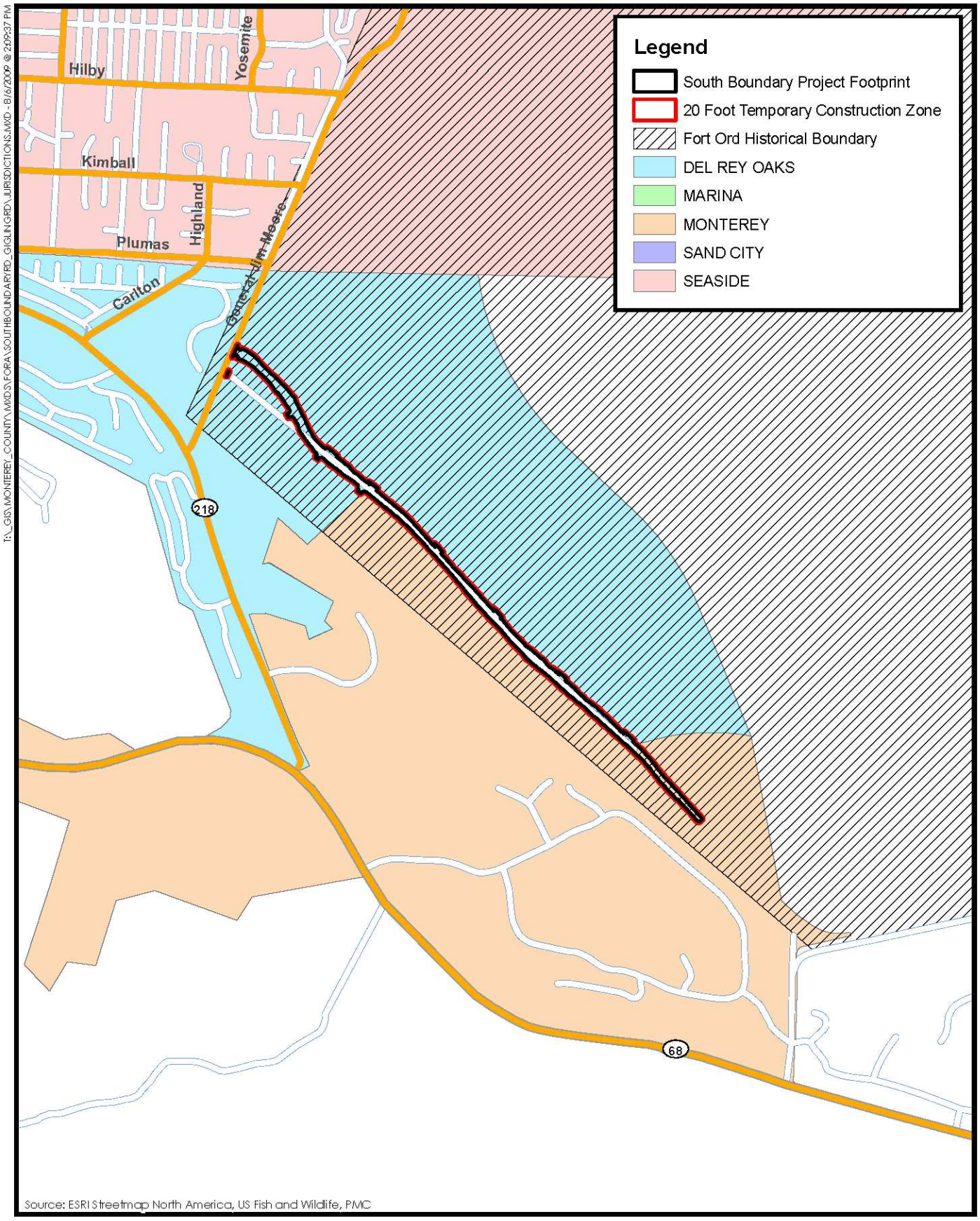

Figure 3
Jurisdictions

PMC

City of Del Rey Oaks Tree Ordinance

Chapter 12.16 of the City of Del Rey Oaks Municipal Code provides regulations that control the removal, protection, and preservation of trees within the city. The provisions within the chapter apply to all oak and other significant trees on all public and private property within the city. Section 12.16.030 states that an oak tree means: any tree of the *Quercus* genus that has a single trunk that measures more than thirty (30) inches in circumference at two feet above the ground, or multi-trunked trees having two trunks with a circumference of at least 40 inches at two feet above the root crown. Section 12.16.060 provides the standards for granting a tree removal permit based on the following findings:

A. The condition of the tree with respect to disease, danger of falling, and the proximity to existing or proposed structures;

B. The necessity to remove a tree in order to construct proposed improvements to prevent economic hardships to the owner of the property. The burden of proof shall be the responsibility of the applicant at the time of the application to remove the tree;

C. The topography of the land, the effect of tree removal on erosion, soil retention, and the diversion or increased flow of surface water;

D. The number of trees existing the neighborhood. Decisions shall be guided by the standards established in the neighborhood and the effect of the tree removal upon property value in the area; and

E. Good forestry practices, such as the number of health trees which a given parcel of land or are can support.

Section 12.16.050.D of the City of Del Rey Oaks Municipal Code provides conditions of tree removal permits.

City of Monterey

As the southeastern 1,160 feet of the proposed South Boundary Road improvement area is located within the boundaries of the City of Monterey, the following City of Monterey General Plan policies are applicable to this portion of the proposed project:

General Plan Policies

- **Urban Design – Wooded Skyline and Foothills Policy b.3**: Trees in forested areas should be preserved, and denuded areas should be reforested where feasible.

- **Conservation – Flora and Fauna and Marine Resources Policy d.1**: Protect existing native plants and promote the use of locally occurring, native vegetation for public and private landscaping and revegetation efforts.

- **Conservation – Flora and Fauna and Marine Resources Policy d.3**: Protect existing sensitive habitats by careful planning to avoid and/or mitigate significant impacts to habitat areas identified as having high and moderate biological values.

- **Conservation – Flora and Fauna and Marine Resources Policy d.4**: Protect and manage habitats that support special-status species, are of high biological diversity, or are unusual

or regionally restricted. Prepare biotic reports or habitat management plans as needed to ensure protection of habitat values.

- **Conservation – Flora and Fauna and Marine Resources Policy d.5**: Reduce biotic impacts to a less-than-significant level on project sites by ensuring that mitigation measures identified in biotic reports are incorporated as conditions of approval for development projects. Compliance with the City Tree Ordinance is the mechanism that will be used to address impacts of tree removals. As mitigation for significant impacts, avoidance, replacement, restoration of habitats on or off-site or other measures may be required.

- **Conservation – Flora and Fauna and Marine Resources Policy d.6**: Within identified habitat areas with high biological value, the City will provide for a focused evaluation of areas identified as appropriate habitat for special-status species during the project review and approval process.

City of Monterey Tree Ordinance

Chapter 37 of the City of Monterey Municipal Code provides regulations that control the removal, protection, and preservation of trees within the city. The provisions within the chapter apply to all protected trees, which are: a) trees located on a vacant private parcel that are more than two inches in diameter when measured at a point four feet six inches above the tree's natural grade; and b) trees located on a private, developed parcel that are more than six inches when measured at a point four feet six inches above the tree's natural grade. Section 37-3 prohibits the removal or damage to any tree in the public right-of-way unless pursuant to a permit issued by the City Forester. According to Section 37-10(B) of the City of Monterey Municipal Code, a tree removal permit may be approved, denied, or conditionally approved based the following findings:

(1) The condition of the tree with respect to disease; hazardous conditions caused by the tree including but not limited to its proximity to existing structures or high pedestrian traffic areas such as parking lots, playgrounds and pedestrian walkways; its status as an undesirable non-native species; or its interference with utility services that cannot be controlled or remedied through reasonable preservation and/or preventive procedures and practices.

(2) The condition of the tree as a host to a plant, or insect, or other parasitic organism which endangers other adjacent healthy trees.

(3) The number of healthy trees the parcel is able to support as determined by the City Forester based on such considerations as tree species, growth characteristics, general health of the stand, tree age, solar orientation and soil condition.

(4) The acceptance of mitigation measures including, but not limited to, those set forth in Section 37-11 below.

(5) The value and importance of the tree on the site or in the community, based on such factors as its service as part of a windbreak system, its assistance in drainage or in the avoidance of soil erosion, its service as a component of a wildlife habitat, or its role in maintaining the existing urban forest.

Section 37-11 of the City of Monterey Municipal Code provides conditions of removal/mitigation measure standards that may be imposed on any proposed tree removal.

METHODS

On June 1, June 2, July 20, and July 21, 2009, PMC biologists conducted focused plant surveys within the PSA. During these surveys a reconnaissance-level assessment of the PSA was also conducted. Prior to the plant surveys and assessment, the potential for special-status species to occur within the PSA was evaluated by querying varying sources as described below. Special-status species, identified from the literature and database searches, were determined to have potential to occur in the PSA if their documented geographic range from the literature and database search includes the project vicinity and if suitable habitat for the species was identified within or near the PSA. **Appendix A** presents the results of the CNDDB, CNPS, and USFWS queries for special-status species that have the potential to occur within the PSA and surrounding vicinities.

The California Natural Diversity Data Base (CNDDB) was queried for a list of special-status wildlife, plant, and fisheries resources that are known to occur within the PSA or vicinity (CDFG 2009). A database search was performed for special-status species within the *Seaside, California* 7.5-minute USGS topographic quadrangle (USGS 1947) and the eight surrounding quadrangles (*Mount Carmel, Soberanes Point, Salinas, Spreckels, Carmel Valley, Marina, and Monterey*).

The CNPS electronic online inventory was also searched for rare or endangered plants that may occur within the PSA (CNPS 2009). This query was performed for CNPS List 1A, List 1B, and List 2, plants occurring in the USGS 7.5-minute quadrangles listed above. List 1A species are presumed extinct in California. List 1B species are considered rare or endangered in California and elsewhere. List 2 species are considered rare or endangered in California, but are more common elsewhere.

In addition, a species list was requested and received from the Ventura Fish and Wildlife Office which included federally listed, proposed, or candidate plant and animal species that could potentially be affected by the proposed project (USFWS 2009a).

When the USFWS lists a species as threatened or endangered under FESA, areas of habitat considered essential to its conservation and survival may be designated as critical habitat. These areas may require special consideration and/or protection due to their ecological importance. In July 2009, potential critical habitat designations within the general vicinity of the PSA (up to five miles from the project boundary of each site) were checked using the USFWS Critical Habitat Portal (USFWS 2009b). Critical habitat has been designated for Monterey spineflower (*Chorizanthe pungens* var. *pungens*), California red-legged frog (*Rana aurora draytonii*), and the south/central California coast Evolutionarily Significant Unit (ESU) for steelhead (*Oncorhynchus mykiss irideus*) within five miles of the PSA. No critical habitat has been designated or proposed within the PSA (**Figure 4**).

Other relevant documents previously prepared within the vicinity of the proposed project were also reviewed including the Checklist of Vascular Plants of Fort Ord, California from the Fort Ord Natural Reserve website (University of Santa Cruz Natural Reserves 2009).

During the site assessment PMC biologists walked transects throughout the PSA, paying special attention to areas with the potential to support special-status species. Tables 1 and 2 of **Appendix B** include consolidated lists of special-status plant and wildlife species from the database search. Each table includes the regulatory status and habitat characteristics of each species and a rationale for including each species in the impact analysis. **Appendix C** includes a list of plant and animal species observed within the PSA during surveys. **Appendix D** includes

the plant survey results memorandum which contains figures depicting the locations of mapped special-status plants.

Vegetative communities, including sensitive habitat types, occurring within the PSA were characterized based on *A Guide to Wildlife Habitats* (Mayer and Laudenslayer 1988), delineated during field surveys onto an aerial photograph, and digitized using ArcGIS software (**Figures 5a** through **5j**). The noted vegetative communities were used to help assess the likelihood of potential special-status species occurring within the PSA.

Species-specific focused or protocol-level surveys for wildlife were not conducted during the assessment.

The botanical inventory of the PSA was floristic in nature and all plant species encountered have been identified to the extent necessary. Taxonomy of plant species is based on *The Jepson Manual of Higher Plants of California* (Hickman 1993). For optimal identification, the survey was conducted during the flowering period for each of the special-status plant species with potential to occur within the PSA. In accordance with the CNPS Botanical Survey Guidelines, the survey was conducted by personnel with the following qualifications: 1) experience with conducting floristic surveys; 2) intimate knowledge of plant taxonomy and plant community ecology and classification; 3) familiarity with the plants of the area, including special status and locally significant plants; 4) familiarity with the appropriate state and federal statutes related to plants and plant collecting, 5) and experience with analyzing impacts of project activities on native plants and plant communities. The purpose of the survey was to identify listed plant species within the impact area of the proposed projects. Botanical surveys were conducted in accordance with the *Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities* (Nelson 1994); however, only listed plant species were targeted and identified in the field.

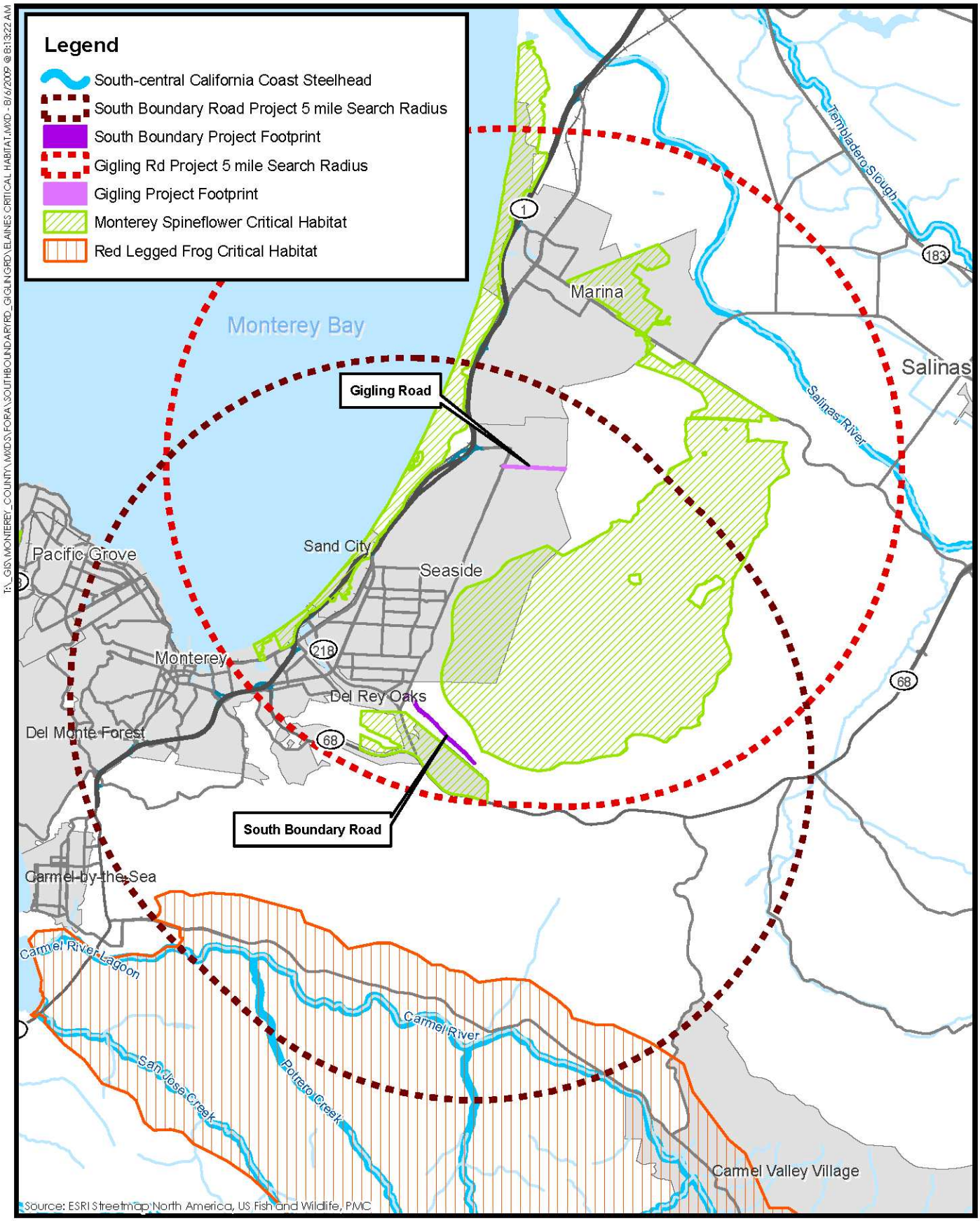

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Figure 4
Critical Habitat

PMC

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Map 5a
South Boundary Road Habitat Map

PMC

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South Boundary Rd

Legend

- Project Footprint
- 20 Foot Temporary Construction Zone
- Coastal Oak Woodland
- Maritime Chaparral
- Paved Roadway
- Urban/Ruderal

Source: NAIP 2005, Creegan & D'Angelo Infrastructor Engineering, PMC

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Map 5b

South Boundary Road Habitat Map

PMC

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South Boundary Rd

Legend

- Project Footprint
- 20 Foot Temporary Construction Zone
- Coastal Oak Woodland
- Maritime Chaparral
- Paved Roadway
- Urban/Ruderal

Source: NAIP 2005, Creegan & D'Angelo Infrastructor Engineering, PMC

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Map 5c
South Boundary Road Habitat Map

PMC

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South Boundary Rd

Legend

- Project Footprint
- 20 Foot Temporary Construction Zone
- Coastal Oak Woodland
- Maritime Chaparral
- Paved Roadway
- Urban/Ruderal

Source: NAIP 2005, Creegan & D'Angelo Infrastructor Engineering, PMC

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Map 5d
South Boundary Road Habitat Map

PMC

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Map 5e
South Boundary Road Habitat Map

PMC

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South Boundary Rd

Legend

- Project Footprint
- 20 Foot Temporary Construction Zone
- Coastal Oak Woodland
- Maritime Chaparral
- Paved Roadway
- Urban/Ruderal

Source: NAIP 2005; Creegan & D'Angelo Infrastructor Engineering; PMC

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Map 5f
South Boundary Road Habitat Map

PMC

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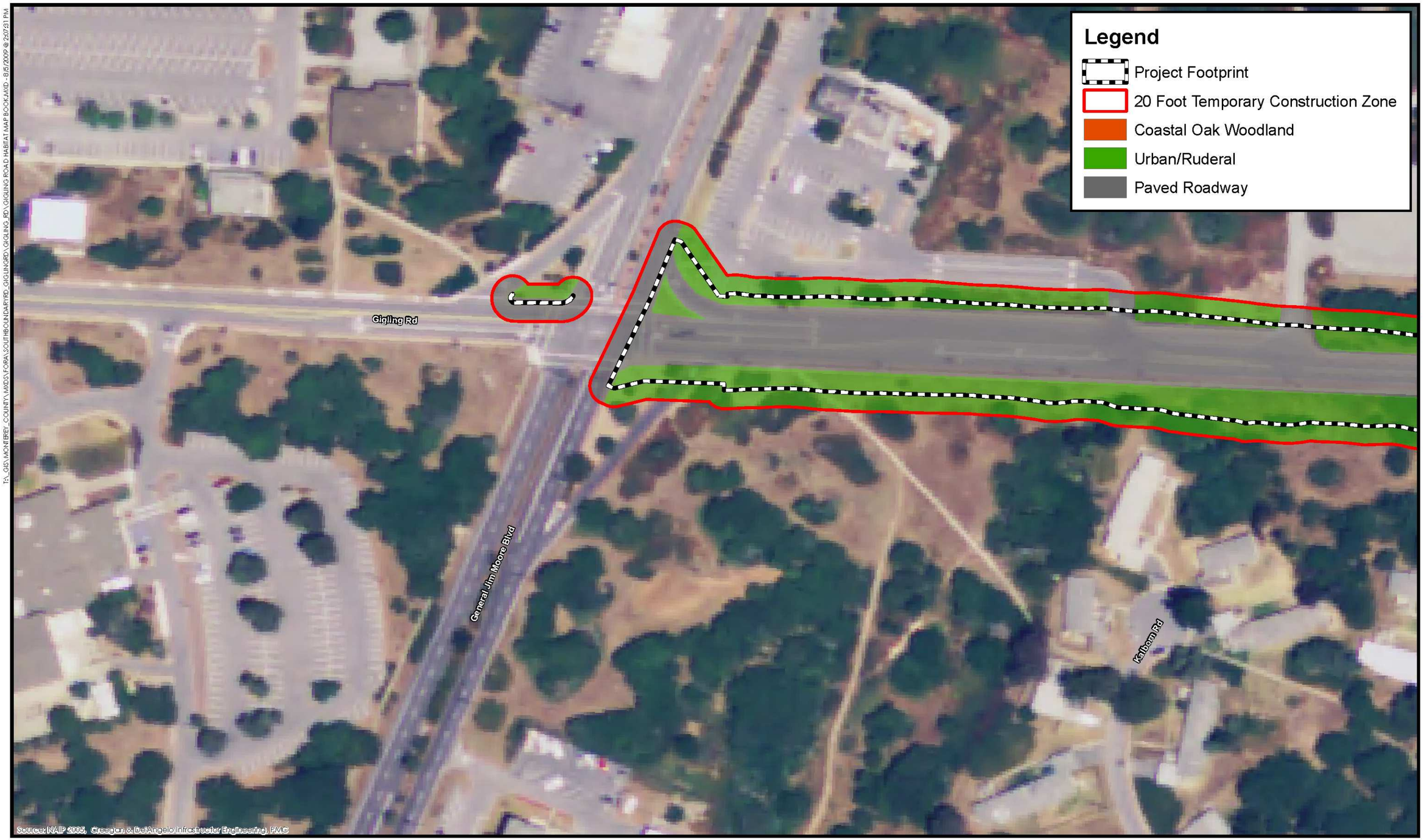

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Map 5g
Gigling Road Habitat Map

PMC

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Map 5h
Gigling Road Habitat Map

PMC

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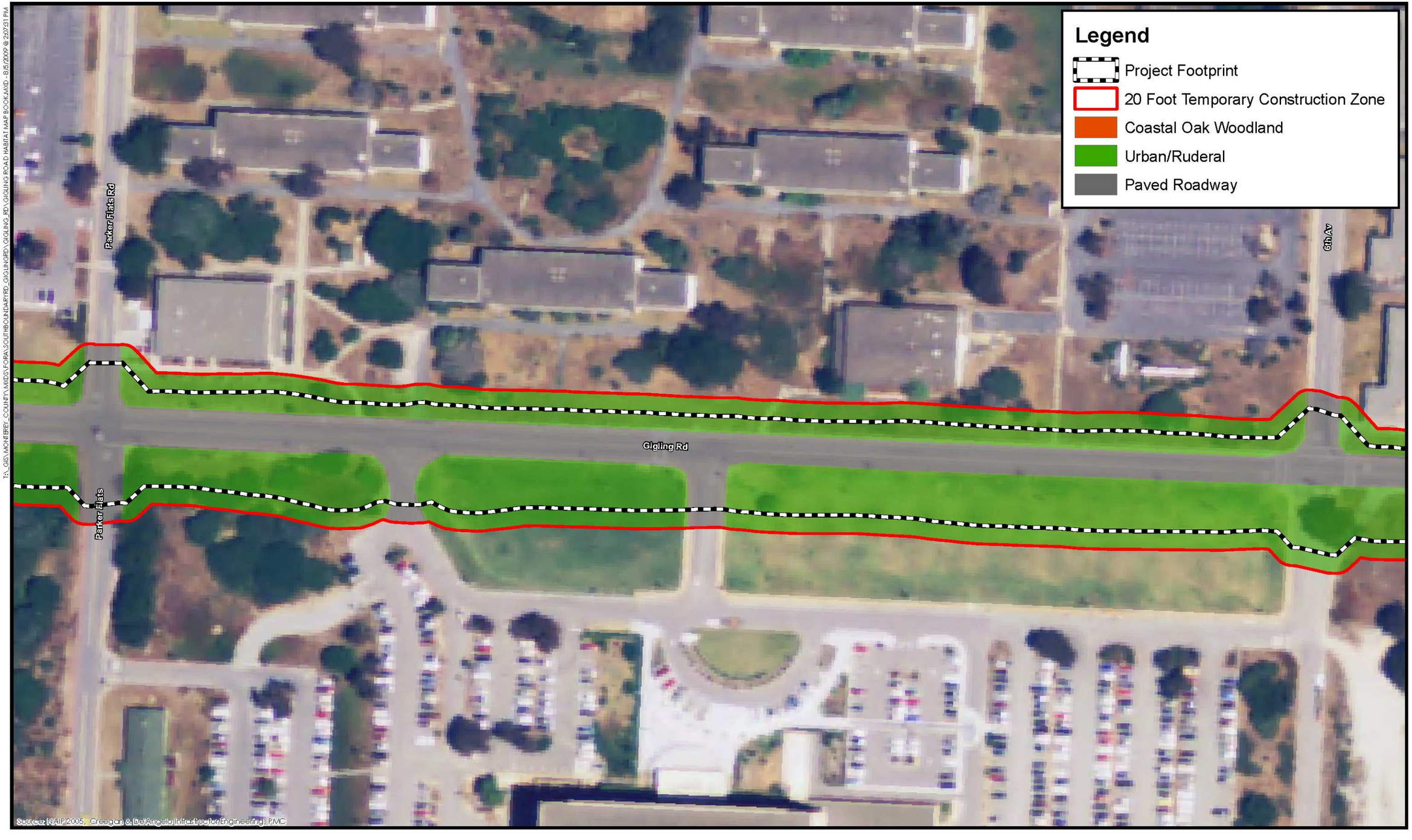

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Map 5i
Gigling Road Habitat Map

PMC

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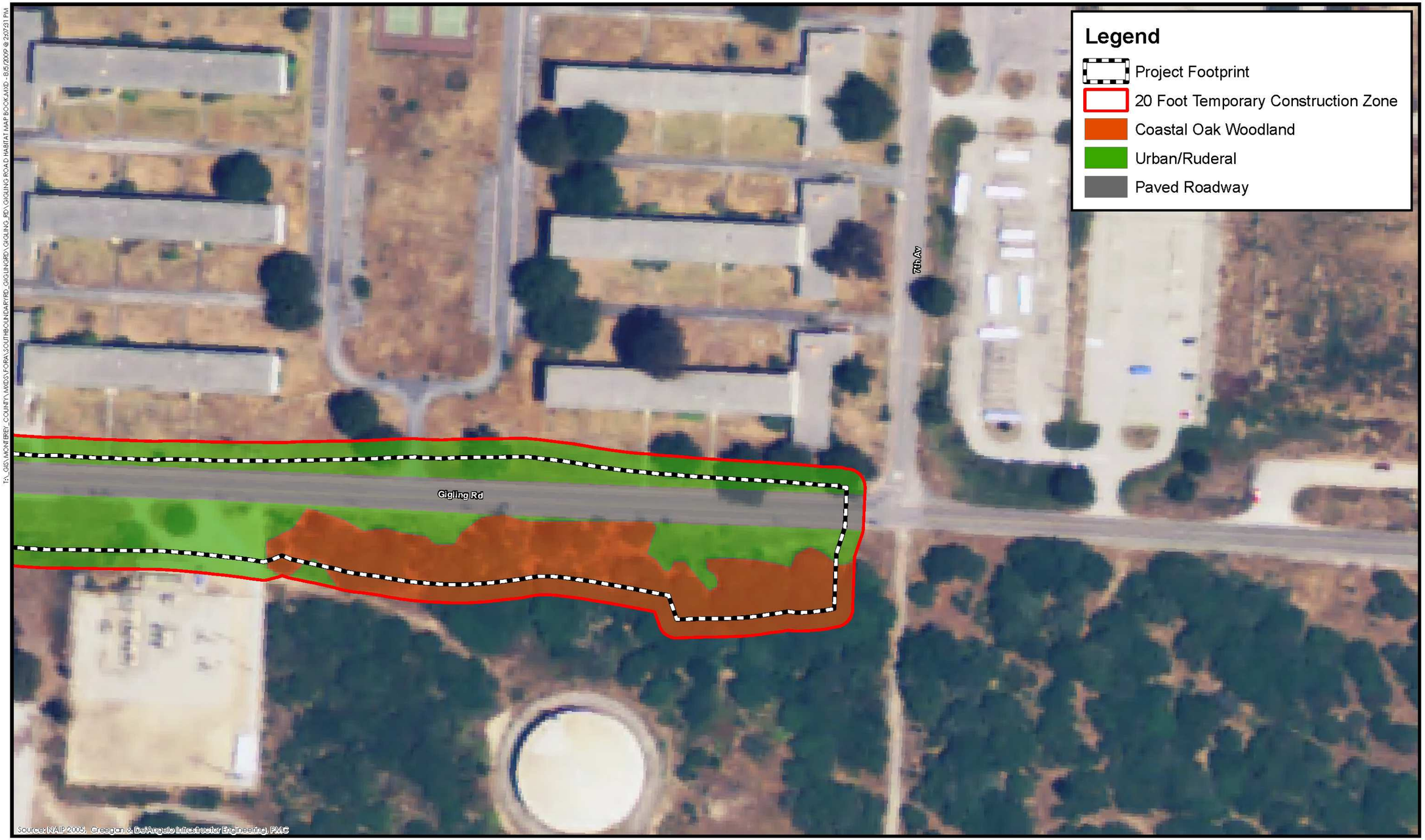

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Map 5j
Gigling Road Habitat Map

PMC

RESULTS

PSA DESCRIPTION

Fort Ord is a former U.S. Army infantry base located in Monterey County, about five miles northeast of the City of Monterey (**Figure 1** and **Figure 2**). The South Boundary Road improvement area is undeveloped with the exception of the paved roadway. Vegetation conists primarily of coast live oak (*Quercus agrifolia*) woodland and maritime chaparral. Surrounding land uses include residential development to the north and west, and a business park to the southwest. The Gigling Road improvement area primarily consists of urban (ruderal) vegetation along the existing roadway and a small stand of coast live oak woodland at the southeastern end of the alignment. Land uses immediately surrounding the alignment include existing and abandoned buildings from the former Fort Ord base and commercial development.

TOPOGRAPHY AND DRAINAGE

The general topography within the PSA and surrounding areas is characterized as mostly gently sloping to nearly level. The elevation within the South Boundary Road improvement area ranges from 140 to 280 feet above mean sea level (MSL). The elevation within the Gigling Road improvement area ranges from 245 to 350 feet above MSL. The majority of seasonal surface runoff is conveyed as sheet flow throughout the PSA. No wetlands or other waters of the U.S., including drainages, were observed at either the South Boundary Road or Gigling Road improvement areas. The Gigling Road improvement area contains curbs, gutters, and stormwater-related improvements.

VEGETATIVE COMMUNITIES

Three vegetative communities, including coastal oak woodland, maritime chaparral, and urban/ruderal, have been identified within the PSA (see **Figures 5a** through **5j** and **Table 1** below). These vegetative communities may provide habitat for a number of common and special-status plant and wildlife species. These communities, including associated common plant and wildlife species observed or expected to occur, are described below. **Appendix C** includes a list of the plant and wildlife species observed within the PSA during the assessment.

TABLE 1 – VEGETATIVE COMMUNITIES WITHIN THE PSA

Biological Community	Acres		
	Project Footprint	TCZ	Total
South Boundary Road Improvement Area			
Maritime Chaparral	8.1	5.2	13.3
Coastal Oak Woodland	2.3	1.7	4.0
Urban/Ruderal	0.1	0.4	0.5
Total	**10.5**	**7.3**	**17.8**
Gigling Road Improvement Area			
Coastal Oak Woodland	0.8	0.3	1.1
Urban/Ruderal	6.5	4.1	10.6
Total	**7.3**	**4.4**	**11.7**

Maritime Chaparral

Maritime chaparral occurs within the South Boundary Road improvement area only; it is not found within the Gigling Road improvement area. The maritime chaparral community occurs on well-drained, sandy substrates within the zone of summer coastal fog incursion. Fire appears necessary for continued reproduction (CDFG 2007). This community, which is characterized by manzanita (*Arctostaphylos* spp.) and California lilac (*Ceanothus cuneatus*) species adapted to the foggy coastal climate, once dominated sandy hills along Monterey Bay, Nipomo Mesa, Burton Mesa, and Morro Bay (CDFG 2007). Maritime chaparral is now one of the region's most threatened community types, with its extent severely reduced by development (CDFG 2007). The following description of this community is from an article in Madroño (25:65-112) prepared by J.R. Griffin (1979) titled, Maritime Chaparral and Endemic Shrubs of the Monterey Bay Region:

> Central maritime chaparral is an uncommon vegetation type that is present in patches at locations scattered throughout the Monterey Bay region. Maritime chaparral stands are dominated by one or more *Arctostaphylos* taxa, including several subspecies of burl forming *A. tomentosa* (woollyleaf, shaggy-barked, or brittleleaf manzanita) and four locally endemic, non-burl forming species that were the primary focus of this study: *A. hookeri* ssp. *hookeri* (Hooker's manzanita), *A. pajaroensis* (Pajaro manzanita), *A. montereyensis* (Monterey or Toro manzanita), and *A. pumila* (sandmat manzanita). At some locations, stand dominance is shared with *Adenostoma fasciculatum*. Several state and federally listed species are associated with central maritime chaparral, including *Chorizanthe pungens* var. *pungens*, *Cordylanthus rigidus* ssp. *littoralis*, and *Piperia yadonii*.

Within the PSA, the maritime chaparral community is primarily dominated by shaggy-barked manzanita (*Arctostaphylos tomentosa* ssp. *tomentosa*) with chamise (*Adenostoma fasciculatum*) and Monterey ceanothus (*Ceanothus cuneatus* var. *rigidus*). Other species present include black sage (*Salvia mellifera*), turkey mullein (*Eremocarpus setigerus*), pampas grass (*Cortaderia selloana*), coyote brush (*Baccharis pilularis*), and sandmat manzanita (*Arctostaphylos pumila*). Monterey spineflower (*Chorizanthe pungens* var. *pungens*), a federally listed species, and diffuse spineflower (*Chorizanthe diffusa*) can be found within disturbed openings.

The maritime chaparral community within the South Boundary Road improvement area varies in density and compostion of species. Density ranges from an area with an impenetrable dense overstory of shrubbery on the north end to an area of sparse shrubbery on the south end of the alignment. Within the more dense, mature chaparral found on the north end of the alignment, coast live oaks are co-dominant and the shrubs are dense and approxiamtely nine to ten feet in height. There are very few breaks in the canopy layer and, therefore, fewer opportunities for low-growing shrubs or small annual herbs to establish in the understory. The maritime chaparral, as it extends to the south becomes more degraded. Degraded areas of maritime chaparral have undergone severe disturbance, resulting in soil compaction, lower densities of chaparral species, and an abundance of non-native annuals such as ripgut brome (*Bromus diandrus*), slender oats (*Avena barbata*), and broad-leaf filaree (*Erodium botrys*).

Maritime chaparral has the potential to support a diversity of wildlife. Both maritime chaparral and coastal scrub communities provide important habitat for Morro Bay-, Santa Cruz-, and Pacific kangaroo rat species (*Dipodomys heermanni morroensis*, *D. venustus venustus*, *D. simulans*, respectively) and the San Diego desert woodrat (*Neotoma lepida*), as well as shrubland bird species, including California quail (*Lophortyx californicus*), sage sparrow (*Amphispiza belli*), rufous-crowned sparrow (*Aimophila ruficeps*), and the sensitive California

thrasher (*Toxostoma redivivum*) and Costa's hummingbird (*Calypte costae*) (CDFG 2007). The black legless lizard (*Anniella pulchra nigra*) and California horned lizard (*Phrynosoma coronatum frontale*) are also special-status species associated with these habitats (USACE 1997). The black legless lizard takes advantage of the loose friable sandy soils found in maritime chaparral for burrowing deep in the sand and leaf litter beneath plants (CDFG 2002). California horned lizards inhabit the warm, sunny, open sandy areas and patches of loose soil where the lizard can bury itself (CDFG 2002). The Monterey dusky-footed woodrat (*Neotoma fuscipes luciana*) can typically be found within the denser chaparral with moderately dense understory growth and abundant dead wood for nest construction (CDFG 2002). The oak trees present could provide roosting and nesting sites for a variety of birds. Degraded maritime chaparral may support some of the wildlife species found in intact maritime chaparral, but it provides a lower quality habitat as there is more soil compaction and less cover in the form of an understory with leaf litter and dead wood. There are patches of loose friable sandy soils and an abundance of warm, sunny, open areas that could be inhabited by the black legless lizard or the California horned lizard.

Coastal Oak Woodland

Coastal oak woodland occurs within the South Boundary Road and Gigiling Road improvement areas. The overstory in coastal oak woodland consists of deciduous and evergreen hardwoods (Holland 2005). In mesic sites, trees characteristic of mixed evergreen forests mix with coast live oak, such as California bay (*Umbellularia californica*), pacific madrone (*Arbutus menziesii*), tanoak (*Lithocarpus densiflorus)*, and canyon live oak (*Quercus chrysolepis*) (Holland 2005).

At the Gigling Road improvement area, the coastal oak woodland is a small stand at the east end of the site on the south side of the alignment. This stand is not extensive, but it is contiguous with a larger intact oak woodland further to the south of the Gigling Road alignment. The coast live oak stand at the Gigling Road improvement area has an understory comprised mainly of poison oak (*Toxicodendron diversilobum*), California blackberry (*Rubus ursinus*), shaggy-barked manzanita, and orange bush monkeyflower (*Mimulus aurantiacus*). Where there has been disturbance, the understory has been heavily invaded by non-native herbs and grasses such as ripgut brome, red brome (*Bromus madritensis* ssp. *rubens*), slender oats, broadleaf filaree, rattlesnake grass (*Briza maxima*), and scotch broom (*Cytisus scoparius*). At the South Boundary Road improvement area, the coastal oak woodland occurs mainly within the northern portion, although there is a small section also found along the central west side of the existing roadway where this community intergrades with a closed cone conifer community (*Pinus* spp.). The coastal oak woodland along the west side of the roadway extends outside of the PSA boundary to the west. The coastal oak woodland within the South Boundary Road improvement area has a similar understory as that found at Gigling Road; it is comprised of shaggy-barked manzanita, orange bush monkeyflower, and coffeeberry (*Rhamnus californica*). Areas of thicker canopy have poison oak, California blackberry, and numerous non-native herbs and grasses as components of the understory.

Coastal oak woodlands provide habitat for a variety of wildlife species such as California quail, wild turkey (*Meleagris gallopavo*), and black-tail deer (*Odocoileus hemionus*) (Holland 2005). At least 60 species of mammals may use oaks in some way (Barrett 1980). In addition, 110 species of birds have been observed during the breeding season in California habitats where oaks form a significant part of the canopy or subcanopy (Verner 1980). A red-tailed hawk (*Buteo jamaicensis*), numerous western fence lizards (*Sceloporus occidentalis*), and a variety of small passerine birds were observed within the coastal oak woodland within the PSA (**Appendix C**).

Urban/Ruderal

Urban/ruderal habitat occurs within the South Boundary Road and Gigling Road improvement areas. Urban habitat is distinguished by the presence of both native and exotic species maintained in a relatively static composition within a downtown, residential, or suburbia setting. Paved roadways are not included in this category, but are depicted separately on **Figures 5a** through **5j**. Species richness in these areas depends greatly upon community design (i.e., open space considerations) and proximity to the natural environment (McBride and Reid 1988). Vegetation in urban areas consists primarily of introduced ornamental trees and shrubs and manicured lawns as well as non-native and invasive herbaceous species in disturbed areas. Common plants observed within the urban/ruderal community within the Gigling Road improvement area include Bermuda grass (*Cynodon dactylon*), bluegrass (*Poa annua*), kikuyu grass (*Pennisetum clandestinum*), ice plant (*Carpobrotus edulis*), slender oats, ripgut brome, red brome, and broadleaf filaree. Non-native (planted) trees along Gigling Road include Monterey cypress (*Cupressus macrocarpa*) and Monterey pine (*Pinus radiata*). A few planted coast live oaks are also found within the Gigling Road improvement area particularly on the south side of the alignment between Malmedy Road and Nijmegen Road.

The urban/ruderal habitat within the South Boundary Road improvement area consists of the existing dirt roads north of the existing South Boundary Road and the areas immediately surrounding these areas. The dirt roads were used as training sites for marching infantrymen. Since the closure of the military base, these dirt roadways have not been used extensively and plants are beginning to re-establish and grow within the roadways.

Native and introduced wildlife species that are tolerant of disturbances and/or human activities often thrive in urban habitats (McBride and Reid 1988). During the assessment various avian species commonly found in urban and ruderal habitats, such as American crow (*Corvus brachyrhynchos*), rock pigeon (*Columba livia*), mourning dove (*Zenaida macroura*), American robin (*Turdus migratorius*), and western scrub jay (*Aphelocoma californica*) were observed in the PSA. Wild turkeys and a red-shouldered hawk (*Buteo lineatus*) were also observed along the Gigling Road alignment. Numerous small burrows are present within the sandy soils along Gigling Road and are assumed to be occupied by lizards, such as western fence lizard, and ground squirrels (*Spermophilus beecheyi*).

SPECIAL-STATUS SPECIES

Special-status species are commonly characterized as species that are at potential risk or actual risk to their persistence in a given area or across their native habitat (locally, regionally, or nationally) and are identified by a state and/or federal resource agency as such. These agencies include governmental agencies such as CDFG and USFWS, or private organizations such as CNPS. The degree to which a species is at risk of extinction is the limiting factor on a species status designation. Risk factors to a species' persistence or population's persistence include but are not limited to: habitat loss, increased mortality factors (take, electrocution, etc.), invasive species, and environmental toxins.

In context of environmental review, special-status species are defined by the following codes:

- Species that are listed, proposed, or candidates for listing under FESA (50 CFR 17.11 – listed; 61 FR 7591, February 28, 1996 candidates).

- Species that are listed or proposed for listing under CESA (Fish and Game Code 1992 §2050 et seq.; 14 CCR §670.1 et seq.).

- Species that are designated as Species of Special Concern by CDFG.
- Species that are designated as Fully Protected by CDFG (Fish and Game Code, §3511, §4700, §5050, §5515).
- Species that meet the definition of rare or endangered under CEQA (14 CCR §15380).

Each special-status species identified within the database searches has been addressed individually in **Appendix B** of this report. The potential for each special-status species to occur within the PSA was assessed based on previously recorded occurrences of the species within the vicinity of the PSA (CDFG 2009; CNPS 2009; USFWS 2009a), suitability of habitat within the PSA, and professional expertise. Those species with potential to occur within the PSA are addressed below.

Special-status Plants

Based on a records search of the CNDDB (CDFG 2009), the CNPS (2009) online electronic inventory, and the USFWS (2009a) online species list, special-status plant species have the potential to occur within the vicinity of the PSA. Based on field observations and literature review specific to the special-status plants listed in **Appendix B**, the potential for occurrence within the PSA has been determined for each species. The Gigling Road improvement area does not have the potential to support special-status species based on the disturbed nature of the area and the results of the focused rare plant surveys. Four special-status plant species were identified as potentially occurring within the South Boundary Road improvement area including Hickman's onion (*Allium hickmanii*), sandmat manzanita, Monterey spineflower, and Santa Cruz microseris (*Stebbinsoseris decipiens*). Of the four species that have potential to occur, two special-status plant species, Monterey spineflower and sandmat manzanita, were observed within the South Boundary Road improvement area during the focused rare plant surveys and assessment (**Appendix D**). Seaside bird's-beak (*Cordylanthus rigidus* ssp. *littoralis*) was also observed southwest of the proposed South Boundary Road alignment at the intersection of General Jim Moore Boulevard and South Boundary Road, and north of where a road barrier will be placed to block access to the existing South Boundary Road (**Appendix D**). Because this species is located outside of the PSA, it is not addressed further in this document. The locations of Monterey spineflower and Seaside bird's-beak are depicted on Figures 4a through 4f of the plant survey results memorandum attached as **Appendix D**.

Although occurrences of sandmat manzanita were observed within the PSA, this species is known to be a common component of the maritime chaparral within the former Fort Ord (USACE 1997) and was not mapped. The rare plant surveys conducted by PMC in June/July 2009 focused on listed species and, as such, sandmat manzanita was only incidentally observed. The two remaining species with potential to occur (Hickman's onion and Santa Cruz microseris) are considered in this analysis as the focused plant surveys were not conducted during the blooming period for these plants, thus their presence or absence cannot be confirmed at this time. The species identified as occurring or potentially occurring within the PSA are described below.

Based on the known history of disturbance in the PSA and vicinity, it is assumed that the Monterey pine trees observed within the South Boundary improvement area are non-native (i.e., planted as ornamental trees and come from nursery stock). In addition, a number of Monterey pine and Monterey cypress trees were observed along the Gigling Road alignment; however, these trees were planted as ornamentals. Any Monterey cypress or Monterey pine trees that have been planted are not considered protected native species. As such, these CNPS List 1B

trees are not considered to have special-status under CEQA. The Monterey pine and cypress trees at the Gigling Road improvement area will, however, be protected under the City of Seaside's tree ordinance. The tree ordinances for the cities of Monterey and Del Rey Oaks may protect these species at the South Boundary Road improvement area (see Regulatory Framework discussion).

Information for the life history accounts provided below, unless noted otherwise, is from the CNPS electronic online inventory (CNPS 2009).

Hickman's Onion

Hickman's onion is a CNPS List 1B plant with no state or federal status. Hickman's onion is not a target species under the former Fort Ord HMP (USACE 1997). This plant is a bulbiferous herb in the Liliaceae family. Hickman's onion is found in closed-cone coniferous forest, maritime chaparral, coastal prairie, coastal scrub, and valley and foothill grassland habitats at elevations ranging from five to 200 meters above MSL. This species typically flowers from March to May. There is one previously recorded occurrence within a one–mile radius of the South Boundary Road improvement area (CDFG 2009). The maritime chaparral within the South Boundary Road improvement area provides suitable habitat for this species.

Sandmat Manzanita

Sandmat manzanita is a CNPS List 1B species with no state or federal status. Sandmat manzanita is target species under the former Fort Ord HMP (USACE 1997). This plant is an evergreen shrub in the Ericaceae family. Sandmat manzanita is found in closed-cone coniferous forest, maritime chaparral, cismontane woodland, coastal dunes, and coastal scrub on open, sandy soils at elevations ranging from three to 205 meters above MSL. This species typically flowers from February to May. This species was observed during the plant survey and assessment conducted by PMC biologists in June and July 2009. Sandmat manzanita was observed within the PSA; however, this species is known to be a common component of the chaparral within the former Fort Ord (USACE 1997). Plants were not mapped due to the common nature of this species and because the plant survey was not conducted during the blooming period for this species. There is one previously recorded occurrence within a one–mile radius of the Gigling Road improvement area and two previously recorded occurrences within a one-mile radius of the South Boundary Road improvement area (CDFG 2009). The maritime chaparral within the South Boundary Road improvement area provides suitable habitat for this species.

Monterey Spineflower

Monterey spineflower is a CNPS List 1B species and a federally listed as threatened species. Monterey spineflower is target species under the former Fort Ord HMP (USACE 1997). This plant is an annual herb in the Polygonaceae family. It occurs on sandy soils within coastal dune, coastal scrub, maritime chaparral, cismontane woodland, and valley and foothill grassland habitats at elevations ranging from three to 450 meters above MSL. This species typically flowers from April to June, and sometimes into July. This species was observed this species in various locations throughout the South Boundary improvement area during the plant survey and assessment conducted by PMC biologists in June and July 2009. Monterey spineflower was found to co-occur with diffuse spineflower. As such, population densities were not estimated. In addition, Monterey spineflower is an annual plant, thus the size and location of the population can fluctuate from year to year. There is one previously recorded occurrence within a one-mile radius of the Gigling Road improvement area and two previously recorded occurrences within a one-mile radius of South Boundary Road improvement area (CDFG 2009). Based on the 2009

surveys conducted by PMC biologists, Monterey spineflower occupied approximately 0.10 acre within the South Boundary Road improvement area (footprint and TCZ). This species was not observed at the Gigling Road improvement area. Openings within maritime chaparral within the South Boundary Road improvement area provides suitable habitat for this species although this species was not observed at any other locations than that described above.

In its designation of critical habitat for Monterey spineflower (USFWS 2002), the USFWS excluded areas designated as "Development" in the HMP for Fort Ord (USACE 1997). The portions of Gigling Road and South Boundary Road that are the focus of this project lie within HMP-designated "Development" areas. Consequently, the PSA is not located within designated critical habitat for Monterey spineflower.

Santa Cruz microseris

Santa Cruz microseris is a CNPS List 1B plant with no state or federal listing status. Santa Cruz microseris is not a target species under the former Fort Ord HMP (USACE 1997). This plant is an annual herb in the Asteraceae family. Santa Cruz microseris is found in broadleafed upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, and valley and foothill grassland habitats in open areas (sometimes on serpentinite) at elevations ranging from ten to 500 meters above MSL. This species typically flowers from April to May. There is one previously recorded occurrence within a one-mile radius of the South Boundary Road improvement area (CDFG 2009). The maritime chaparral within the South Boundary Road improvement area provides suitable habitat for this species.

Special-status Wildlife

Based on a records search of the CNDDB and the USFWS online species list, a few special-status wildlife species have the potential to occur within the PSA or the vicinity of the PSA. Based on field observations and literature review specific to the special-status wildlife species listed in **Appendix B**, the potential for occurrence has been determined for each species. Four wildlife species were determined to have potential to occur within the PSA including California tiger salamander (*Ambystoma californiense*), black legless lizard, California horned lizard, and American badger (*Taxidea taxus*). No special-status wildlife species were observed during the PSA assessment; however, species-specific focused surveys were not conducted. The species identified as potentially occurring within the PSA are described below. Information for the life history accounts provided below, unless noted otherwise, is from the California Wildlife Habitat Relationships (CWHR) system maintained by CDFG (2002).

California tiger salamander

The California tiger salamander (CTS) is a federally listed threatened species and a CDFG species of special concern. This species is a target species under the former Fort Ord HMP (USACE 1997). CTS breed in seasonal pools in grasslands and lowland hills, but spend most of their life in subterranean refugia in nearby upland habitat, commonly using small mammal burrows for that purpose. CTS are known to move long distances (2 kilometers [km] or 1.24 miles) between aestivation sites and breeding pools. For successful breeding, CTS require seasonal pools that hold water for a minimum of four months to allow CTS larval metamorphosis to occur. Because CTS adults may take four to five years to reach sexual maturity, during which time they are using upland habitat, 95 to 99 percent of their life cycle is spent on land, and suitable upland habitat is critical to the survival of the species. Presence of the species is most readily determined by springtime pond surveys or by rainy season drift fencing, pit traps, and nighttime observations.

There is no suitable breeding habitat for CTS within the PSA, but there is a recorded occurrence of this species within approximately 1.23 miles of the South Boundary Road improvement area (CDFG 2009), which is within the observed distance (1.24 miles) that CTS will travel from breeding sites (USFWS and CDFG 2003). The nearest recorded occurrence to the Gigling Road improvement area is a distance of approximately 1.32 miles (CDFG 2009). According to the *Interim Guidelines on Site Assessments and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander* prepared jointly by the USFWS and CDFG (2003), these agencies may assume presence or infer that a significant impact will occur if the proposed project site is: 1) located within one kilometer (km) (0.6 mile) of a known population, and 2) no barrier exists that would inhibit immigration to the subject site. However, the 2005 Biological Opinion, *Cleanup and Reuse of Former Fort Ord, Monterey County, California, as it affects California Tiger Salamander and Critical Habitat for Contra Costa Goldfields* (USFWS 2005), uses a 2 km radius from breeding locations as an estimate of CTS upland habitat. In addition, this Biological Opinion identifies the 321-acre Del Rey Oaks property as an area that potentially supports breeding and upland habitat for CTS. A portion of the South Boundary Road alignment travels through this property. As such, the USFWS may assume presence or infer that a significant impact would occur due to the distance to the nearest known occurrence. The PSA is not located within critical habitat for this species (USFWS 2009b).

Black legless lizard

The black legless lizard is a CDFG species of special concern and is a target species under the former Fort Ord HMP (USACE 1997). It has no state or federal listing status. Legless lizards are fossorial animals that burrow in sand and leaf litter beneath plants and feed on insects and other invertebrates. The black legless lizard is found in loose, friable sandy soils in a variety of habitat types. At former Fort Ord, it is closely associated with the Baywood Sands and Oceano soils with native dune vegetation, coastal scrub, maritime chaparral, oak woodlands, oak savanna, and grasslands. Within the PSA, the maritime chaparral and coastal oak woodlands are potential habitat for the black legless lizard. There are ten previously recorded occurrences of this species within a one-mile radius of the Gigling Road improvement area and four previously recorded occurrences within a one-mile radius of the South Boundary Road improvement area (CDFG 2009).

California horned lizard

The coast (California) horned lizard is a CDFG species of special concern with no state or federal listing status. This species is not a target species under the former Fort Ord HMP (USACE 1997). The California horned lizard is a large lizard with five head spines projected toward the posterior. This species inhabits valleys, foothills, and semiarid mountains from sea level up to 8,000 feet (2,438 meters) in elevation and is found grassland, coniferous forest, woodland, and chaparral habitats with open areas and patches of loose soil. This species is associated with habitats that contain a sandy substrate that they can burrow into and supports their prey base of ants and beetles. This subspecies ranges in the Central Valley from southern Tehama County south, in the Sierra foothills from Butte County to Tulare County below 4,000 feet; below 6,000 feet in the mountains of southern California exclusive of desert regions; and throughout the Coast Ranges south from Sonoma County. California horned lizards typically breed during April and the hatchlings first appear during July and August. California lowland populations are in decline primarily due to urban and agricultural expansion. Within the PSA, the maritime chaparral and coastal oak woodland are potential habitat for the California horned lizard. There are five previously recorded occurrences within a five-mile radius of the Gigling Road improvement area; these same five recorded occurrences are located within a ten-mile radius of the South Boundary Road improvement area (CDFG 2009).

American badger

The American badger is a California species of special concern with no state or federal listing status. This species is not a target species under the former Fort Ord HMP (USACE 1997). The geographic distribution of the American badger is from Alberta southward to central Mexico and eastward from the Pacific coast to Ohio. This species ranges throughout the state of California, but are absent from humid coastal forests of Del Norte county and Humboldt county. Suitable habitat for badgers is characterized by grasslands, shrublands, mountain meadow, and open stages of most habitats with dry soil. Badgers dig burrows in soil for cover, or reuse old burrows. They prey mostly on fossorial rodents such as ground squirrels. They will also eat a variety of other animals including mice, woodrats, birds, and insects. Within the PSA, maritime chaparral provides potential habitat for the American badger. There are two previously recorded occurrences within a one-mile radius of the South Boundary Road improvement area and seven previously recorded occurrences within a five-mile radius of the Gigling Road improvement area; six of these occurrences are overlapping between the two improvement areas (CDFG 2009).

Raptors & other migratory birds

Several raptor species, such as red-tailed hawk and red-shouldered hawk, forage and nest in a variety of habitats throughout Monterey County. Raptor nests are protected under the MBTA and Section 3503.5 of the California Fish and Game Code, which makes it illegal to destroy any active raptor nest. The MBTA also protects migratory bird nests. Medium- to large-sized trees in the PSA and vicinity may provide nesting habitat for raptor species and migratory birds. In addition, the maritime chaparral and coastal oak woodlands within the PSA provide potential foraging habitat for raptors and migratory birds. Consequently, raptors and other migratory birds have potential to occur within the PSA.

Sensitive Habitats, Including Critical Habitat

Sensitive habitats include: a) areas of special concern to resource agencies; b) areas protected under the California Environmental Quality Act (CEQA); c) areas designated as sensitive natural communities by CDFG; d) areas outlined in Section 1600 of the California Fish and Game Code; e) areas regulated under Section 404 of the federal Clean Water Act (CWA); f) areas protected under Section 402 of the CWA; and g) areas protected under local regulations and policies. Two of the biological communities found in the PSA, oak woodland and maritime chaparral, are considered sensitive habitats protected by various agencies. There are no riverine, riparian, or wetland habitats within the PSA which would be considered sensitive habitats under the jurisdiction of CDFG and the USACE.

The term "oak woodland" refers to an oak stand with greater than 10 percent canopy cover or that may have historically supported greater than 10 percent canopy cover (Oak Woodland Conservation Act, Fish and Game Code Section 1361). Coast live oak woodland was identified in the PSA with more than 10 percent canopy cover (mapped as "coastal oak woodland"). Although this habitat type does not have a threatened state rank, it is a habitat of concern to CDFG (state rank 4 = apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern; i.e. there is some threat, or somewhat narrow habitat). Oak woodlands are rapidly disappearing in California and, as defined in CEQA, further elimination would result in significant adverse impacts.

The maritime chaparral within the PSA, defined as central maritime chaparral by CDFG and the *Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995), is considered by CDFG to be

rare or uncommon but not imperiled (state rank 2.2 –threatened, between 2,000 and 10,000 acres). This rare habitat is found only in areas with a predominance of summer fog. Maritime chaparral is considered a threatened habitat type, and so is protected by many agencies along the coast of California.

The USFWS defines critical habitat as a specific area that is essential for the conservation of a federally listed species and which may require special management considerations or protection. Critical habitat has been designated for Monterey spineflower, California red-legged frog, and the south/central California coast ESU for steelhead within five miles of the PSA. No critical habitat has been designated or proposed within the PSA (USFWS 2009b) (**Figure 4**).

Wildlife Movement Corridors

Wildlife corridors refer to established migration routes commonly used by resident and migratory species for passage from one geographic location to another. Corridors are present in a variety of habitats and link otherwise fragmented acres of undisturbed area. Maintaining the continuity of established wildlife corridors is important to: a) sustain species with specific foraging requirements; b) preserve a species' distribution potential; and c) retain diversity among many wildlife populations. Therefore, resource agencies consider wildlife corridors to be a sensitive resource. The South Boundary Road improvement area parallels or includes the existing roadway. While the natural habitats within the PSA are used by common wildlife species for various life-history requirements (foraging, nesting, resting/perching), the PSA does not contain connected expanses of open space, riparian corridors, or drainages which may be used by wildlife species as movement corridors. In addition, the Gigling Road improvement area is surrounded by development thereby limiting any movement by wildlife.

Protected Trees

An arborist survey has not been performed within the PSA. As such, an exact count of trees impacted by the proposed project is not possible at this time. The South Boundary Road improvement area contains a large number of coast live oak trees within the coastal oak woodland and maritime chaparral communities. Non-native Monterey pine trees were also observed in scattered locations throughout the South Boundary Road improvement area. Coast live oak trees, as well as the non-native Monterey pine and Monterey cypress, are found within the Gigling Road improvement area, but occur largely as planted ornamentals. Coast live oak trees are also found within the small coastal oak woodland at the east end of the Gigling Road improvement area.

Within the City of Seaside (Gigling Road improvement area), all trees, including non-native Monterey pine and cypress trees, that are at least ten feet in height above the ground, or that are six inches or greater in diameter at breast height (DBH), are currently protected under the City of Seaside's tree ordinance, require an application for removal, and replacement at a 1:1 ratio. Within the City of Monterey (southeastern portion of South Boundary Road improvement area), trees located on vacant private parcels that are more than two inches in diameter when measured at a point four feet six inches above the tree's natural grade and trees located on developed private parcels that are more than six inches in diameter when measured at a point four feet six inches above the tree's natural grade are considered protected trees and are subject to conditions of removal/mitigation measure standards provided in Sections 37-10 and 37-11 of the City of Monterey Municipal Code. Within the City of Del Rey Oaks (nothwestern portion of Sound Boundary Road improvement area), all oaks and other significant trees, as defined, are protected. An oak tree is defined as any tree of the *Quercus* genus that has a single trunk that measures more than thirty (30) inches in circumference at two feet above the

ground or, for multi-trunked trees having two trunks with a circumference of at least 40 inches at two feet above the root crown. A significant tree is defined as a woody perennial plant which usually, but not necessarily, has a single trunk, and which has a height of 30 feet or more, or has a circumference of 36 inches of more at 24 inches above the ground.

IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

To determine the level of significance of an identified impact, the criteria outlined in the California Environmental Quality Act (CEQA) Guidelines were used. CEQA (Section 15065) directs lead agencies to find that a project may have a significant effect on the environment if it has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish and 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 an endangered, rare or threatened species, or eliminate important examples of the major periods of California history or prehistory.

CEQA (Section 15206) further specifies that a project shall be deemed to be of statewide, regional, or area-wide significance if it would substantially affect sensitive wildlife habitats including, but not limited to, riparian lands, wetlands, bays, estuaries, marshes, and habitats for rare and endangered species.

CEQA (Section 15380) further provides that a plant or animal species, even if not on one of the official lists, may be treated as "rare or endangered" if, for example, it is likely to become endangered in the foreseeable future.

Additional criteria to assess significant impacts to biological resources due to the proposed project are specified in the CEQA Guidelines Section 15382 (Significant Effect on the Environment) "...a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance."

Based on the Environmental Checklist in Appendix G of the CEQA Guidelines, a proposed project could be considered to have significant biological resource impacts if it would have:

- A substantial adverse effect, either directly or through habitat modifications, on any special-status species;
- A substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFG or USFWS;
- A substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act 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; and

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

The PSA is located within "Development" areas as designated by the former Fort Ord HMP (USACE 1997). Impacts to sensitive species and habitats within "Development" areas are anticipated and accommodated by the policies of the HMP. Large tracts of habitat have been set aside in the HMP as conservation areas to mitigate for the loss of habitat for the affected species in the "Development" areas on the former Fort Ord. The following discussion of the "Development" designation contained in the HMP is pertinent to the proposed project:

> Lands designated as "Development" have no management restrictions placed upon them as a result of the HMP. The biological resources found on these parcels are not considered essential to the long-term preservation of sensitive species at the former Fort Ord. The Biological Opinion allows for development of these parcels, but also requires identification of sensitive biological resources within these parcels that may be salvaged for use in restoration activities within reserve areas. The HMP does not exempt future landowners for complying with environmental regulations enforced by federal, state and local agencies. This includes compliance with the federal Endangered Species Act (ESA). However, implementation of the HMP will simplify future regulatory compliance by allowing U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) to issue permits and take authorizations easily.

The HMP does not provide specific authorization for incidental take of federal or state listed species to future land recipients under the federal ESA or CESA. In compliance with the ESA and CESA, FORA is currently in the process of obtaining a Section 10 Incidental Take Permit from the USFWS and a Section 2081 Incidental Take Permit from CDFG, which will provide base-wide coverage for take of federal and state-listed wildlife and plant species to all non-federal entities receiving land on the former Fort Ord. This process involves the preparation of a Habitat Conservation Plan (HCP) and Implementing Agreement (IA). The HCP and IA are currently in draft form and being reviewed by the resource agencies. This biological resources impact analysis assumes that the HCP and the IA, which is tiered off the HMP, will be signed by all the agencies responsible for its implementation.

To coordinate the HMP with CEQA compliance, CDFG may take into account the conservation measures set forth in the HMP when considering CEQA requirements for sensitive species and habitat types. CDFG would consider the conservation program for HMP species and their habitats included in the HMP as adequate mitigation for CEQA compliance for the natural resources during the implementation of land reuse and development planning at the former Fort Ord. There may be issues, such as oak woodland mitigation, outside the scope of the HMP that would need to be considered under CEQA.

1. A SUBSTANTIAL ADVERSE EFFECT, EITHER DIRECTLY OR THROUGH HABITAT MODIFICATIONS, ON ANY SPECIAL-STATUS SPECIES

Impacts to Special-status Plants

Approximately 0.05 acre of Monterey spineflower, a federally listed species, will be directly impacted, and an additional 0.05 acre located within the TCZ could potentially be indirectly and/or temporarily impacted by the proposed project at the South Boundary Road improvement area. In addition, the maritime chaparral (13.3 acres) within the South Boundary

Road improvement area provides suitable habitat for sandmat manzanita, Hickman's onion, and Santa Cruz microseris. Monterey spineflower and diffuse spineflower were observed co-occurring in openings with sandy soils in the chaparral and oak woodland communities. Since both species co-occur and it was phenologically difficult to distinguish the difference between the two species in the field, it was assumed that all sites where one species was present, both species have potential to occur. As the intermixed spineflower species occurred in large clumps, not every individual plant within each clump was sampled for presence of the rare Monterey spineflower in the interest of not destroying the population. In addition, Monterey spineflower is an annual plant, thus the size and location of the population can fluctuate from year to year. As such, an accurate estimate of Monterey spineflower was not obtained. Impacts at this time are based on the mapped areas of spineflower as depicted in **Appendix D**.

If special-status plant species are present within the project footprint (impact area) or TCZ, they may be directly impacted by trampling, compaction, or removal. Although there will be impacts to special-status plant species in the vicinity of the proposed project, and there would be a potentially significant impact, the PSA is within HMP designated "Development" parcels and, as such, the loss of habitats and certain special-status species (including Monterey spineflower and sandmat manzanita) were anticipated and are mitigated through the preservation and management of over 16,000 acres on former Fort Ord for habitat conservation. However, the HMP does not authorize incidental take of any species listed as threatened or endangered under the federal ESA and entities are responsible for submitting the HMP in combination with additional documentation. Any impacts to listed plant species prior to adoption of the Fort Ord HCP or receipt of an incidental take permit are considered **potentially significant**.

As the Fort Ord HCP has not yet been adopted, the project cannot take listed species until the HCP has been adopted and/or a federal take permit has been secured. To ensure no take of federally listed Monterey spineflower, areas identified during the survey conducted by PMC in June/July 2009 (see Figures 4a through 4f, **Appendix D**) should be avoided prior to issuance of a take permit by USFWS and/or CDFG or adoption of the Fort Ord HCP.

Hickman's onion and Santa Cruz microseris are not covered species in the HMP (USACE 1997). Implementation of the proposed project may result in adverse impacts to these specials-status plant species should they be present; this is considered a **potentially significant** impact. Implementation of the mitigation measures identified below will reduce this impact to a less than significant level.

Suggested Mitigation Measures

For the South Boundary Road Improvement Area

MM-1 Construction activities shall be restricted as necessary to avoid disturbance of the listed plant populations. Avoidance measures shall include fencing of the population(s) before construction to ensure no ingress of personnel or equipment at a minimum radius of 20 feet around a rare plant population and construction monitoring by a qualified biologist. Avoidance areas shall be identified on project plans. Silt fencing and other Best Management Practices (BMPs) shall be used to ensure that the hydrology surrounding the population is not affected by project construction. In addition, no trees or shrubbery shall be removed surrounding the rare plant populations so that sunlight/shade is not changed that may affect their viability.

Once the Fort Ord HCP is adopted and USFWS/CDFG issues a take permit for listed plant species, then the project proponent may take the species given the stipulations of the take permit. If listed plants cannot be avoided, the following mitigation measures shall apply:

Efforts shall be made to salvage portions of the habitat or plant populations that will be lost as a result of implementation of the proposed project by transplanting the plants that would be adversely affected by the proposed project for either re-establishment after construction is complete or for planting in a new area in appropriate habitat. A propagation program shall be developed for the salvage and transfer of rare, threatened, or endangered plant populations from the site before the initiation of construction activities. Permits may be required from the CDFG or USFWS, which will ensure that certified biologists are involved in the propagation and transport of rare, threatened, or endangered plant species. (Note: Propagation methods for the salvaged plant population must be developed on a case-by-case basis and must include the involvement of local conservation easements/ preserves/ open space, where applicable). The propagation and transfer of individual plant species must be performed at the correct time of year and successfully completed before the project's construction activities eliminate or disturb the plants and habitats of concern.

Timing/Implementation: *Prior to the initiation of construction activities.*

Enforcement/Monitoring: *FORA*

MM-2 FORA shall retain a qualified biologist to perform focused surveys to determine the presence/absence of Hickman's onion and Santa Cruz microseris within and adjacent to (within 20 feet, where appropriate) the proposed impact area (project footprint). These surveys shall be conducted in accordance with CDFG approved guidelines for conducting field surveys. Specifically, the guidelines are outlined in: *Guidelines for Assessing Effects of Proposed Developments on Rare Plants and Plant Communities* (Nelson, J.R. 1994), *In*: California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California, February 1994, Special Publication No. 1, Fifth Edition. These guidelines require rare plant surveys to be conducted at the proper time of year when rare or endangered species are both "evident" and identifiable. Field surveys shall be scheduled to coincide with known flowering periods, and/or during periods of phonological development that are necessary to identify the plant species of concern. If no special-status plant species are found, then no further mitigation is necessary.

If these special-status plant species are found within or adjacent to (within 20 feet) the proposed impact area during the surveys, these plant species shall be avoided to the extent possible. Avoidance measures shall include fencing of the population(s) before construction to ensure no ingress of personnel or equipment at a minimum radius of 20 feet around a rare plant population and construction monitoring by a qualified biologist. Avoidance areas shall be identified on project plans. Silt fencing and other BMPs shall be used to ensure that the hydrology surrounding the population is not affected by project construction. In addition, no trees or shrubbery shall be removed surrounding the rare plant populations so that sunlight/shade is not changed

that may affect their viability. If these special-status plants cannot be avoided, the following mitigation measures shall apply:

Before the approval of grading plans or any ground-breaking activity within the PSA, FORA shall submit a mitigation plan concurrently to CDFG and USFWS (if appropriate) for review and comment, and FORA may consult with these entities before approval of the mitigation plan. The plan shall include mitigation measures for the population(s) to be directly affected. Possible mitigation for the population(s) that would be removed during construction of the project includes implementation of a program to transplant, salvage, cultivate, or re-establish the species at suitable sites (if feasible). The mitigation ratio for directly impacted plant species shall be at a minimum ratio of 2:1 (two plants for every one impacted). The actual level of mitigation may vary depending on the sensitivity of the species (its rarity or endangerment status), its prevalence in the area, and the current state of knowledge about overall population trends and threats to its survival. Alternatively, replacement credits may be purchased by FORA at an approved mitigation bank should such credits be available.

Any special-status plant species that are identified adjacent to the PSA, but not proposed to be disturbed by the project, shall be protected by barrier fencing to ensure that construction activities and material stockpiles do not impact any special-status plant species. These avoidance areas shall be identified on project plans.

Timing/Implementation: Prior to the initiation of construction activities.

Enforcement/Monitoring: FORA

With implementation of the above mitigation measures, impacts to special-status plants are considered **less than significant**. No mitigation is required for the Gigling Road improvement area.

Impacts to Special-status Wildlife Species

California Tiger Salamander

The California tiger salamander (CTS) is a federally listed threatened species, a CDFG species of special concern, and a targeted species under former Fort Ord HMP. Potential upland habitat for CTS has been identified within the South Boundary Road improvement area as this site is located within 1.24 miles of a known breeding area. In addition, the Del Rey Oaks property, in which the northwestern portion of the alignment is located, has been identified by the USFWS as potential breeding and upland habitat (USFWS 2005). As such, the USFWS may assume presence or infer that a significant impact would occur within the South Boundary Road improvement area due to the distance to the nearest known occurrence and suitable habitats (USFWS 2005). As described further above, under the federal ESA any activity with a federal nexus such as this one that may affect a federally listed plant or animal requires consultation (Section 7) with the USFWS. Road improvements such as South Boundary Road and Gigling Road have been addressed in the 2005 USFWS Biological Opinion titled, *Cleanup and Reuse of Former Fort Ord, Monterey County, California, as it affects California Tiger Salamander and Critical Habitat for Contra Costa Goldfields.* However, the federal entities involved with the project may elect to confirm with USFWS that the proposed project conforms with all provisions of this Biological

Opinion prior to proceeding. If the proposed project does not comply with the conditions in this Biological Opinion, this would be considered a **potentially significant** impact. Implementation of the following mitigation measure would reduce this impact to a less than significant level.

Suggested Mitigation Measures

MM-3 To address incidental take of California tiger salamander, the proposed project shall comply with the conditions in the 2005 USFWS Biological Opinion, *Cleanup and Reuse of Former Fort Ord, Monterey County, California, as it affects California Tiger Salamander and Critical Habitat for Contra Costa Goldfields*, issued to the U.S. Army by the USFWS. Only those conditions relevant to the PSA would apply.

Timing/Implementation: *Prior to the initiation of construction activities.*

Enforcement/Monitoring: *FORA*

Implementation of the above mitigation measure would reduce impacts to the California tiger salamander to a **less than significant** level by ensuring compliance with the Biological Opinion, *Cleanup and Reuse of Former Fort Ord, Monterey County, California, as it affects California Tiger Salamander and Critical Habitat for Contra Costa Goldfields* (USFWS 2005).

Black Legless Lizard

Project implementation will result in a total of 8.1 acres of direct impacts and 5.2 acres of indirect/temporary impacts to maritime chaparral habitats at the South Boundary Road improvement area, a total of 2.3 acres of direct impacts and 1.7 acres of indirect/temporary impacts to coastal oak woodland habitats at the South Boundary Road improvement area, and a total of 0.8 acre of direct impacts and 0.3 acre of indirect/temporary impacts to coastal oak woodland at the Gigling Road improvement area. The maritime chaparral and coastal oak woodland habitats may support black legless lizard species. The black legless lizard is not federally or state-listed, but it is designated as a species of special concern by CDFG. It is also included as a targeted species under former Fort Ord HMP (USACE 1997). Mitigation for the loss of potential habitat for the black legless lizard is provided through the preservation and management of habitat reserve areas within the boundaries of the former Fort Ord as described in the 1997 HMP. Implementation of the proposed project is not expected to reduce the populations of this species below self-sustaining levels within the region. As such, impacts to this species are considered **less than significant** and mitigation measures are not required.

California Horned Lizard

The California horned lizard is not federally or state-listed, but it is designated as a species of special concern by CDFG. This species is not a targeted species under former Fort Ord HMP (USACE 1997). As such, there is no mitigation for the loss of potential habitat for this species under the HMP. Project implementation will result in a total of 8.1 acres of direct impacts and 5.2 acres of indirect/temporary impacts to maritime chaparral habitats at the South Boundary Road improvement area that may support this species. As such, construction and operational activities proposed within the PSA may impact habitat and/or result in the take of individuals of California horned lizard should they be present. However, implementation of the proposed project is not expected to reduce the populations of this species below self-sustaining levels within the region. As such, impacts to this species are considered **less than significant** and mitigation measures are not required.

American Badger

The American badger is not federally or state-listed, but it is designated as a species of special concern by CDFG. This species is not a targeted species under former Fort Ord HMP (USACE 1997). As such, there is no mitigation for the loss of potential habitat for this species under the HMP. Project implementation will result in a total of 8.1 acres of direct impacts and 5.2 acres of indirect/temporary impacts to maritime chaparral habitats at the South Boundary Road improvement area that may support this species. As such, construction and operational activities proposed within the PSA may impact habitat and/or result in the take of individuals of American badger should they be present. However, this is a large, mobile species that is likely to avoid disturbance areas. In addition, implementation of the proposed project is not expected to reduce the populations of this species below self-sustaining levels within the region. As such, impacts to this species are considered **less than significant** and mitigation measures are not required.

Impacts to Avian Species

While bird nests were not observed during the assessment, the vegetation in and around the PSA provides potential nesting habitat for raptors and migratory birds. Raptors and migratory birds protected under the MBTA may be impacted by project implementation should they be present. All native breeding birds (except game birds during the hunting season), regardless of their listing status, are protected under the MBTA. Vegetation removed during the nesting season as a result of project implementation would result in direct impacts to nesting birds should they be present. Furthermore, noise and other human activity may result in nest abandonment, if nesting birds are present within 100 feet (200 feet for raptors) of construction activities. There are a total of 5.1 acres of coastal oak woodlands within the PSA. Approximately 2.3 acres will be directly impacted at the South Boundary Road improvement area and 0.8 acre will be directly impacted at the Gigling Road improvement area. These acreages do not reflect the additional trees and shrubs located within the maritime chaparral and urban communities where birds may nest.

Suggested Mitigation Measures

For Both the Gigling Road and South Boundary Road Improvement Areas

MM-4 If proposed site disturbance and construction activities are planned to occur within the PSA during the nesting season for local avian species (typically February 22 through August 1), FORA shall retain shall retain a qualified biologist to conduct a focused survey for active nests of special-status birds within and in the vicinity of (up to 200 feet and no less than 100-feet outside project boundaries, where possible) the disturbance and construction area no more than 30 days prior to ground disturbance or tree removal. If active nests are found, trees/shrubs with nesting birds shall not be disturbed until abandoned by the birds or a qualified biologist deems disturbance potential to be minimal (in consultation with USFWS and/or CDFG, where appropriate). If applicable, tree removal shall be restricted to a period following fledging of chicks, which typically occurs between late July and early August.

If an active nest is located within the 100 feet (200 feet for raptors) of construction activities, other restrictions may include establishment of exclusion zones (no ingress of personnel or equipment at a minimum radius of

100 feet or 200 feet, as appropriate, around the nest as confirmed by the appropriate resource agency) or alteration of the construction schedule.

Reference to this requirement and the MBTA shall be included in the construction specifications.

If construction activities or tree removal are proposed to occur during the non-breeding season (August 2 – February 21), a survey is not required, no further studies are necessary, and no mitigation is required.

Timing/Implementation: *Prior to the initiation of construction activities.*

Enforcement/Monitoring: *FORA*

Implementation of the above mitigation measure would reduce impacts to nesting raptors and migratory birds to a **less than significant** level.

2. A SUBSTANTIAL ADVERSE EFFECT ON ANY RIPARIAN HABITAT OR OTHER SENSITIVE NATURAL COMMUNITY IDENTIFIED IN LOCAL OR REGIONAL PLANS, POLICIES, OR REGULATIONS, OR BY THE CDFG OR USFWS

Impacts to Sensitive Natural Communities

The proposed project would result in the removal of coastal oak woodland and maritime chaparral vegetative communities within the designated clearing limits of the PSA. Project implementation would result in the direct loss of approximately 8.1 acres of maritime chaparral at the South Boundary Road improvement area, 2.3 acres of coastal oak woodland at the South Boundary Road improvement area, and 0.8 acre of coastal oak woodland at the Gigling Road improvement area. In addition, indirect and/or temporary impacts may result in the 20-foot TCZ surrounding each proposed roadway alignment. This would result in the indirect/temporary impact of approximately 5.2 acres of maritime chaparral at the South Boundary Road improvement area, 1.7 acres of coastal oak woodland at the South Boundary Road improvement area, and 0.3 acre of coastal oak woodland at the Gigling Road improvement area.

Although there will be removal of maritime chaparral communities at the South Boundary Road improvement area, the PSA is within HMP designated "Development" parcels and, as such, the loss of habitats were anticipated and are mitigated through the preservation and management of over 16,000 acres of open space on former Fort Ord (USACE 1997). As such, the potential impact of the proposed project on this sensitive natural community is considered **less than significant** with implementation and compliance with the HMP.

Only the maritime chaparral community is targeted under the HMP (USACE 1997). Impacts and mitigation measures for coastal oak woodland are addressed further below under **Impacts to Trees**.

3. A SUBSTANTIAL ADVERSE EFFECT ON FEDERALLY PROTECTED WETLANDS AS DEFINED BY SECTION 404 OF THE CLEAN WATER ACT THROUGH DIRECT REMOVAL, FILLING, HYDROLOGICAL INTERRUPTION, OR OTHER MEANS

Impacts to Jurisdictional Waters of the U.S., Including Wetlands

No waters of the U.S., including wetlands, were observed within the PSA; therefore, there will be **no impacts** to this resource.

4. 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

Impacts to Migratory Corridors

The proposed project is not located in an area used by native and/or migratory species for movement or nursery sites. The South Boundary Road improvement area parallels or includes the existing roadway. The Gigling Road improvement area is surrounded by development thereby limiting any movement by wildlife.

5. CONFLICT WITH ANY LOCAL POLICIES OR ORDINANCES PROTECTING BIOLOGICAL RESOURCES, SUCH AS A TREE PRESERVATION POLICY OR ORDINANCE

Impacts to Trees Protected under the Local Tree Ordinance

An arborist survey has not been performed within the PSA. As such, an exact count of trees impacted by the proposed project is not possible at this time. The South Boundary Road improvement area contains a large number of coast live oak trees within the coastal oak woodland (4.0 acres) and maritime chaparral (13.3 acres) communities. Non-native Monterey pine trees were also observed in scattered locations throughout this improvement area. Coast live oak trees, as well as the non-native Monterey pine and Monterey cypress, are found within the Gigling Road improvement area, but occur largely as planted ornamentals. Coast live oak trees are also found within the small coastal oak woodland at the east end of the Gigling Road improvement area (1.1 acres). Within the City of Seaside (Gigling Road improvement area), all trees, including non-native Monterey pine and cypress trees, that are at least ten feet in height above ground, or that are six inches or greater DBH, are currently protected under the City of Seaside's tree ordinance. Within the City of Monterey (southeastern portion of the South Boundary Road improvement area), trees on private vacant parcels that are greater than two inches in diameter at four feet six inches above the tree's natural grade are protected and require a permit for removal. With the City of Del Rey Oaks, oak trees measuring more than 30 inches in circumference (9½ inches in diameter) measured at two feet above the root crown, and significant trees measuring 30 feet or more in height or 36 inches or more in circumference, are protected and require a permit for removal.

Implementation of the proposed project will result in the removal of coast live oak, Monterey pine, and Monterey cypress trees. Removal of trees has the potential to reduce habitat resource function and value within the PSA. This is considered a **significant impact**. The following mitigation measures, as appropriate for each improvement area, will reduce this impact to a less than significant level.

Suggested Mitigation Measures

For Both the Gigling Road and South Boundary Road Improvement Areas

MM-5 Prior to the commencement of construction activities, FORA shall engage a Registered Professional Forester or Certified Arborist to assist in field adjustments of tree removal and to prepare a tree removal plan for the proposed project after the proposed improvements have been staked in the field. The tree removal plan will indicate: the location of each protected tree to be removed for grading and/or construction; the location of trees that are proposed for relocation; the location of protected trees that are located adjacent to grading and/or construction limits (i.e. within 20 feet); and will indicate that all oak trees which require pruning, are pruned by a Certified Arborist prior to initiation of construction activities. The purpose of the tree removal plan is to support a tree removal permit or application, as appropriate. The tree removal plan will accompany the arborist survey as described under mitigation measures **MM-7** and **MM-8** below.

Timing/Implementation: *Prior to the initiation of construction activities.*

Enforcement/Monitoring: *City of Seaside, City of Monterey, or City of Del Rey Oaks, as applicable; FORA*

MM-6 Prior to commencement of construction activities, to the greatest extent feasible, the critical root zone (measurement of the dripline radius taken from the tree trunk to the tip of the farthest reaching branch as determined by a Certified Arborist or Registered Professional Forrester) of any tree or groups of trees to be retained shall be fenced with a four-foot high brightly colored synthetic fence at the outermost edge of the critical root zone to prevent injury to the trees prior to grading and during construction activities within the project area. The fencing shall remain in place until all construction activities are complete. Trenching, grading, soil compaction, parking of vehicles or heavy equipment, stockpiling of construction materials, and/or dumping of materials will not be allowed within the critical root zone.

Timing/Implementation: *Prior to the initiation of construction activities.*

Enforcement/Monitoring: *City of Seaside, City of Monterey, or City of Del Rey Oaks, as applicable; FORA*

Gigling Road Improvement Area Only – City of Seaside

MM-7 Mitigation for tree removal associated with the Gigling Road improvements shall be in accordance with Chapter 8.54 of the City of Seaside Municipal Code. FORA shall engage a Registered Professional Forester or Certified Arborist to perform an arborist survey of the PSA for trees with a circumference of at least 20 inches (approximately six inches in diameter) measured at 24 inches above the ground persuant to Section 8.54.020. The survey shall also include landmark oak trees which are defined as trees 24 inches or more in diameter when measured two feet above the ground, or trees which are visually significant, historically significant, or exemplary of their species.

All removed trees must be replaced at a 1:1 ratio with a minimum 5-gallon approved specimen tree of a species and in an approved location as stated under Section 8.54.070.

Timing/Implementation: *Prior to the initiation of construction activities.*

Enforcement/Monitoring: *City of Seaside; FORA*

South Boundary Improvement Area Only – Cities of Del Rey Oaks and Monterey

MM-8 Mitigation for tree removal associated with the South Boundary Road Improvements shall be in accordance with Chapter 12.16 of the City of Del Rey Oaks Municipal Code and Chapter 37 of the City of Monterey Municipal Code. Within the City of Del Rey Oaks jurisdiction, FORA shall engage a Registered Professional Forester or Certified Arborist to perform an arborist survey of the PSA for single trunk oaks greater 30 inches in circumference (9½ inches diameter) diameter at two feet above the ground surface or multi-trunk oaks with a circumference of any two trunks of at least 40 inches as measured two feet above the root crown; and any woody perennial plants that have a height of 30 feet or more, or a circumference of 36 inches or more at 24 inches above ground (pursuant to Section 12.16.030 of the City of Del Rey Oaks Municipal Code).

Within the City of Monterey jurisdiction, FORA shall engage a Registered Professional Forester or Certified Arborist to perform an arborist survey of the PSA for trees that are greater than two inches in diameter at four feet six inches above the tree's natural grade (for trees on private vacant parcels, pursuant to Section 37-8 of the City of Monterey Municipal Code).

All protected trees impacted within the City of Del Rey Oaks shall be mitigated in accordance with Section 12.16.050 of the City of Del Rey Oaks Municipal Code. All protected trees impacted within the City of Monterey shall be mitigated in accordance with Sections 37-10 and 37-11 of the City of Monterey Municipal Code.

Timing/Implementation: *Prior to the initiation of construction activities.*

Enforcement/Monitoring: *Cities of Del Rey Oaks and Monterey Planning Department; FORA*

Implementation of these mitigation measures would ensure that protected trees within the PSA are replaced and protected during construction activities, as appropriate, to restore habitat values within the PSA, reducing potentially significant impacts to protected trees to a **less than significant** level.

6. CONFLICT WITH THE PROVISIONS OF AN ADOPTED HABITAT CONSERVATION PLAN, NATURAL COMMUNITY CONSERVATION PLAN, OR OTHER APPROVED LOCAL, REGIONAL, OR STATE HABITAT CONSERVATION PLAN

The proposed project does not conflict with an adopted HCP/NCCPP, Recovery Plan, or other Planning Document. The proposed project is consistent with the adopted HMP. At this time, there is no adopted HCP or NCCP; however, if one is adopted prior to project initiation, the proposed project would be modified to be consistent with the adopted plan. The proposed project is consistent with the recovery plan for Monterey spineflower (USFWS 1998).

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The data base searches contained herein include a collection of resource data available for the PSA and vicinity and do not necessarily reflect or conclude the absence or presence of any special-status species within the PSA.

APPENDICES

APPENDIX A RESULTS OF DATABASE SEARCHES

	Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1	***Actinemys marmorata pallida*** southwestern pond turtle	ARAAD02032			G3G4T2T3Q	S2	SC
2	***Agelaius tricolor*** tricolored blackbird	ABPBXB0020			G2G3	S2	SC
3	***Allium hickmanii*** Hickman's onion	PMLIL02140			G2	S2.2	1B.2
4	***Ambystoma californiense*** California tiger salamander	AAAAA01180	Threatened	unknown code...	G2G3	S2S3	SC
5	***Anniella pulchra nigra*** black legless lizard	ARACC01011			G3G4T2T3Q	S2	SC
6	***Anniella pulchra pulchra*** silvery legless lizard	ARACC01012			G3G4T3T4Q	S3	SC
7	***Arctostaphylos edmundsii*** Little Sur manzanita	PDERI04260			G2	S2.2	1B.2
8	***Arctostaphylos hookeri ssp. hookeri*** Hooker's manzanita	PDERI040J1			G3T2?	S2?	1B.2
9	***Arctostaphylos montereyensis*** Toro manzanita	PDERI040R0			G2	S2.1	1B.2
10	***Arctostaphylos pajaroensis*** Pajaro manzanita	PDERI04100			G2	S2.1	1B.1
11	***Arctostaphylos pumila*** sandmat manzanita	PDERI04180			G2	S2.2	1B.2
12	***Astragalus tener var. tener*** alkali milk-vetch	PDFAB0F8R1			G1T1	S1.1	1B.2
13	***Astragalus tener var. titi*** coastal dunes milk-vetch	PDFAB0F8R2	Endangered	Endangered	G1T1	S1.1	1B.1
14	***Athene cunicularia*** burrowing owl	ABNSB10010			G4	S2	SC
15	***Buteo regalis*** ferruginous hawk	ABNKC19120			G4	S3S4	
16	***Callitropsis goveniana*** Gowen cypress	PGCUP04031	Threatened		G1	S1.2	1B.2
17	***Callitropsis macrocarpa*** Monterey cypress	PGCUP04060			G1	S1.2	1B.2
18	***Central Dune Scrub***	CTT21320CA			G2	S2.2	
19	***Central Maritime Chaparral***	CTT37C20CA			G2	S2.2	
20	***Centromadia parryi ssp. congdonii*** Congdon's tarplant	PDAST4R0P1			G4T3	S3.2	1B.2
21	***Charadrius alexandrinus nivosus*** western snowy plover	ABNNB03031	Threatened		G4T3	S2	SC
22	***Chorizanthe pungens var. pungens*** Monterey spineflower	PDPGN040M2	Threatened		G2T2	S2.2	1B.2
23	***Chorizanthe robusta var. robusta*** robust spineflower	PDPGN040Q2	Endangered		G2T1	S1.1	1B.1

	Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
24	***Clarkia jolonensis*** Jolon clarkia	PDONA050L0			G2	S2.2	1B.2
25	***Coelus globosus*** globose dune beetle	IICOL4A010			G1	S1	
26	***Collinsia multicolor*** San Francisco collinsia	PDSCR0H0B0			G2	S2.2	1B.2
27	***Cordylanthus rigidus ssp. littoralis*** seaside bird's-beak	PDSCR0J0P2		Endangered	G5T1	S1.1	1B.1
28	***Cypseloides niger*** black swift	ABNUA01010			G4	S2	SC
29	***Danaus plexippus*** monarch butterfly	IILEPP2010			G5	S3	
30	***Delphinium hutchinsoniae*** Hutchinson's larkspur	PDRAN0B0V0			G2	S2.1	1B.2
31	***Eremophila alpestris actia*** California horned lark	ABPAT02011			G5T3Q	S3	
32	***Ericameria fasciculata*** Eastwood's goldenbush	PDAST3L080			G2	S2.1	1B.1
33	***Eriogonum nortonii*** Pinnacles buckwheat	PDPGN08470			G2	S2.3	1B.3
34	***Erysimum ammophilum*** sand-loving wallflower	PDBRA16010			G2	S2.2	1B.2
35	***Erysimum menziesii ssp. menziesii*** Menzies' wallflower	PDBRA160E1	Endangered	Endangered	G3?T2	S2.1	1B.1
36	***Erysimum menziesii ssp. yadonii*** Yadon's wallflower	PDBRA160E4	Endangered	Endangered	G3?T1	S1.1	1B.1
37	***Eucyclogobius newberryi*** tidewater goby	AFCQN04010	Endangered		G3	S2S3	SC
38	***Euphilotes enoptes smithi*** Smith's blue butterfly	IILEPG2026	Endangered		G5T1T2	S1S2	
39	***Falco mexicanus*** prairie falcon	ABNKD06090			G5	S3	
40	***Fritillaria liliacea*** fragrant fritillary	PMLIL0V0C0			G2	S2.2	1B.2
41	***Gilia tenuiflora ssp. arenaria*** sand gilia	PDPLM041P2	Endangered	Threatened	G3G4T2	S2.2	1B.2
42	***Horkelia cuneata ssp. sericea*** Kellogg's horkelia	PDROS0W043			G4T1	S1.1	1B.1
43	***Lasiurus cinereus*** hoary bat	AMACC05030			G5	S4?	
44	***Lasthenia conjugens*** Contra Costa goldfields	PDAST5L040	Endangered		G1	S1.1	1B.1
45	***Layia carnosa*** beach layia	PDAST5N010	Endangered	Endangered	G2	S2.1	1B.1
46	***Linderiella occidentalis*** California linderiella	ICBRA06010			G3	S2S3	

	Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
47	***Lupinus tidestromii*** Tidestrom's lupine	PDFAB2B3Y0	Endangered	Endangered	G2	S2.1	1B.1
48	***Malacothamnus palmeri var. involucratus*** Carmel Valley bush-mallow	PDMAL0Q0B1			G3T2Q	S2.2	1B.2
49	***Malacothamnus palmeri var. palmeri*** Santa Lucia bush-mallow	PDMAL0Q0B5			G3T2Q	S2.2	1B.2
50	***Malacothrix saxatilis var. arachnoidea*** Carmel Valley malacothrix	PDAST660C2			G5T2	S2.2	1B.2
51	***Microseris paludosa*** marsh microseris	PDAST6E0D0			G2	S2.2	1B.2
52	***Monterey Cypress Forest***	CTT83150CA			G1	S1.2	
53	***Monterey Pine Forest***	CTT83130CA			G1	S1.1	
54	***Monterey Pygmy Cypress Forest***	CTT83162CA			G1	S1.1	
55	***Northern Bishop Pine Forest***	CTT83121CA			G2	S2.2	
56	***Northern Coastal Salt Marsh***	CTT52110CA			G3	S3.2	
57	***Oceanodroma homochroa*** ashy storm-petrel	ABNDC04030			G2	S2	SC
58	***Oncorhynchus mykiss irideus*** steelhead - south/central California coast ESU	AFCHA0209H	Threatened		G5T2Q	S2	SC
59	***Pelecanus occidentalis californicus*** California brown pelican	ABNFC01021	Endangered	Endangered	G4T3	S1S2	
60	***Phrynosoma coronatum (frontale population)*** coast (California) horned lizard	ARACF12022			G4G5	S3S4	SC
61	***Pinus radiata*** Monterey pine	PGPIN040V0			G1	S1.1	1B.1
62	***Piperia yadonii*** Yadon's rein orchid	PMORC1X070	Endangered		G2	S2.1	1B.1
63	***Plagiobothrys uncinatus*** hooked popcorn-flower	PDBOR0V170			G2	S2.2	1B.2
64	***Potentilla hickmanii*** Hickman's cinquefoil	PDROS1B0U0	Endangered	Endangered	G1	S1.1	1B.1
65	***Rana draytonii*** California red-legged frog	AAABH01022	Threatened		G4T2T3	S2S3	SC
66	***Reithrodontomys megalotis distichlis*** Salinas harvest mouse	AMAFF02032			G5T1	S1	
67	***Rosa pinetorum*** pine rose	PDROS1J0W0			G2Q	S2.2	1B.2
68	***Sidalcea malachroides*** maple-leaved checkerbloom	PDMAL110E0			G3G4	S3S4.2	4.2
69	***Stebbinsoseris decipiens*** Santa Cruz microseris	PDAST6E050			G2	S2.2	1B.2
70	***Taxidea taxus*** American badger	AMAJF04010			G5	S4	SC
71	***Thamnophis hammondii*** two-striped garter snake	ARADB36160			G3	S2	SC

	Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
72	***Tortula californica*** California screw moss	NBMUS7L090			G2G4	S2.2	1B.2
73	***Trifolium buckwestiorum*** Santa Cruz clover	PDFAB402W0			G1	S1.1	1B.1
74	***Trifolium polyodon*** Pacific Grove clover	PDFAB402H0		Rare	G1Q	S1.1	1B.1
75	***Trifolium trichocalyx*** Monterey clover	PDFAB402J0	Endangered	Endangered	G1	S1.1	1B.1
76	***Valley Needlegrass Grassland***	CTT42110CA			G1	S3.1	

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
81440-2009-SL-0445

August 27, 2009

Elaine Flock, Senior Biologist
PMC
140 Independence Circle, Suite C
Chico, California 95973

Subject: Species List for the Proposed Roadway Improvement Project on the Former Fort Ord in Monterey County, California.

This letter is in response to your request, dated and received in our office on July 27, 2009, for a list of endangered, threatened, and other special status species that may occur in the vicinity of the proposed roadway improvement project on the former Fort Ord in Monterey County, California. The project proposes the design and construction of roadway improvements on two sites; South Boundary Road and Gigling Road on the former Fort Ord in Monterey County.

South Boundary Road would be modified as a two-lane roadway from General Jim Moore Boulevard for approximately 7,560 feet (1.45 miles), east towards York Road. Gigling Road would be modified as a four-lane arterial from General Jim Moore Boulevard to approximately 7th street (approximately 0.92 miles). This would include the construction of a four-lane collector with an 18-foot median for a 115-foot minimum right-of-way, including the installation of street lights and landscaping. The study area includes both project sites and a 1.24-mile radius buffer.

The U.S. Fish and Wildlife Service's (Service) responsibilities include administering the Endangered Species Act of 1973, as amended (Act), including sections 7, 9, and 10. Section 9 of the Act prohibits the taking of any federally listed endangered or threatened species. Section 3(18) of the Act defines take to mean to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Service regulations (50 CFR 17.3) define harm to include significant habitat modification or degradation which actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harassment is defined by the Service as an intentional or negligent action that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. The Act provides for civil and criminal penalties for the unlawful taking of listed species.

Exemptions to the prohibitions against take may be obtained through coordination with the Service in two ways. If the subject project is to be funded, authorized, or carried out by a Federal agency and may affect a listed species, the Federal agency must consult with the Service, pursuant to section 7(a)(2) of the Act. If a proposed project does not involve a Federal agency but may result in the take of a listed animal species, the project proponent should apply for an incidental take

permit, pursuant to section 10(a)(1)(B) of the Act. Once you have determined if the proposed project will have a lead Federal agency, we can provide you with more detailed information regarding the section 7 or 10(a)(1)(B) permitting process.

We recommend that you review information in the California Department of Fish and Game's Natural Diversity Data Base. You can contact the California Department of Fish and Game at (916) 324-3812 for information on other sensitive species that may occur in this area.

If you have any questions, please call Lena Chang of my staff at (805) 644-1766, extension 302.

Sincerely,

David M. Pereksta
Assistant Field Supervisor

LISTED SPECIES THAT MAY OCCUR IN THE VICINITY OF THE PROPOSED ROADWAY IMPROVEMENT PROJECT SITES ON THE FORMER FORT ORD, MONTEREY COUNTY, CALIFORNIA

Mammals		
Southern sea otter	*Enhydra lutris nereis*	T
Birds		
Brown pelican	*Pelecanus occidentalis*	E
California least tern	*Sterna antillarum browni*	E
Marbled murrelet	*Brachyramphus marmoratus marmoratus*	T
Western snowy plover	*Charadrius alexandrinus nivosus*	T, CH
Amphibians		
California red-legged frog	*Rana aurora draytonii*	T
California tiger salamander	*Ambystoma californiense*	T, CH
Santa Cruz long-toed salamander	*Ambystoma macrodactylum croceum*	E
Invertebrates		
Smith's blue butterfly	*Euphilotes enoptes smithi*	E
Plants		
Beach layia	*Layia carnosa*	E
Coastal dunes milk-vetch	*Astragalus tener* var. *titi*	E
Contra Costa goldfields	*Lasthenia conjugens*	E, CH
Hickman's potentilla	*Potentilla hickmanii*	E
Monterey spineflower	*Chorizanthe pungens* var. *pungens*	T, CH
Robust spineflower	*Chorizanthe robusta* var. *robusta*	E
Menzies' wallflower	*Erysimum menziesii*	E
Monterey gilia	*Gilia tenuiflora ssp. arenaria*	E
Santa Cruz tarplant	*Holocarpha macradenia*	T, CH
Tidestrom's lupine	*Lupinus tidestromii*	E
Yadon's piperia	*Piperia yadonii*	E, CH

Key:
E – Endangered T – Threatened CH - Critical habitat

Inventory of Rare and Endangered Plants

v7-09c 7-14-09

Status: search results - Fri, Jul. 17, 2009 15:45 c

{QUADS_123} =~ m/366D|344A|344B|365B|365C|343B|366A Search

Tip: CNPS_LIST:"List 3" (note the field name) returns only taxa on List 3. "List 3" by itself, matches the phrase wherever found. Browse the list of **field names**.[all tips and help.] [search history]

Your Quad Selection: Seaside (366D) 3612157, Mount Carmel (344A) 3612147, Soberanes Point (344B) 3612148, Salinas (365B) 3612166, Spreckels (365C) 3612156, Carmel Valley (343B) 3612146, Marina (366A) 3612167, Monterey (366C) 3612158

Hits 1 to 49 of 49

Requests that specify topo quads will return only Lists 1-3.

To save selected records for later study, click the ADD button.

ADD checked items to Plant Press | check all | check none

Selections will appear in a new window.

open	save	hits	scientific	common	family	CNPS
		1	**Allium hickmanii**	Hickman's onion	Liliaceae	List 1B.2
		1	**Arctostaphylos edmundsii**	Little Sur manzanita	Ericaceae	List 1B.2
		1	**Arctostaphylos hookeri ssp. hookeri**	Hooker's manzanita	Ericaceae	List 1B.2
		1	**Arctostaphylos montereyensis**	Toro manzanita	Ericaceae	List 1B.2
		1	**Arctostaphylos pajaroensis**	Pajaro manzanita	Ericaceae	List 1B.1
		1	**Arctostaphylos pumila**	sandmat manzanita	Ericaceae	List 1B.2
		1	**Astragalus tener var. tener**	alkali milk-vetch	Fabaceae	List 1B.2
		1	**Astragalus tener var. titi**	coastal dunes milk-vetch	Fabaceae	List 1B.1
		1	**Callitropsis goveniana**	Gowen cypress	Cupressaceae	List 1B.2
		1	**Callitropsis macrocarpa**	Monterey cypress	Cupressaceae	List 1B.2
		1	**Centromadia parryi ssp. congdonii**	Congdon's tarplant	Asteraceae	List 1B.2
		1	**Chorizanthe pungens var. pungens**	Monterey spineflower	Polygonaceae	List 1B.2
		1	**Chorizanthe robusta var. robusta**	robust spineflower	Polygonaceae	List 1B.1
		1	**Clarkia jolonensis**	Jolon clarkia	Onagraceae	List 1B.2

		1	**Collinsia multicolor**	San Francisco collinsia	Scrophulariaceae	List 1B.2
		1	**Cordylanthus rigidus ssp. littoralis**	seaside bird's-beak	Scrophulariaceae	List 1B.1
		1	**Corethrogyne leucophylla**	branching beach aster	Asteraceae	List 3.2
		1	**Delphinium hutchinsoniae**	Hutchinson's larkspur	Ranunculaceae	List 1B.2
		1	**Delphinium umbraculorum**	umbrella larkspur	Ranunculaceae	List 1B.3
		1	**Ericameria fasciculata**	Eastwood's goldenbush	Asteraceae	List 1B.1
		1	**Eriogonum nortonii**	Pinnacles buckwheat	Polygonaceae	List 1B.3
		1	**Erysimum ammophilum**	sand-loving wallflower	Brassicaceae	List 1B.2
		1	**Erysimum menziesii ssp. menziesii**	Menzies' wallflower	Brassicaceae	List 1B.1
		1	**Erysimum menziesii ssp. yadonii**	Yadon's wallflower	Brassicaceae	List 1B.1
		1	**Fritillaria liliacea**	fragrant fritillary	Liliaceae	List 1B.2
		1	**Galium clementis**	Santa Lucia bedstraw	Rubiaceae	List 1B.3
		1	**Gilia tenuiflora ssp. arenaria**	Monterey gilia	Polemoniaceae	List 1B.2
		1	**Grindelia hirsutula var. maritima**	San Francisco gumplant	Asteraceae	List 1B.2
		1	**Horkelia cuneata ssp. sericea**	Kellogg's horkelia	Rosaceae	List 1B.1
		1	**Lasthenia conjugens**	Contra Costa goldfields	Asteraceae	List 1B.1
		1	**Layia carnosa**	beach layia	Asteraceae	List 1B.1
		1	**Leptosiphon croceus**	coast yellow leptosiphon	Polemoniaceae	List 1B.1
		1	**Lupinus tidestromii**	Tidestrom's lupine	Fabaceae	List 1B.1
		1	**Malacothamnus palmeri var. involucratus**	Carmel Valley bush-mallow	Malvaceae	List 1B.2
		1	**Malacothamnus palmeri var. palmeri**	Santa Lucia bush-mallow	Malvaceae	List 1B.2
		1	**Malacothrix saxatilis var. arachnoidea**	Carmel Valley malacothrix	Asteraceae	List 1B.2
		1	**Micropus amphibolus**	Mt. Diablo cottonweed	Asteraceae	List 3.2
		1	**Microseris paludosa**	marsh microseris	Asteraceae	List 1B.2
		1	**Monardella antonina ssp. antonina**	San Antonio Hills monardella	Lamiaceae	List 3
						List

	☐	1	**Pinus radiata**	Monterey pine	Pinaceae	1B.1
	☐	1	**Piperia yadonii**	Yadon's rein orchid	Orchidaceae	List 1B.1
	☐	1	**Plagiobothrys uncinatus**	hooked popcorn-flower	Boraginaceae	List 1B.2
	☐	1	**Potentilla hickmanii**	Hickman's cinquefoil	Rosaceae	List 1B.1
	☐	1	**Rosa pinetorum**	pine rose	Rosaceae	List 1B.2
	☐	1	**Stebbinsoseris decipiens**	Santa Cruz microseris	Asteraceae	List 1B.2
	☐	1	**Tortula californica**	California screw-moss	Pottiaceae	List 1B.2
	☐	1	**Trifolium buckwestiorum**	Santa Cruz clover	Fabaceae	List 1B.1
	☐	1	**Trifolium polyodon**	Pacific Grove clover	Fabaceae	List 1B.1
	☐	1	**Trifolium trichocalyx**	Monterey clover	Fabaceae	List 1B.1

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No more hits.

APPENDIX B SPECIAL-STATUS SPECIES POTENTIALLY OCCURRING WITHIN THE PSA

TABLE 1 – SPECIAL-STATUS PLANT SPECIES

Scientific Name Common Name	Status			Habitat Description[4]	Considered in Impact Analysis	Rationale*
	Federal[1]	State[2]	CNPS[3]			
Plants						
Allium hickmanii Hickman's onion	~	~	1B.2	Perennial bulbiferous herb in the lily family (*Liliaceae*). Closed-cone coniferous forest, chaparral (maritime), coastal prairie, coastal scrub, valley and foothill grassland. Blooms: March - May Elevation: 5 – 200 meters	**Yes**	South Boundary site only contains suitable habitat. June/July surveys conducted outside blooming period for this species. There is one recorded occurrence within 1 mile of South Boundary Road site.
Arctostaphylos edmundsii Little Sur manzanita	~	~	1B.2	Perennial evergreen shrub in the heath family (*Ericaceae*). Coastal bluff scrub and chaparral in sandy soils. Known from fewer than ten occurrences. Blooms: November - April Elevation: 30 – 105 meters	No	Study area outside known distribution range. No recorded occurrences within 1 mile of study area.
Arctostaphylos hookeri ssp. *hookeri* Hooker's manzanita	~	~	1B.2	Perennial evergreen shrub in the heath family (*Ericaceae*). Closed-cone coniferous forest, chaparral, cismontane woodland, and coastal scrub in sandy soils. Blooms: January – June Elevation: 85 - 536 meters	No	Study area contains suitable habitat. Species not observed during June/July surveys. One recorded occurrence within 1 mile of both Gigling and South Boundary Road sites.
Arctostaphylos montereyensis Toro manzanita	~	~	1B.2	Perennial evergreen shrub in the heath family (*Ericaceae*). Chaparral (maritime), cismontane woodland, and coastal scrub in sandy soils. Known from fewer than ten occurrences. Blooms: February - March Elevation: 30 - 730 meters	No	Study area contains suitable habitat. Although June/July surveys were conducted outside blooming period, this evergreen shrub was not observed. One recorded occurrence within 1 mile of Gigling site and three occurrences within 1 mile of South Boundary site.

Scientific Name Common Name	Status			Habitat Description[4]	Considered in Impact Analysis	Rationale*
	Federal[1]	State[2]	CNPS[3]			
Arctostaphylos pajaroensis Pajaro manzanita	~	~	1B.1	Perennial evergreen shrub in the heath family (*Ericaceae*). Chaparral (sandy). Blooms: December - March Elevation: 30 - 760 meters	No	South Boundary site only contains suitable habitat. Although June/July surveys were conducted outside blooming period, this evergreen shrub was not observed. One recorded occurrence within 1 mile of Gigling site.
Arctostaphylos pumila Sandmat manzanita	~	~	1B.2	Perennial evergreen shrub in the heath family (*Ericaceae*). Closed-cone coniferous forest, chaparral (maritime), cismontane woodland, coastal dunes, coastal scrub in sandy, openings. Known from fewer than twenty occurrences. Blooms: February - May Elevation: 3 - 205 meters	**Yes**	Study area contains suitable habitat. Species present within South Boundary Road alignment only. One recorded occurrence within 1 mile of Gigling site and two recorded occurrences within 1 mile of South Boundary site.
Astragalus tener var. tener Alkali milk-vetch	~	~	1B	Annual herb in the legume family (*Fabaceae*). Playas, valley and foothill grassland (adobe clay), and vernal pools (alkaline). Blooms: March - June Elevation: 1 - 60 meters	No	Study area does not contain suitable habitat. No recorded occurrences within 1 mile of study area.
Astragalus tener var. *titi* Coastal dunes milk-vetch	FE	SE	1B.1	Annual herb in the legume family (*Fabaceae*). Coastal bluff scrub (sandy), coastal dunes, coastal prairie (mesic), often vernally mesic areas. Known from only one occurrence on the Monterey Peninsula. San Diego County occurrences have not been documented since the 1970's, despite rediscovery attempts. Blooms: March - May Elevation: 1 – 50 meters	No	Study area outside known distribution range. No recorded occurrences within 1 mile of study area.
Callitropsis goveniana Gowen cypress	FT	~	1B.2	Perennial evergreen tree in the cypress family (*Cupressaceae*). Closed-cone coniferous forest and chaparral (maritime). Known from only three native occurrences in the Monterey area. Elevation: 30 – 300 meters	No	Study area contains suitable habitat; however, species not observed during plant surveys in June/July 2009. No recorded occurrences within 1 mile of study area.

Scientific Name Common Name	Status			Habitat Description[4]	Considered in Impact Analysis	Rationale*
	Federal[1]	State[2]	CNPS[3]			
Callitropsis macrocarpa Monterey cypress	~	~	1B.2	Perennial evergreen tree in the cypress family (*Cupressaceae*). Closed-cone coniferous forest and chaparral (maritime). Known from only three native occurrences in the Monterey area. Elevation: 30 – 300 meters	**Yes**	Study area contains suitable habitat; however, only non-native occurrences observed along Gigling Road alignment. Not considered a rare plant under CEQA. However, species considered under tree impacts. No recorded occurrences within 1 mile of study area.
Centromadia parryi ssp. *congdonii* Congdon's tarplant	~	~	1B.2	Annual herb in the sunflower family (*Asteraceae*). Valley and foothill grassland (alkaline). A synonym of *Hemizonia parryi* ssp. *congdonii* in The Jepson Manual. Blooms: May – October (November) Elevation: 1 – 230 meters	No	Study area does not contain suitable habitat. No recorded occurrences within 1 mile of study area.
Chlorogalum purpureun var. *purpureun* Purple amole	FT	~	1B.1	Chaparral, cismontane woodlands, valley and foothill grasslands in clay soil. Blooms: April – June Elevation: 205 – 350 meters	No	Study area outside known elevation range. No recorded occurrences within 1 mile of study area.
Chorizanthe pungens var. *pungens* Monterey spineflower	FT Critical Habitat	~	1B.2	Annual herb in the knotweed family (*Polygonaceae*). Chaparral (maritime), cismontane woodland, coastal dunes, coastal scrub, valley and foothill grassland in sandy soils. Blooms: April – June (July) Elevation: 3 – 450 meters	**Yes**	Study area contains suitable habitat. Species present within South Boundary Road alignment only. Species not observed within Gigling Road alignment. One recorded occurrence within 1 mile of Gigling site and two recorded occurrences within 1 mile of South Boundary site. Study area not within critical habitat.
Chorizanthe robusta var. *robusta* Robust spineflower	FE	~	1B.1	Annual herb in the knotweed family (*Polygonaceae*). Chaparral (maritime), cismontane woodland (openings), coastal dunes, coastal scrub in sandy or gravelly soils. Most populations extirpated, and now known from only six extended occurrences.	No	Study area contains suitable habitat. Species not observed during June/July 2009 surveys. One recorded occurrence within 1 mile of Gigling site.

Scientific Name Common Name	Status			Habitat Description[4]	Considered in Impact Analysis	Rationale*
	Federal[1]	State[2]	CNPS[3]			
				Blooms: April – September Elevation: 3 – 300 meters		
Clarkia jolonensis Jolon clarkia	~	~	1B.2	Annual herb in the evening primrose family (*Onagraceae*). Chaparral, cismontane woodland, coastal scrub, and riparian woodland. Can be confused with *C. lewisii*. Blooms: April – June Elevation: 20 – 660 meters	No	Study area contains suitable habitat. Species not observed during June/July 2009 surveys. One recorded occurrence within 1 mile of South Boundary site.
Collinsia multicolor San Francisco collinsia	~	~	1B.2	Annual herb in the figwort family (*Scrophulariaceae*). Closed-cone coniferous forest, and coastal scrub, sometimes serpentinite. Blooms: March – May Elevation: 30 – 250 meters	No	Study area does not contain suitable habitat. No recorded occurrences within 1 mile of study area.
Cordylanthus rigidus ssp. *littoralis* Seaside bird's-beak	~	SE	1B.1	Annual hemi-parasitic herb in the figwort family (*Scrophulariaceae*). Closed-cone coniferous forest, chaparral (maritime), cismontane woodland, coastal dunes, and coastal scrub, on sandy, often disturbed sites. Known from fewer than twenty occurrences. Blooms: April – October Elevation: 0 – 425 meters	No	Study area contains suitable habitat. Species present outside South Boundary Road alignment. Species not observed within Gigling Road alignment. One recorded occurrence within 1 mile of Gigling site and four recorded occurrences within 1 mile of South Boundary site.
Corethrogyne leucophylla Branching beach aster	~	~	3.2	Perennial herb in the sunflower family (*Asteraceae*). Closed-cone coniferous forest and coastal dunes. A synonym of *Lessingia filaginifolia* var. *filaginifolia* in The Jepson Manual. Blooms: May – December Elevation: 3 – 60 meters	No	Study area does not contain suitable habitat. No recorded occurrences within 1 mile of study area. List 3 and 4 plants not considered in analysis.
Delphinium hutchinsoniae Hutchinson's larkspur	~	~	1B.2	Perennial herb in the buttercup family (*Ranunculaceae*). Broad-leafed upland forest, chaparral, coastal prairie, and coastal scrub. Known from approximately ten occurrences.	No	Study area contains suitable habitat. Species not observed during June/July 2009 surveys. No recorded occurrences within 1 mile

Scientific Name Common Name	Status			Habitat Description[4]	Considered in Impact Analysis	Rationale*
	Federal[1]	State[2]	CNPS[3]			
				Blooms: Marsh - June Elevation: 0 – 427 meters		of study area.
Delphinium umbraculorum Umbrella larkspur	~	~	1B.3	Perennial herb in the buttercup family (*Ranunculaceae*). Cismontane woodland. Hybridizes with *D. parryi* ssp. *parryi*. Blooms: April – June Elevation: 400 – 1,600 meters	No	Study area outside known elevation range. No recorded occurrences within 1 mile of study area.
Ericameria fasciculata Eastwood's goldenbush	~	~	1B.1	Perennial evergreen shrub in the sunflower family (*Asteraceae*). Closed-cone coniferous forest, chaparral (maritime), coastal dunes, and coastal scrub in sandy, openings. Known from fewer than twenty occurrences in the Monterey Bay area. Blooms: July – October Elevation: 30 – 275 meters	No	Study area contains suitable habitat. Species not observed during June/July 2009 surveys. One recorded occurrence within 1 mile of both Gigling and South Boundary Road sites.
Eriogonum nortonii Pinnacles buckwheat	~	~	1B.3	Annual herb in the knotweed family (*Polygonaceae*). Chaparral, valley and foothill grassland in sandy soils, often on recent burns. Known from approximately twenty occurrences. Blooms: May – August (September) Elevation: 300 – 975 meters	No	Study area outside known elevation range. No recorded occurrences within 1 mile of study area.
Erysimum ammophilum Coast wallflower	~	~	1B.2	Perennial herb in the mustard family (*Brassicaceae*). Chaparral (maritime), coastal dunes, and coastal scrub in sandy, openings. Previously included in this species is *E. capitatum* ssp. *capitatum*. Blooms: February – June Elevation: 0 – 60 meters	No	Study area contains suitable habitat. Species not observed during June/July 2009 surveys. One recorded occurrence within 1 mile of South Boundary site.
Erysimum menziesii ssp. *menziesii* Menzies' wallflower	FE	SE	1B.1	Perennial herb in the mustard family (*Brassicaceae*). Coastal dunes. Known from only ten occurrences. Nearly extirpated on the Monterey Peninsula. Blooms: March – June	No	Study area does not contain suitable habitat. No recorded occurrences within 1 mile of study area.

Scientific Name Common Name	Status			Habitat Description[4]	Considered in Impact Analysis	Rationale*
	Federal[1]	State[2]	CNPS[3]			
				Elevation: 0 – 35 meters		
Erysimum menziesii ssp. *yadonii* Yadon's wallflower	FE	SE	1B.1	Perennial herb in the mustard family (*Brassicaceae*). Coastal dunes. Known only from six occurrences near Marina on Monterey Bay. Included in state-listed Endangered *E. menziesii*. Blooms: May – September Elevation: 0 – 10 meters	No	Study area does not contain suitable habitat. No recorded occurrences within 1 mile of study area.
Fritillaria liliacea Fragrant fritillary	~	~	1B.2	Perennial bulbiferous herb in the lily family (*Liliaceae*). Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland, often serpentinite. Blooms: February - April Elevation: 3 - 410meters	No	Coast live oak woodland contains maritime chaparral understory and is unlikely to support this species. No recorded occurrences within 1 mile of study area.
Galium clementis Santa Lucia bedstraw	~	~	1B.3	Perennial herb in the coffee family (*Rubiaceae*). Lower montane coniferous forest, upper montane coniferous forest, granitic or serpentinite, rocky. Blooms: May – July Elevation: 1,130 – 1,780 meters	No	Study area outside known elevation range. No recorded occurrences within 1 mile of study area.
Gilia tenuiflora ssp. *arenaria* Monterey [sand] gilia	FE	ST	1B.2	Annual herb in the phlox family (*Polemoniaceae*). Chaparral (maritime), cismontane woodland, coastal dunes, coastal scrub, sandy, openings. Known from fewer than twenty occurrences. Blooms: April – June Elevation: 10 – 45 meters	No	Study area contains suitable habitat. Species not observed during June/July 2009 surveys. Two recorded occurrences within 1 mile of both Gigling and South Boundary Road sites.
Grindelia hirsutula var. *maritima* San Francisco gumplant	~	~	1B.2	Perennial herb in the sunflower family (*Asteraceae*). Coastal bluff scrub, coastal scrub, valley and foothill grassland, sandy or serpentinite. Can be difficult to identify. Blooms: June - September	No	Study area does not contain suitable habitat. No recorded occurrences within 1 mile of study area.

Scientific Name Common Name	Status			Habitat Description[4]	Considered in Impact Analysis	Rationale*
	Federal[1]	**State[2]**	**CNPS[3]**			
				Elevation: 15 - 400 meters		
Holocarpa macradenia Santa Cruz tarplant	FT Critical Habitat	SE	1B.1	Coastal prairie, coastal scrub, valley and foothill grassland in clay soils. Blooms: June - October Elevation: 10 - 220 meters	No	Study area does not contain suitable habitat. No recorded occurrences within 1 mile of study area. Study area not within critical habitat.
Horkelia cuneata ssp. *sericea* Kellogg's horkelia	~	~	1B.1	Perennial herb in the rose family. (*Rosaceae*). Closed-cone coniferous forest, chaparral (maritime), coastal dunes, and coastal scrub, sandy or gravelly, openings. Historical occurrences need field surveys. Remaining plants less distinct from ssp. *cuneata* than those formerly occurring near San Francisco. Blooms: April – September Elevation: 10 – 200 meters	No	Study area contains suitable habitat. Species not observed during June/July 2009 surveys. Four recorded occurrences within 1 mile of Gigling site and two recorded occurrences within 1 mile of South Boundary site.
Lasthenia conjugens Contra Costa goldfields	FE	~	1B.1	Annual herb in the sunflower family (*Asteraceae*). Cismontane woodland, playas (alkaline), valley and foothill grassland, vernal pools, in mesic soils. Many historical occurrences extirpated by development and agriculture. Blooms: March – June Elevation: 0 – 470 meters	No	Coast live oak woodland contains maritime chaparral understory and is unlikely to support this species. No recorded occurrences within 1 mile of study area.
Layia carnosa Beach layia	FE	SE	1B.1	Annual herb in the sunflower family (*Asteraceae*). Coastal dunes and coastal scrub (sandy). Blooms: March – July Elevation: 0 – 60 meters	No	Study area does not contain suitable habitat. No recorded occurrences within 1 mile of study area.
Leptosiphon croceus Coast yellow leptosiphon	~	~	1B.1	Annual herb in the phlox family (*Polemoniaceae*). Coastal bluff scrub and coastal prairie. Known only from one occurrence near Moss Beach. See *L. parviflorus* in The Jepson	No	Study area does not contain suitable habitat. No recorded occurrences within 1 mile of study area.

Scientific Name Common Name	Status			Habitat Description[4]	Considered in Impact Analysis	Rationale*
	Federal[1]	State[2]	CNPS[3]			
				Manual. Blooms: April – May Elevation: 10 – 150 meters		
Lupinus tidestromii Tidestrom's lupine	FE	SE	1B.1	Perennial rhizomatous herb in the legume family (*Fabaceae*). Coastal dunes. Known from fewer than 20 occurrences. Includes *L. tidestromii* var. *layneae*. Only Monterey County plants are state-listed Endangered as *L.t.* var. *tidestromii*. Blooms: April - June Elevation: 0 - 100 meters	No	Study area does not contain suitable habitat. No recorded occurrences within 1 mile of study area.
Malacothamnus palmeri var. *involucratus* Carmel Valley bush-mallow	~	~	1B.2	Perennial deciduous shrub in the mallow family (*Malvaceae*). Chaparral, cismontane woodland, and coastal scrub. A synonym of *M. palmeri* in The Jepson Manual. Blooms: May – August (October) Elevation: 30 – 1,100 meters	No	Study area contains suitable habitat. Species not observed during June/July 2009 surveys. One recorded occurrence within 1 mile of South Boundary site.
Malacothamnus palmeri var. *palmeri* Santa Lucia bush-mallow	~	~	1B.2	Perennial deciduous shrub in the mallow family (*Malvaceae*). Chaparral (rocky). A synonym of *M. palmeri* in The Jepson Manual. Blooms: May – July Elevation: 60 – 360 meters	No	Study area contains suitable habitat. Species not observed during June/July 2009 surveys. No recorded occurrences within 1 mile of study area.
Malacothrix saxatilis var. *arachnoidea* Carmel Valley malacothrix	~	~	1B.2	Perennial rhizomatous herb in the sunflower family (*Asteraceae*). Chaparral (rocky) and coastal scrub. Known from approximately ten occurrences. Blooms: (March)June - December Elevation: 25 – 1,036 meters	No	Study area outside known distribution range. No recorded occurrences within 1 mile of study area.

Scientific Name Common Name	Status			Habitat Description[4]	Considered in Impact Analysis	Rationale*
	Federal[1]	State[2]	CNPS[3]			
Micropus amphibolus Mt. Diablo cottonweed	~	~	3.2	Annual herb in the sunflower family (*Asteraceae*). Broad-leafed upland forest, chaparral, cismontane woodland, valley and foothill grassland in rocky soils. Can be confused with *M. californicus*. Many occurrences old; need current status information. Blooms: March – May Elevation: 45 – 825 meters	No	Study area contains suitable habitat. List 3 and 4 plants not considered in analysis. No recorded occurrences within 1 mile of study area.
Microseris paludosa Marsh microseris	~	~	1B.2	Perennial herb in the sunflower family (*Asteraceae*). Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. Similar to *M. laciniata* spp. *leptosepala*. Blooms: April – June (July) Elevation: 5 – 300 meters	No	Species not observed during June/July 2009 surveys. One recorded occurrence within 1 mile of South Boundary site.
Monardella antonina ssp. *antonina* San Antonio Hills monardella	~	~	3	Perennial rhizomatous herb in the mint family (*Lamiaceae*). Chaparral and cismontane woodland. Easily confused with *M. villosa* ssp. *villosa*, which may be the taxon occurring in Alameda, Contra Costa, San Benito, and Santa Clara counties; needs clarification. Blooms: June – August Elevation: 500 – 1,000 meters	No	Study area outside known elevation range. No recorded occurrences within 1 mile of study area. List 3 and 4 plants not considered in analysis.

Scientific Name Common Name	Status			Habitat Description[4]	Considered in Impact Analysis	Rationale*
	Federal[1]	State[2]	CNPS[3]			
Pinus radiata Monterey pine	~	~	1B.1	Perennial evergreen tree in the pine family (*Pinaceae*). Closed-cone coniferous forest and cismontane woodland. Only three native stands in CA, at Ano Nuevo, Cambria, and the Monterey Peninsula; introduced in many areas. Only one-half of the species' historical extent remains undeveloped on the Monterey Peninsula, and forest destruction has been unevenly distributed over different geomorphic surfaces. Elevation: 25 - 185 meters	**Yes**	Study area contains suitable habitat. Non-native species only - not considered a rare plant under CEQA. Species considered under tree impacts. One recorded occurrence within 1 mile of South Boundary site.
Piperia yadonii Yadon's rein orchid	FE Critical Habitat	~	1B.1	Perennial herb in the orchid family (*Orchidaceae*). Coastal bluff scrub, closed-cone coniferous forest, chaparral (maritime) in sandy soils. Blooms: (February) May - August Elevation: 10 - 510 meters	No	Study area contains suitable habitat. Species not observed during June/July 2009 surveys. One recorded occurrence within 1 mile of South Boundary site. Study area not within critical habitat.
Plagiobothrys uncinatus Hooked popcorn-flower	~	~	1B.2	Annual herb in the borage family (*Boraginaceae*). Chaparral (sandy), cismontane woodland, valley and foothill grassland. Field surveys needed in Gabilan and Santa Lucia ranges to determine status. Blooms: April - May Elevation: 300 – 760 meters	No	Study area outside known elevation range. No recorded occurrences within 1 mile of study area.
Potentilla hickmanii Hickman's cinquefoil	FE	SE	1B.1	Perennial herb in the rose family (*Rosaceae*). Coastal bluff scrub, closed-cone coniferous forest, meadows and seeps (vernally mesic), marshes and swamps (freshwater). Blooms: April – August Elevation: 10 – 135 meters	No	Study area does not contain suitable habitat. No recorded occurrences within 1 mile of study area.

Scientific Name Common Name	Status			Habitat Description[4]	Considered in Impact Analysis	Rationale*
	Federal[1]	State[2]	CNPS[3]			
Rosa pinetorum Pine rose	~	~	1B.2	Perennial shrub in the rose family (*Rosaceae*). Closed-cone coniferous forest. Possible hybrid of *R. spithamea, R. gymnocarpa,* or others; further study needed. Blooms: May – July Elevation: 2 – 300 meters	No	Study area does not contain suitable habitat. No recorded occurrences within 1 mile of study area.
Sidalcea malachroides Maple-leaved checkerbloom	~	~	4.2	Perennial herb in the mallow family (*Malvaceae*). Broad-leafed upland forest, coastal prairie, coastal scrub, North Coast coniferous forest, and riparian woodland, often in disturbed areas. Endangered in Oregon. Blooms: April – August Elevation: 2 – 730 meters	No	Study area does not contain suitable habitat. No recorded occurrences within 1 mile of study area. List 3 and 4 plants not considered in analysis.
Stebbinsoseris decipiens Santa Cruz microseris	~	~	1B.2	Annual herb in the sunflower family (*Asteraceae*). Broad-leafed upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, valley and foothill grassland, open areas, sometimes serpentinite. Known from fewer than twenty occurrences. Blooms: April – May Elevation: 10 – 500 meters	**Yes**	South Boundary Road site only contains suitable habitat. June/July surveys conducted outside blooming period for this species. One recorded occurrence within 1 mile of South Boundary site.
Tortula californica California screw-moss	~	~	1B.2	Moss in the *Pottiaceae* family. Chenopod scrub, valley and foothill grassland in sandy, soil. Elevation: 10 – 1,460 meters	No	Study area does not contain suitable habitat. No recorded occurrences within 1 mile of study area.
Trifolium buckwestiorum Santa Cruz clover	~	~	1B.1	Annual herb in the legume family (*Fabaceae*). Broad-leafed upland forest, cismontane woodland, coastal prairie in gravelly, margins. Known from fewer than fifteen very small occurrences; only one fully protected. Blooms: April - October Elevation: 105 – 610 meters	No	Study area outside known elevation range. One recorded occurrence within 1 mile of South Boundary site.

Scientific Name Common Name	Status			Habitat Description[4]	Considered in Impact Analysis	Rationale*
	Federal[1]	State[2]	CNPS[3]			
Trifolium polyodon Pacific Grove clover	~	Rare	1B.1	Annual herb in the legume family (*Fabaceae*). Closed-cone coniferous forest, coastal prairie, meadows and seeps, valley and foothill grassland in mesic soils. Known from seven occurrences on the Monterey and Point Lobos Peninsulas. A synonym of *T. variegatum* in The Jepson Manual, but appears to be distinct. Blooms: April – June Elevation: 5 – 120 meters	No	Study area does not contain suitable habitat. Two recorded occurrences within 1 mile of South Boundary site.
Trifolium trichocalyx Monterey clover	FE	SE	1B.1	Annual herb in the legume family (*Fabaceae*). Closed-cone coniferous forest (sandy, openings, burned areas). Known from only one occurrence from the central portion of the Monterey Peninsula. Fewer than 1,000 plants seen in 1987, none in 1992, and only 22 in 1995. Appears to be a fire follower. Blooms: April – June Elevation: 30 – 240 meters	No	Study area does not contain suitable habitat. No recorded occurrences within 1 mile of study area.

* STUDY AREA REFERS TO BOTH THE SOUTH BOUNDARY ROAD SITE AND THE GIGLING ROAD SITE TOGETHER. PROJECT SITES DISCUSSED SEPAREARTELY WHERE NEEDED.

CODE DESIGNATIONS

Federal status[1]: 2009 USFWS Listing	State status[2]: 2009 CDFG Listing	CNPS[3]: 2009 CNPS Listing
FE = Listed as endangered under the Endangered Species Act	**SE** = Listed as endangered under the California Endangered Species Act	**1A** = Plants species that presumed extinct in California.
FT = Listed as threatened under the Endangered Species Act	**ST** = Listed as threatened under the California Endangered Species Act	**1B** = Plant species that are rare, threatened, or endangered in California and elsewhere.
FC = Candidate for listing (threatened or endangered) under Endangered Species Act	**CSC** = Species of Concern as identified by CDFG	**List 2** = Plant species that are rare, threatened, or endangered in California, but more common elsewhere.
FD = Delisted in accordance with the Endangered Species Act	**CFP** = Listed as fully protected under CDFG code	**List 3** = Plant species that lack the necessary information to assign them to a listing status.

	CR = Species identified as rare by CDFG	**List 4** = Plants that have a limited distribution or that are infrequent throughout a broader area in California.
		Threat Ranks **0.1**-Seriously threatened in California (high degree/immediacy of threat) **0.2**-Fairly threatened in California (moderate degree/immediacy of threat) **0.3**-Not very threatened in California (low degree/immediacy of threats or no current threats known)
Habitat description[4]: Habitat description adapted from CNDDB (CDFG 2009) and CNPS online inventory (CNPS 2009)		

TABLE 1 – SPECIAL-STATUS WILDLIFE SPECIES

Common Name (*Scientific Name*)	Status		Habitat Description[3]	Considered in Impact Analysis	Rationale*
	Federal[1]	State[2]			
Invertebrates					
Euphilotes enoptes smithi Smith's blue butterfly	FE	~	Smith's blue buterfly is found in scattered colonies in coastal areas of Central California. It uses two habitats, coastal sand dunes and cliff/chaparral, both of which are endangered. Smith's blue butterfly is associated with two species of buckwheat, seacliff buckwheat (*Eriogonum parvifolium*) and seaside buckwheat (*Eriogonum latifolium*) in all life stages, and the presence of these plants is a key habitat requirement. These plants are obligate host plants for the larvae and the principle nectar sources for adults. They also provide mating sites. The butterflies generally spend their lifetime within 200 feet of the host plant on which they emerged. Smith's Blues are found in coastal sand dunes and cliff/chaparral areas along the central California coast in Monterey, Santa Cruz, and San Mateo Counties.	No	Suitable habitat not present within study area. Five recorded occurrences within 5 miles of Gigling site and four recorded occurrences within 5 miles of South Boundary site. Two of these occurrences overlap.
Fish					
Eucyclogobius newberryi Tidewater goby	FE	~	Historically widespread in brackish coastal lagoons and coastal creeks in California from the mouth of the Smith River, Del Norte County, south to Agua Hedionda Lagoon, San Diego County. Naturally absent (due to lack of suitable habitat) between Humboldt Bay and Ten Mile River, between Point Arena and Salmon Creek, and between Monterey Bay and Arroyo del Oso.	No	Suitable habitat not present within study area. One recorded occurrence within 1 mile of both Gigling and South Boundary sites.
Oncorhynchus mykiss irideus Steelhead south/central California coast ESU	FT Critical Habitat	~	Both anadromous and non-anadromous forms exist. Anadromous forms migrate between freshwater breeding and marine non-breeding habitats; California breeders migrate to non-breeding habitats as far away as Alaska.	No	Suitable habitat not present within study area. One recorded occurrence within 10 miles of Gigling site. Same occurrence within 5 miles of South Boundary site. Study area not within critical habitat.

Common Name (*Scientific Name*)	Status		Habitat Description[3]	Considered in Impact Analysis	Rationale*
	Federal[1]	State[2]			
Amphibians					
Ambystoma californiense California tiger salamander	FT Critical Habitat	CSC	Typically found in annual grasslands of lower hills and valleys; breeds in temporary and permanent ponds and in streams; uses rodent burrows and other subterranean retreats in surrounding uplands for shelter; appears to be absent in waters containing predatory game fish. The California tiger salamander spends most of its lifecycle estivating underground in adjacent valley oak woodland or grassland habitat, primarily in abandoned rodent burrows. Research has shown that dispersing juveniles can roam up to two miles from their breeding ponds and that a minimum of several hundred acres of uplands habitat is needed surrounding a breeding pond in order for the species to survive over the long term.	**Yes**	Suitable breeding habitat not present within study area; however, South Boundary site is within 1.24 miles of known occurrence; therefore, site is considered suitable upland habitat. Nearest known occurrences are 1.23 miles northeast of South Boundary Road and 1.32 miles southeast of Gigling Road. Study area not within critical habitat.
Rana aurora draytonii California red-legged frog	FT Critical Habitat	CSC	Found in humid forests, woodlands, grasslands, and streamsides with plant cover. Most common in lowlands or foothills. Frequently found in woods adjacent to streams. Breeding habitat is in permanent or late season sources of deep water; lakes, ponds, reservoirs, slow streams, marshes, bogs, and swamps. From sea level to 8,000 feet (2,440 meters). Breeds late December to early April. Endemic to California and northern Baja California. Ranges along the coast from Mendocino County in northern California south to northern Baja California, and inland through the northern Sacramento Valley into the foothills of the Sierra Nevada mountains, south to Tulare county, and possibly Kern county.	No	Suitable breeding habitat not present within study area. Nearest known occurrences are 1.6 miles south of South Boundary Road and 4.9 miles north of Gigling Road. Study area not within critical habitat.
Reptiles					
Actinemys marmorata pallida Southwestern pond turtle	~	CSC	Found in ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches, with abundant vegetation, and either rocky or muddy bottoms, in woodland, forest, and grassland. In streams, prefers pools to shallower areas. Logs, rocks, cattail mats, and exposed banks are required for basking. May enter brackish water and even seawater. From the San Francisco Bay south, along the coast	No	Suitable habitat not present within study area. One recorded occurrence within 1 mile of both South Boundary and Gigling Road sites.

Common Name (*Scientific Name*)	Status		Habitat Description[3]	Considered in Impact Analysis	Rationale*
	Federal[1]	State[2]			
			ranges into northern Baja California (where it has disappeared throughout most of its range.) Isolated populations occur along the Mojave River at Camp Cody and Afton Canyon. From sea level to over 5,900 feet (1,800 meters) in elevation.		
Anniella pulchra nigra Black legless lizard	~	CSC	Occurs in moist warm loose soil with plant cover. Moisture is essential. Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Leaf litter under trees and bushes in sunny areas and dunes stabilized with bush lupine and mock heather often indicate suitable habitat. Often can be found under surface objects such as rocks, boards, driftwood, and logs. Can also be found by gently raking leaf litter under bushes and trees.	**Yes**	Suitable habitat is present within study area. Ten recorded occurrences within 1 mile of Gigling site and four recorded occurrences within 1 mile of South Boundary site.
Anniella pulchra pulchra Silvery Legless Lizard	FT	CSC	Lowlands and foothills in or near permanent sources of deep water with dense shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	No	Suitable habitat not present within study area. One recorded occurrence within 5 miles of Gigling site.
Phrynosoma coronatum frontale California horned lizard	~	CSC	Frequents a wide variety of habitats; most common in lowlands along sandy washes with scattered low bushes. Inhabits open areas of sandy soil and low vegetation in valleys, foothills and semiarid mountains from sea level to 8,000 feet (2,438 meters) in elevation. Found in grasslands, coniferous forests, woodlands, and chaparral, with open areas and patches of loose soil. Often found in lowlands along sandy washes with scattered shrubs and along dirt roads, and frequently found near ant hills. Ranges up onto the Kern Plateau east of the crest of the Sierra Nevada.	**Yes**	Marginally suitable habitat present within study area. No recorded occurrences within 1 mile of study area. Five recorded occurrences within 5 miles of Gigling site – same five recorded occurrences within 10 miles of South Boundary site.
Thamnophis hammondii Two-striped garter snake	~	CSC	Generally found around pools, creeks, cattle tanks, and other water sources, often in rocky areas, in oak woodland, chaparral, brushland, and coniferous forest. Ranges continuously from near Salinas in Monterey County south along the coast mostly west of the south	No	Suitable habitat not present within study area. No recorded occurrences within 10 miles of study area.

Common Name (*Scientific Name*)	Status		Habitat Description[3]	Considered in Impact Analysis	Rationale*
	Federal[1]	State[2]			
			Coast Ranges, to southern California where it ranges east through the Transverse Ranges (and into the desert in Victorville) and south through the Peninsular Ranges into northern Baja California. Occurs in southern Baja in isolated areas. Also occurs on Catalina Island. At elevations from sea Level to 6,988 feet (2130 meters).		
Birds					
APODIFORMES (swifts, hummingbirds)					
Cypseloides niger Black swift	MNMC	CSC	Breeding black swifts are restricted to a very limited supply of potential nesting locations: behind or beside permanent or semi-permanent waterfalls, on perpendicular cliffs near water and in sea caves.	No	Suitable habitat not present within study area. No recorded occurrences within 10 miles of study area.
CHARADRIIFORMES (shorebirds, gulls)					
Brachyramphus marmoratus Marbled murrelet	FT	SE	(Nesting) Feeds near-shore; nests inland along coast, from Eureka to Oregon border and from Half Moon Bay to Santa Cruz; nests in old-growth redwood-dominated forests, up to six miles inland, often in Douglas firs.	No	Suitable habitat not present within study area. No recorded occurrences within 10 miles of study area.
Charadrius alexandrinus nivosus Western snowy plover	FT; MNBMC	CSC	Sandy beaches, salt pond levees; needs sandy, gravelly, or friable soils for nesting. Plovers can be found on flat, open coastal beaches in dunes, and near stream mouths. They are well camouflaged and extremely hard to see, often crouching in small depressions taking shelter from the wind. From early spring to mid-fall, plovers nest in loose colonies, often coming back to the same beaches every year. The nests are simple scrapes in the sand with 1-3 eggs that the male warms at night, while the female does day duty. Eggs hatch in about 27 days, and within hours the chicks are searching for their food of insects and other beach invertebrates.	No	Suitable habitat not present within study area. Three recorded occurrences within 5 miles of Gigling site and two recorded occurrences within 5 miles of South Boundary site. One of these occurrences overlap.

Common Name (*Scientific Name*)	Status		Habitat Description[3]	Considered in Impact Analysis	Rationale*
	Federal[1]	State[2]			
Sterna antillarum browni California least tern	FE; MNBMC	SE	The bulk of distribution in southern California coast. The least tern arrives at its breeding grounds in late April. The breeding colonies are not dense and may appear along either marine or estuarine shores, or on sand bar islands in large rivers, in areas free from humans or predators. Nests are situated on barren to sparsely vegetated places near water, normally on sandy or gravelly substrates.	No	Suitable habitat not present within study area. No recorded occurrences within 10 miles of study area.
PASSERIFORMES (perching birds)					
Agelaius tricolor Tri-colored blackbird	~	CSC	Breeds in freshwater wetlands, with tall dense vegetation including tule, cattail, blackberry and rose. Forages in grasslands and croplands. Resident year-round. Breeds April to July.	No	Suitable habitat not present within study area. Two recorded occurrences within 5 miles of Gigling site and one recorded occurrence within 5 miles of South Boundary site. Occurrences do not overlap.
PELECANIFORMES (pelicans, cormorants)					
Pelacanus occidentalis californicus California brown pelican	FE; MNBMC	SE	(Nesting colony) Colonial nester on coastal islands just outside the surf line; nests on coastal islands of small to moderate size which afford immunity from attack by ground-dwelling predators. The nest location varies from a simple scrape on the ground on an island to a bulky stick nest in a low tree. Some immature birds may stray to inland freshwater lakes. The brown pelican has a habit of diving for fish from the air. It eats mainly herring-like fish. Groups of brown pelicans often travel in single file, flying low over the water's surface.	No	Suitable habitat not present within study area. No recorded occurrences within 10 miles of study area.

Common Name (*Scientific Name*)	Status		Habitat Description[3]	Considered in Impact Analysis	Rationale*
	Federal[1]	State[2]			
PROCELLARIIFORMES (albatrosses, petrels)					
Oceanodroma homochroa Ashy storm-petrel	MNBMC	CSC	Ashy storm-petrel breeds on a small number of island groups and offshore rocks within the California Current System, the northernmost being off Mendocino County and the southernmost at Los Coronados Islands off northern Baja California, Mexico. Breeding has been confirmed at only six major island groups (South Farallon, San Miguel, Santa Cruz, Santa Barbara, San Clemente, and Los Coronado Islands) and three groups of offshore rocks (Castle Rock/Hurricane Point, Double Point, and Bird Rocks). Breeds in rock crevices and burrows in colonies on offshore islands. Birds feed at sea on planktonic crustaceans and small fish and visit the colony at night.	No	Suitable habitat not present within study area. No recorded occurrences within 10 miles of study area.
STRIGIFORMES (owls)					
Athene cunicularia Burrowing owl	~	CSC	Open grasslands and shrublands up to 5,300 feet with low perches and small mammal burrows. Resident year-round. Breeds March-August.	No	Suitable habitat not present within study area. Three recorded occurrences within 5 miles of Gigling site and one recorded occurrence within 5 miles of South Boundary site. One of these occurrences overlap.

Common Name (*Scientific Name*)	Status		Habitat Description[3]	Considered in Impact Analysis	Rationale*
	Federal[1]	State[2]			
Mammals					
Antrozous pallidus Pallid bat			Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings. Night roosts may be in more open sites, such as porches and open buildings. Few hibernation sites are known, but rock crevices may be used. Occurrence is primarily in arid habitats. Colonies are usually small and may contain 12-100 bats.	No	Suitable habitat not present within study area. No recorded occurrences within 10 miles of study area.
Enhydra lutris nereis Southern sea otter	FT	~	Sea otters are marine mammals. They inhabit temperate coastal waters with rocky or soft sediment ocean bottoms less than 1 km from shore. Kelp forest ecosystems are characteristic of otter habitats. This species is found off the coast of central California.	No	Suitable habitat not present within study area. No recorded occurrences within 10 miles of study area.
Eumops perotis californicus Western mastiff bat	~	CSC	A large bat found mostly in the southern half of California, but ranges north to Butte County. Primarily roosts in crevices in vertical cliffs, usually granite or consolidated sandstone, and in broken terrain with exposed rock faces; they may also be found occasionally in high buildings, trees, and tunnels. Requires vertical faces to drop from in order to take flight.	No	Suitable roosting habitat not present within study area. No recorded occurrences within 10 miles of study area.
Lasiurus blossevillii Western red bat	~	CSC	Strongly associated with riparian habitats, particularly mature stands of cottonwood/sycamore (Pierson *et al.* 2006). Feeds over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands.	No	Suitable roosting habitat not present within study area. No recorded occurrences within 10 miles of study area.
Townsend's big-eared bat *Corynorhinus townsendii*	~	CSC	Found in all but subalpine and alpine habitats, and may be found at any season throughout its range. Requires caves, mines, tunnels, buildings, or other human-made structures for roosting.	No	Suitable roosting habitat not present within study area. No recorded occurrences within 10 miles of study area.

Common Name (*Scientific Name*)	Status		Habitat Description[3]	Considered in Impact Analysis	Rationale*
	Federal[1]	State[2]			
Taxidea taxus American badger	~	CSC	Stout-bodied, primarily solitary species that hunts for ground squirrels and other small mammal prey in open grassland, cropland, deserts, savanna, and shrubland communities. Badgers have large home ranges and spend inactive periods in underground burrows. Badgers typically mate in mid- to late summer and give birth between March and April.	**Yes**	Suitable habitat present within study area. Two recorded occurrences within 1 mile of South Boundary site and seven recorded occurrences within five miles of Gigling site. Six of these occurrences overlap.

* STUDY AREA REFERS TO BOTH THE SOUTH BOUNDARY ROAD SITE AND THE GIGLING ROAD SITE TOGETHER. PROJECT SITES DISCUSSED SEPAREARTELY WHERE NEEDED.

CODE DESIGNATIONS

Federal status[1]	State status[2]
FE = Listed as endangered under the Endangered Species Act	**SE** = Listed as endangered under the California Endangered Species Act
	ST = Listed as threatened under the California Endangered Species Act
FT = Listed as threatened under the Endangered Species Act	**CSC** = Species of Concern as identified by the CDFG
FC = Candidate for listing (threatened or endangered) under Endangered Species Act	**CFP** = Listed as fully protected under DFG code
FPD = Federally Proposed to be Delisted identified by USFWS	
MNBMC = Migratory Nongame Bird of Management Concern, protected under the Migratory Bird Treaty Act	
Habitat description[3]= Description adapted from CNDDB (CDFG 2009) and Natureserve Explorer (2009)	

California Department of Fish and Game (CDFG). 2009. California Natural Diversity Database (CNDDB) Rarefind 3 computer program, Version 3.1.0. CDFG, Biogeographic Data Branch. Sacramento, CA.

NatureServe. 2008. NatureServe Explorer (online edition). Online Encyclopedia. Version 7.1. Data last updated February 6, 2009. Accessed online at: http://www.natureserve.org/explorer/

APPENDIX C LIST OF SPECIES OBSERVED DURING THE JUNE AND JULY 2009 SURVEYS

Appendix C – Plant and Wildlife Species Observed within the PSA during the June/July 2009 Assessment

Scientific Name	Common Name
Plants	
Achillea millefolium	Yarrow
Adenostoma fasciculatum	Chamise
Agave sp.	Century plant
Agoseris apargioids	Coast dandelion
Aira caryophylla	Silver hairgrass
Anagallis arvensis	Scarlet pimpernel
Arctostaphylos pumila	Sandmat manzanita
Arctostaphylos tomentosa ssp. *tomentosa*	Shaggy-barked manzanita
Artemisia californica	Coastal sagebrush
Avena barbata	Slender oat
Baccharis pilularis	Coyote brush
Briza maxima	Rattlesnake grass
Bromus diandrus	Ripgut brome
Bromus hordeaceus	Soft brome
Bromus madritensis ssp. *rubens*	Red brome
Callitropsis macrocarpa	Monterey cypress
Carpobrotus edulis	Iceplant
Centaurea solstitialis	Yellow star thistle
Chorizanthe diffusa	Diffuse spineflower*
Chorizanthe pungens var. pungens	Monterey spineflower*
Cortaderia sp.	Pampas grass
Cynodon dactylon	Bermuda grass
Cytisus scoparius	Scotch broom
Diplacus aurantiacus	Orange bush monkeyflower
Elymus glaucus	Blue wild rye
Eremocarpus setigerus	Turkey mullein/doveweed
Erodium botrys	Broadleaf filaree
Eucalyptus sp.	Eucalyptus
Gallium aparine	Bedstraw

Scientific Name	Common Name
Garrya elliptica	Coast silk tassle
Gnaphalium californicum	California cudweed
Hordeum murinum	Barley
Hirschfeldia incana	Shortpod mustard
Lactuca serriola	Prickly lettuce
Lolium multiflorum	Italian ryegrass
Lupinus arboreus	Bush lupine
Madia gracilis	Slender tarweed
Medicago lupulina	Black medic
Melica torreyana	Torrey melic
Mentha arvensis	Field mint
Pennisetum clandestinum	Kikuyu grass
Phalaris californica	California canarygrass
Pinus radiata	Monterey pine
Plantago coronopus	Cut-leaved plantain
Plantago lanceolata	English plantain
Poa annua	Bluegrass
Pteridium aquilinum var. *pubescens*	Bracken fern
Quercus agrifolia	Coast live oak
Raphanus sativus	Wild radish
Rhamnus californica	Coffeeberry
Rubus ursinus	California blackberry
Rumex acetosella	Sheep sorrel
Salvia mellifera	Black sage
Silybum marianum	Milk thistle
Stachys bullata	California hedge nettle
Torilis nodosa	Knotted hedge parsley
Toxicodendron diversilobum	Poison oak
Tragopogon dubius	Salsify
Trifolium angustifolium	Narrow-leaved clover
Trifolium dubium	Hop clover

Scientific Name	Common Name
Vitus californica	Wild grape
Vulpia microstachys	Pacific fescue
Animals	
Aphelocoma californica	Western scrub-jay
Buteo jamaicensis	Red-tailed hawk
Buteo lineatus	Red-shouldered hawk
Cathartes aura	Turkey vulture
Columba livia	Rock dove/pigeon
Contopus sordidulus	Western wood pewee
Corvus brachyrhynchos	American crow
Pipilo crissalis	California towhee
Sceloporus occidentalis	Western fence lizard
Sturnus vulgaris	European starling
Turdus migratorius	American robin
Zenaida macroura	Mourning dove

* SOUTH BOUNDARY ROAD SITE ONLY

APPENDIX D PLANT SURVEY RESULTS MEMORANDUM

MEMO

To: Rich Simonitch
C & D ENGINEERING

From: Angela Calderaro
PMC

Date: August 14, 2009

Re: Results of the Listed Plant Surveys for the South Boundary Road and Gigling Road Alignments

INTRODUCTION

PMC was contracted by C+D Engineering, on behalf of the Fort Ord Reuse Authority (FORA), to conduct two focused plant surveys in the vicinity of the proposed Roadway Improvement Project at Gigling Road and South Boundary Road. The plant surveys focused on four targeted plant species including Monterey spineflower (*Chorizanthe pungens* var. *pungens*), Seaside bird's-beak (*Cordylanthus rigidus* ssp. *littoralis*), Monterey (sand) gilia (*Gilia tenuiflora* ssp. *arenaria*), and Yadon's rein orchid (*Piperia yadonii*). The purpose of the plant surveys was to identify state and federally listed plant species within the potential impact area of the proposed roadway alignments.

PROJECT LOCATION

The proposed project is located within the former Fort Ord in Monterey County, California (**Figure 1**). The FORA Roadway Improvement Project involves the design and construction of roadway improvements on South Boundary Road and Gigling Road on the former Fort Ord. These improvements are described below:

- Gigling Road. Gigling Road would be improved as a four lane arterial from General Jim Moore Boulevard to before 7th Avenue approximately 4,858 feet (0.92 mile). The proposed roadway improvements would include construction of a four-lane collector with an 18-foot median for a 115-foot minimum right-of-way and would include the installation of street lights and landscaping.

- South Boundary Road. South Boundary Road would be improved as a two-lane roadway from General Jim Moore Boulevard for approximately 7,593 feet (1.44 miles) east towards York Road.

METHODOLOGY

On June 1 and 2 and July 20 and 21, 2009, PMC biologists, Elaine Flock and Angela Calderaro, performed surveys of the project footprint and the Temporary Construction Zone (TCZ) (**Figure 1**). The TCZ includes a 20-foot buffer measured from the proposed project footprint for each roadway alignment, and was used to capture species that may be temporarily or indirectly impacted by proposed project activities. The project footprint and TCZ are hereinafter referred to as the project study area (PSA) for each roadway alignment.

The Del Rey Oaks property located to the northeast of the existing South Boundary Road and General Jim Moore Boulevard intersection was previously surveyed for rare plant species by Duffy and Associates. Although PMC began to survey this property in June, surveys were halted once Duffy and Associates agreed to share their data for this effort. Duffy and Associates did not find the rare plant species that PMC identified within the PSA. The PSA was surveyed again in July to capture species that may not have been in bloom or captured during the June survey.

Botanical surveys were conducted in accordance with the *Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities* (California Department of Fish and Game [CDFG] 2000); however, only listed plant species were targeted and identified in the field.

According to the California Natural Diversity Data Base (CNDDB) (CDFG 2009) and the California Native Plant Society (CNPS) online inventory (CNPS 2009; **Appendix A**), there are four federally and/or state-listed plant species that could occur in the PSA where appropriate habitat is present. **Figure 2** shows the previously recorded occurrences of targeted rare plants according to the CNDDB within a one-mile radius of the South Boundary Road PSA. Survey efforts were focused on the listed targeted plant species identified from the database searches. **Table 1** below lists the targeted plant species and habitat information. Taxonomy of plant species was based on *The Jepson Manual of Higher Plants of California* (Hickman 1993). The University of California at Davis Herbarium was consulted in June for identification of rare plants.

CRITICAL HABITAT

There is no designated or proposed critical habitat within the PSA for either roadway alignment. **Figure 3** shows the critical habitat in the vicinity of the PSA for each proposed roadway alignment (USFWS 2009a). The Del Rey Oaks critical habitat unit for Monterey spineflower consists of approximately 639 acres southwest of the proposed South Boundary Road alignment. It has been proposed for removal as critical habitat for the Monterey spineflower (USFWS 2006). The Del Rey Oaks unit was not included in the proposed revision of this species critical habitat since it has substantial areas of

development within its boundaries and, as a consequence, the area within the unit is very fragmented (USFWS 2009b).

TABLE 1 – TARGET PLANT SPECIES

Species	Status	Habitat	Comments
Chorizanthe pungens var. pungens Monterey spineflower	FT/~/1B	Chaparral (maritime), cismontane woodland, coastal dunes, coastal scrub, Valley and foothill grassland in sandy soil. Blooms: April - June (July); Elevation: 3 – 450 m	There are four previously recorded occurrences within a five-mile radius of the project sites (CDFG 2009). This species was observed within the South Boundary TCZ.
Cordylanthus rigidus ssp. littoralis Seaside bird's-beak	~/SE/1B	Closed-cone coniferous forest, chaparral (maritime), cismontane woodland, coastal dunes, and coastal scrub in sandy soil, often disturbed sites. Blooms: April – October; Elevation: 0 – 425 m	There are nine previously recorded occurrences within a five-mile radius of the project sites (CDFG 2009). This species was observed outside the TCZ near the intersection of South Boundary Rd and General Jim Moore Blvd.
Gilia tenuiflora ssp. arenaria Monterey (sand) gilia	FE/ST/1B	Chaparral (maritime), cismontane woodland, coastal dunes, coastal scrub in sandy soil, openings. Blooms: April – June; Elevation: 0 – 45 m	There are nine previously recorded occurrences within a five-mile radius of the project sites (CDFG 2009). This species was not observed in the TCZ for either roadway project.
Piperia yadonii Yadon's rein orchid	FE/~/1B	Coastal bluff scrub, closed-cone coniferous forest, chaparral (maritime) in sandy soil. Blooms: (February) May – August; Elevation: 10 – 510 m	There are eight previously recorded occurrences within a five-mile radius of the project sites (CDFG 2009). This species was not observed in the TCZ for either roadway project.

Code Designations

Federal status	*State status*	*CNPS*
FE = Listed as endangered under the Federal Endangered Species Act (FESA)	**SE** = Listed as endangered under the California Endangered Species Act (CESA)	**List 1B** = Plant species that are rare, threatened, or endangered in California and elsewhere.
FT = Listed as threatened under FESA	**ST** = Listed as threatened under CESA	

RESULTS

Gigling Road Alignment

None of the targeted rare plants were identified within the Gigling Road PSA. The area is dominated by invasive non-native species such as ice plant (*Carpobrotus edulis*), wild oats (*Avena fatua*), and bromes (*Bromus* spp.). Invasive non-native species are aggressive and usually crowd out any native species that may occur there. Portions of the Gigling Road PSA are regularly mowed or maintained as landscaped areas. The area is significantly disturbed from the surrounding urban environment.

South Boundary Road Alignment

Monterey spineflower and diffuse spineflower (*Chorizanthe diffusa*) were both observed within the South Boundary Road PSA. Both species were observed co-occurring in openings with sandy soils in the chaparral and oak woodland. Since both species co-occur and it was phenologically difficult to distinguish the difference between the two species in the field; therefore, it was assumed that both species have potential to occur at all sites where one species was present. As spineflower occurred in large clumps within the field, not every individual plant within each clump was sampled for presence of the rare Monterey spineflower in the interest of not destroying the population. Since the populations of diffuse and Monterey spineflower were intermixed, an accurate estimate of Monterey spineflower was not obtained. **Figures 4a** through **4f** shows the locations of spineflowers.

In addition, Seaside bird's-beak (*Cordylanthus rigidus* ssp. *littoralis*) was observed at a few locations at or near the existing intersection of General Jim Moore Boulevard and South Boundary Road. However, all occurrences of this species are located outside of the PSA. Twenty-nine individual Seaside bird's-beak plants were observed in this area; the mapped occurrences are depicted on **Figure 4a**.

RECOMMENDATIONS

The focused surveys for rare plants concluded that there are two rare species, Monterey spineflower and Seaside bird's beak present within or adjacent to the South Boundary Road PSA. Rare plant surveys are valid for two years. If project construction begins after two years from the date of this memo, then additional surveys would be required as directed by USFWS and/or CDFG. If special-status plant species are present within the PSA, they may be directly impacted by trampling, compaction, or removal. Since the Fort Ord Habitat Conservation Plan (HCP) has not been adopted yet, the project cannot take these species until the HCP has been adopted and a federal take permit can be secured. To ensure no take of federally listed Monterey spineflower and state-listed Seaside bird's beak, areas identified within **Figures 4a** through **4f** should be avoided prior to issuance of take permit by USFWS and/or CDFG or adoption of the Fort Ord HCP. The project proponent shall consult with the USFWS and/or CDFG, as

applicable, to determine appropriate avoidance measures for these plants, which may include, but is not limited to the following measures:

- Construction activities shall be restricted as necessary to avoid disturbance of the plant populations. Restrictions shall include establishment of exclusion zones (no ingress of personnel or equipment at a minimum radius of 20 feet around a rare plant population). Silt fencing and other Best Management Practices (BMPs) shall be used to ensure that the hydrology surrounding the population is not affected by project construction. In addition, no trees or shrubbery shall be removed surrounding the rare plant populations so that sunlight/shade is not changed that may affect their viability.

Once the Fort Ord HCP is adopted and the USFWS/CDFG issues a take permit for these plant species, then the project proponent may take the species given the stipulations of the take permit. If plants cannot be avoided then mitigation *may* include the following measures:

- Efforts should be made to salvage portions of the habitat or plant populations that will be lost as a result of implementation of the proposed project by transplanting the plants that would be adversely affected for either re-establishment after construction is complete or for planting in a new area in appropriate habitat. A propagation program should be developed for the salvage and transfer of rare, threatened, or endangered plant populations from the site before the initiation of construction activities. Permits may be required from the CDFG or USFWS, which will ensure that certified biologists are involved in the propagation and transportation of rare, threatened, or endangered plant species. (Note: Propagation methods for the salvaged plant population must be developed on a case-by-case basis and must include the involvement of local conservation easements/preserves/open space, where applicable). The propagation and transfer of individual plant species must be performed at the correct time of year and successfully completed before the project's construction activities eliminate or disturb the plants and habitats of concern.

- Preservation of habitat for the species may be required. The project will remove a substantial amount of habitat for listed plant species.

If you have any questions or concerns, please do not hesitate to contact me or Elaine Flock.

Regards,

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Rancho Cordova, CA 95670
Phone: (916) 361-8384, ext. 10296
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ATTACHMENTS

Figure 1 – Project Location

Figure 2 – Previously Recorded Occurrences of Target Plant Species within a One-mile Radius of the TCZ

Figure 3 – Critical Habitat Surrounding the Proposed Project Sites

Figures 4a–4f – Rare Plant Locations Within and Surrounding the South Boundary Road PSA (Map Series)

APPENDICES

Appendix A – Results of Database Searches

REFERENCES

California Department of Fish and Game (CDFG). 2000. *Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities*. California Department of Fish and Game, Rancho Cordova, California.

California Department of Fish and Game (CDFG). 2009. California Natural Diversity Database (CNDDB): QuickViewer. Wildlife and Habitat Data Analysis Branch, California Department of Fish and Game, Sacramento, CA. Accessed online on May 28, 2009 at http://www.dfg.ca.gov/whdab/html/quick_viewer_launch.html

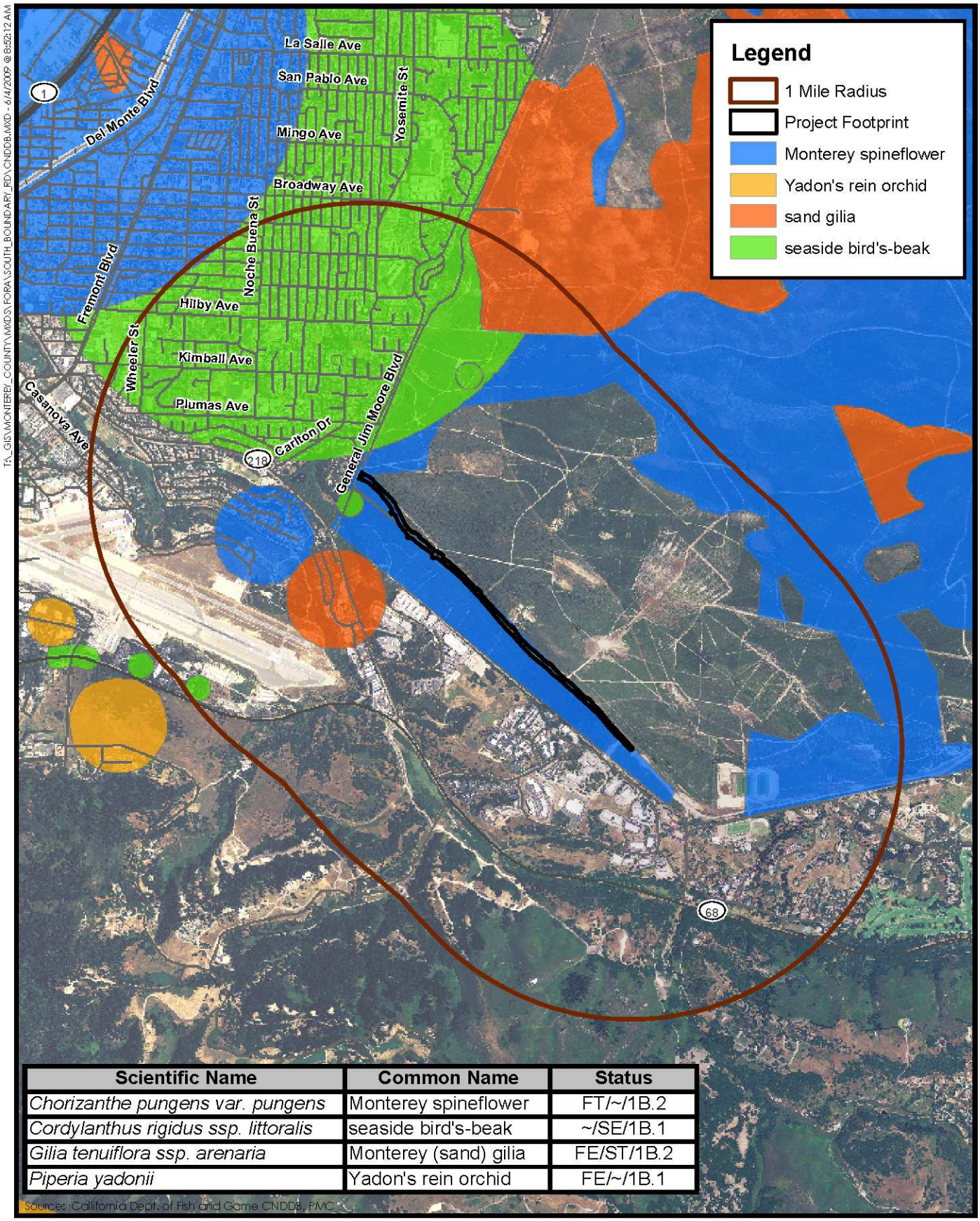
California Native Plant Society (CNPS). 2009. Inventory of Rare and Endangered Plants (online edition, v7-09b 04-10-09). California Native Plant Society, Sacramento, California. Accessed online April 22, 2009: http://www.cnps.org/inventory

Hickman, J.C. 1993. *The Jepson Manual: Higher Plants of California*. University of California Press, Berkeley, CA.

U.S. Fish and Wildlife Service (USFWS). 2006. *Final Proposed Rule: Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Monterey Spineflower (Chorizanthe pungens var. pungens)*. Federal Register: December 14, 2006 (Volume 71, Number 240). Accessed online at http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2006_register&docid=fr14de06-22

U.S. Fish and Wildlife Service (USFWS). 2009a. Critical Habitat Data Portal. Electronic online mapping program accessed online June 12, 2009 at http://crithab.fws.gov/

U.S. Fish and Wildlife Service (USFWS). 2009b. *Species Profile: Monterey Spineflower (Chorizanthe pungens var. pungens)*. Accessed online at http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q271



Scientific Name	Common Name	Status
Chorizanthe pungens var. pungens	Monterey spineflower	FT/~/1B.2
Cordylanthus rigidus ssp. littoralis	seaside bird's-beak	~/SE/1B.1
Gilia tenuiflora ssp. arenaria	Monterey (sand) gilia	FE/ST/1B.2
Piperia yadonii	Yadon's rein orchid	FE/~/1B.1

0.25 0 0.25
MILES
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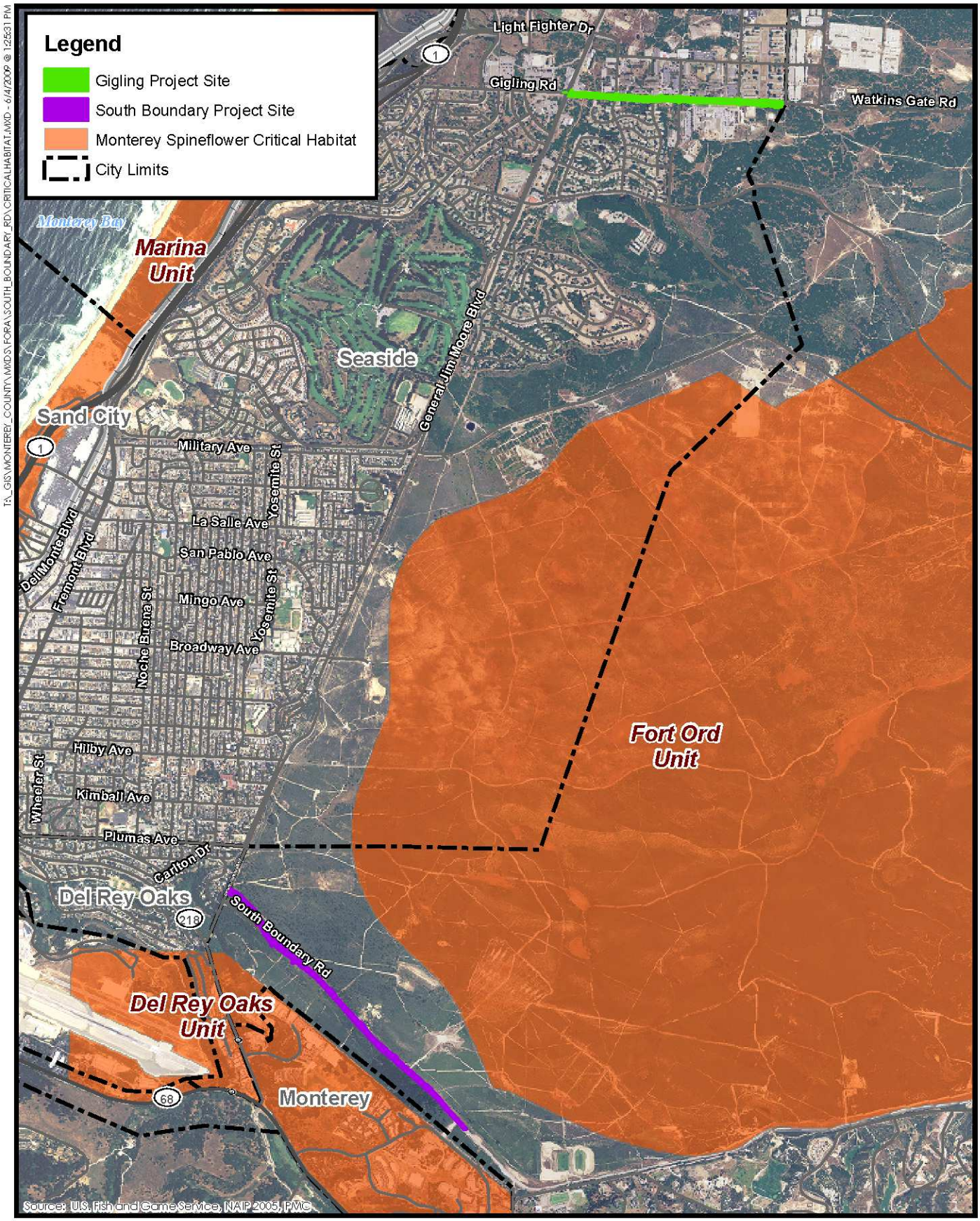
Figure 2
Previously Recorded Occurrences of the Target Plant Species

PMC



T:_GIS\MONTEREY_COUNTY\MXDS\FORA\SOUTH_BOUNDARY_RD\CRITICALHABITAT.MXD - 6/4/2009 @ 12:53:31 PM

Figure 3
Critical Habitat Surrounding the Proposed Project Sites

PMC

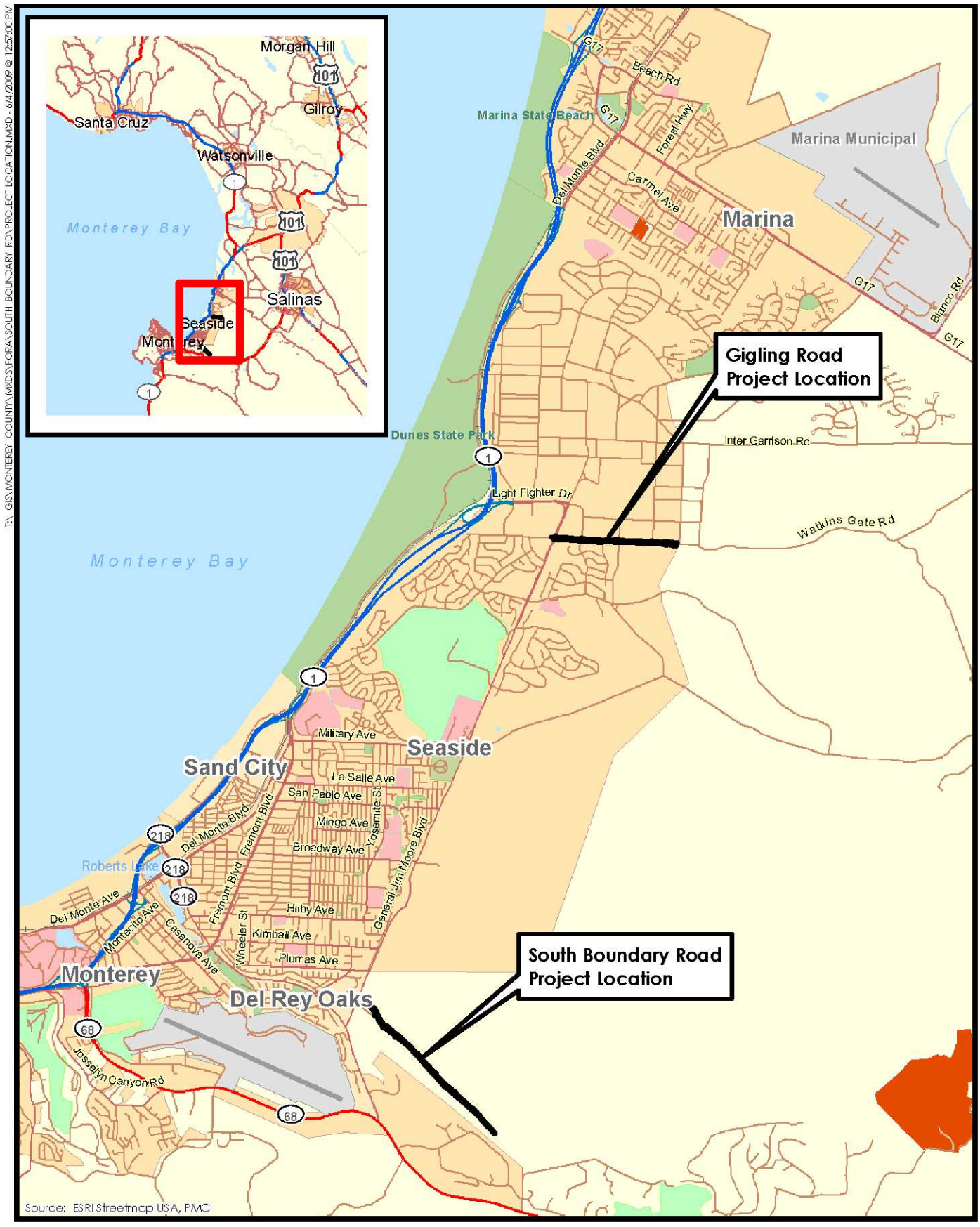


Figure 1
Project Location Map

PMC

T:_GIS\MONTEREY_COUNTY\MXDS\FORA\SOUTH_BOUNDARY_RD\MAPBOOK KEY 11X17.MXD - 6/3/2009 @ 4:14:59 PM

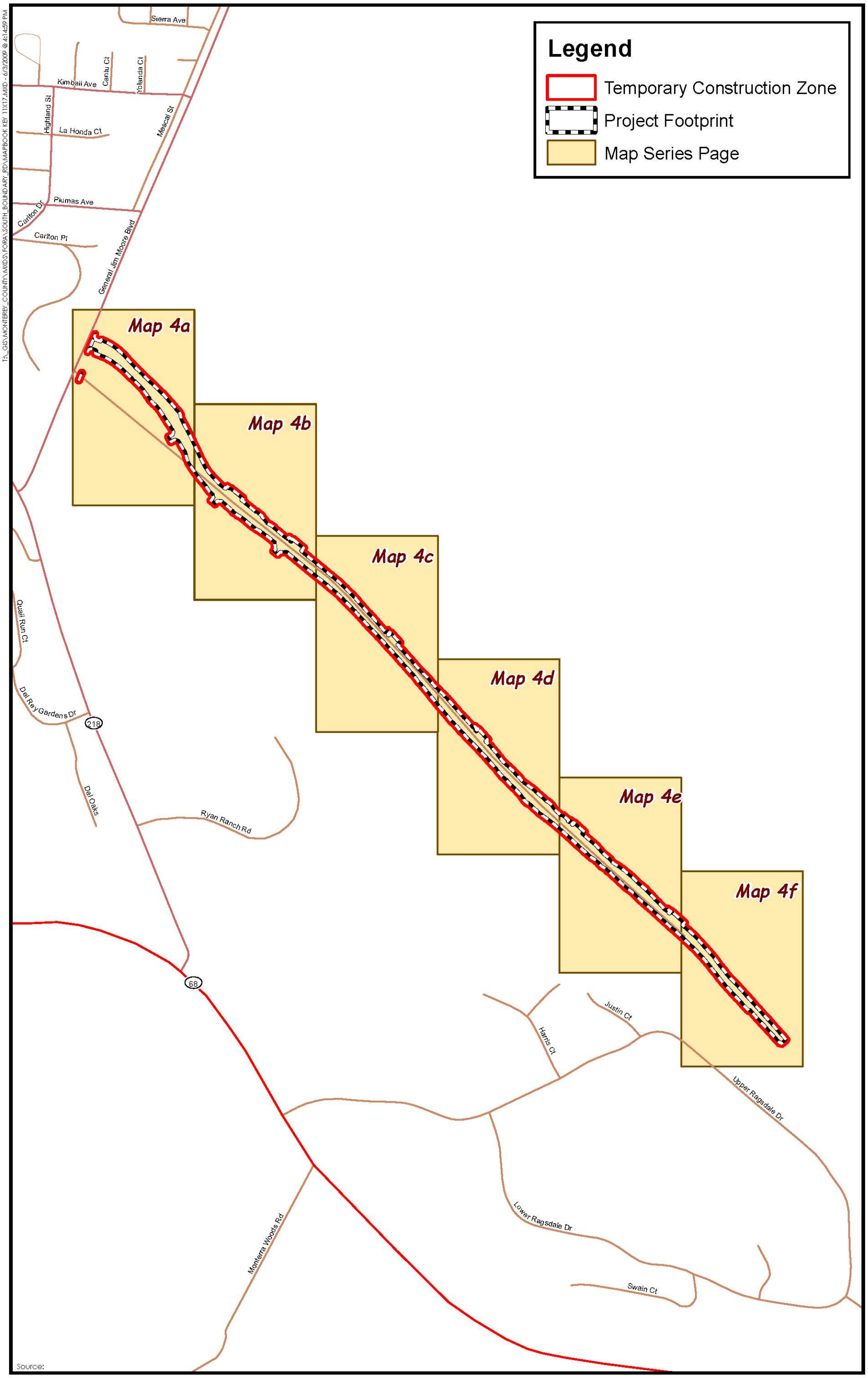


Figure 4
Map Series Key

PMC

T:_GIS\MONTEREY_COUNTY\MXDS\FORA\SOUTHBOUNDARYRD_GIGLINGRD\SOUTHBOUNDARY\SPINEFLOWER MAP SERIES\11X17.MXD - 7/30/2009 @ 2:13:59 PM

Note: Since both species of spineflower, the rare Monterey spineflower and the common diffuse spineflower, co-occur and it was phenologically difficult to distinguish the difference between the two species in the field, it was assumed that all sites where one species was present, both species have potential to occur.

General Jim Moore Blvd

South Boundary Rd

Legend

Project Footprint

20 Foot Temporary Construction Zone

Points

Seaside Bird's Beak

Spineflower

Areas

Seaside Bird's Beak

Spineflower

Source: NAIP 2005, Creegan & D'Angelo Infrastructor Engineering, PMC

50 0 50

FEET

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Map 4a

Locations of Special-Status Plant Species Within and Surrounding the South Boundary Road Project

PMC

T:_GIS\MONTEREY_COUNTY\MXDS\FORA\SOUTHBOUNDARYRD_GIGLINGRD\SOUTHBOUNDARY\SPINEFLOWER MAP SERIES\11X17.MXD - 7/30/2009 @ 2:13:59 PM

Note: Since both species of spineflower, the rare Monterey spineflower and the common diffuse spineflower, co-occur and it was phenologically difficult to distinguish the difference between the two species in the field, it was assumed that all sites where one species was present, both species have potential to occur.

South Boundary Rd

Legend

Project Footprint

20 Foot Temporary Construction Zone

Points

Seaside Bird's Beak

Spineflower

Areas

Seaside Bird's Beak

Spineflower

Source: NAIP 2005, Creegan & D'Angelo Infrastructor Engineering, PMC

50 0 50

FEET

N

Map 4b

Locations of Special-Status Plant Species Within and Surrounding the South Boundary Road Project

PMC

T:_GIS\MONTEREY_COUNTY\MXDS\FORA\SOUTHBOUNDARYRD_GIGLINGRD\SOUTHBOUNDARY\SPINEFLOWER MAP SERIES\11X17.MXD - 7/30/2009 @ 2:13:59 PM

Note: Since both species of spineflower, the rare Monterey spineflower and the common diffuse spineflower, co-occur and it was phenologically difficult to distinguish the difference between the two species in the field, it was assumed that all sites where one species was present, both species have potential to occur.

South Boundary Rd

Legend

Project Footprint

20 Foot Temporary Construction Zone

Points

Seaside Bird's Beak

Spineflower

Areas

Seaside Bird's Beak

Spineflower

Source: NAIP 2005, Creegan & D'Angelo Infrastructor Engineering, PMC

50 0 50

FEET

N

Map 4c

Locations of Special-Status Plant Species Within and Surrounding the South Boundary Road Project

PMC

T:_GIS\MONTEREY_COUNTY\MXDS\FORA\SOUTHBOUNDARYRD_GIGLINGRD\SOUTHBOUNDARY\SPINEFLOWER MAP SERIES\11X17.MXD - 7/30/2009 @ 2:13:59 PM

Note: Since both species of spineflower, the rare Monterey spineflower and the common diffuse spineflower, co-occur and it was phenologically difficult to distinguish the difference between the two species in the field, it was assumed that all sites where one species was present, both species have potential to occur.

South Boundary Rd

Legend

Project Footprint

20 Foot Temporary Construction Zone

Points

Seaside Bird's Beak

Spineflower

Areas

Seaside Bird's Beak

Spineflower

Source: NAIP 2005, Creegan & D'Angelo Infrastructor Engineering, PMC

50 0 50

FEET

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Map 4d

Locations of Special-Status Plant Species Within and Surrounding the South Boundary Road Project

PMC

T:_GIS\MONTEREY_COUNTY\MXDS\FORA\SOUTHBOUNDARYRD_GIGLINGRD\SOUTHBOUNDARY\SPINEFLOWER MAP SERIES\11X17.MXD - 7/30/2009 @ 2:13:59 PM

Note: Since both species of spineflower, the rare Monterey spineflower and the common diffuse spineflower, co-occur and it was phenologically difficult to distinguish the difference between the two species in the field, it was assumed that all sites where one species was present, both species have potential to occur.

South Boundary Rd

Legend

Project Footprint

20 Foot Temporary Construction Zone

Points

Seaside Bird's Beak

Spineflower

Areas

Seaside Bird's Beak

Spineflower

Source: NAIP 2005, Creegan & D'Angelo Infrastructor Engineering, PMC

50 0 50

FEET

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Map 4e

Locations of Special-Status Plant Species Within and Surrounding the South Boundary Road Project

PMC

T:_GIS\MONTEREY_COUNTY\MXDS\FORA\SOUTHBOUNDARYRD_GIGLINGRD\SOUTHBOUNDARY\SPINEFLOWER MAP SERIES\11X17.MXD - 7/30/2009 @ 2:13:59 PM

Note: Since both species of spineflower, the rare Monterey spineflower and the common diffuse spineflower, co-occur and it was phenologically difficult to distinguish the difference between the two species in the field, it was assumed that all sites where one species was present, both species have potential to occur.

South Boundary Rd

Legend

- Project Footprint
- 20 Foot Temporary Construction Zone

Points

- Seaside Bird's Beak
- Spineflower

Areas

- Seaside Bird's Beak
- Spineflower

Source: NAIP 2005; Creegan & D'Angelo Infrastructor Engineering; PMC

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FEET

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Map 4f
Locations of Special-Status Plant Species Within and Surrounding the South Boundary Road Project

PMC

APPENDICES

APPENDIX A: RESULTS OF THE DATABASE SEARCH

	Scientific Name	Common Name	Element Code	Federal Status	State Status	Global Rank	State Rank	CNPS	CDFG
1	***Actinemys marmorata pallida***	southwestern pond turtle	ARAAD02032			G3G4T2T3Q	S2		SC
2	***Agelaius tricolor***	tricolored blackbird	ABPBXB0020			G2G3	S2		SC
3	***Allium hickmanii***	Hickman's onion	PMLIL02140			G2	S2.2	1B.2	
4	***Ambystoma californiense***	California tiger salamander	AAAAA01180	Threatened	unknown code...	G2G3	S2S3		SC
5	***Anniella pulchra nigra***	black legless lizard	ARACC01011			G3G4T2T3Q	S2		SC
6	***Anniella pulchra pulchra***	silvery legless lizard	ARACC01012			G3G4T3T4Q	S3		SC
7	***Arctostaphylos edmundsii***	Little Sur manzanita	PDERI04260			G2	S2.2	1B.2	
8	***Arctostaphylos hookeri ssp. hookeri***	Hooker's manzanita	PDERI040J1			G3T2?	S2?	1B.2	
9	***Arctostaphylos montereyensis***	Toro manzanita	PDERI040R0			G2	S2.1	1B.2	
10	***Arctostaphylos pajaroensis***	Pajaro manzanita	PDERI04100			G2	S2.1	1B.1	
11	***Arctostaphylos pumila***	sandmat manzanita	PDERI04180			G2	S2.2	1B.2	
12	***Astragalus tener var. tener***	alkali milk-vetch	PDFAB0F8R1			G1T1	S1.1	1B.2	
13	***Astragalus tener var. titi***	coastal dunes milk-vetch	PDFAB0F8R2	Endangered	Endangered	G1T1	S1.1	1B.1	
14	***Athene cunicularia***	burrowing owl	ABNSB10010			G4	S2		SC
15	***Buteo regalis***	ferruginous hawk	ABNKC19120			G4	S3S4		
16	***Callitropsis goveniana***	Gowen cypress	PGCUP04031	Threatened		G1	S1.2	1B.2	
17	***Callitropsis macrocarpa***	Monterey cypress	PGCUP04060			G1	S1.2	1B.2	
18	***Central Dune Scrub***	Central Dune Scrub	CTT21320CA			G2	S2.2		
19	***Central Maritime Chaparral***	Central Maritime Chaparral	CTT37C20CA			G2	S2.2		
20	***Centromadia parryi ssp. congdonii***	Congdon's tarplant	PDAST4R0P1			G4T3	S3.2	1B.2	
21	***Charadrius alexandrinus nivosus***	western snowy plover	ABNNB03031	Threatened		G4T3	S2		SC
22	***Chorizanthe pungens var. pungens***	Monterey spineflower	PDPGN040M2	Threatened		G2T2	S2.2	1B.2	
23	***Chorizanthe robusta var. robusta***	robust spineflower	PDPGN040Q2	Endangered		G2T1	S1.1	1B.1	
24	***Clarkia jolonensis***	Jolon clarkia	PDONA050L0			G2	S2.2	1B.2	
25	***Coelus globosus***	globose dune beetle	IICOL4A010			G1	S1		
26	***Collinsia multicolor***	San Francisco collinsia	PDSCR0H0B0			G2	S2.2	1B.2	
27	***Cordylanthus rigidus ssp. littoralis***	seaside bird's-beak	PDSCR0J0P2		Endangered	G5T1	S1.1	1B.1	
28	***Cypseloides niger***	black swift	ABNUA01010			G4	S2		SC
29	***Danaus plexippus***	monarch butterfly	IILEPP2010			G5	S3		
30	***Delphinium hutchinsoniae***	Hutchinson's larkspur	PDRAN0B0V0			G2	S2.1	1B.2	

	Scientific Name	Common Name	Element Code	Federal Status	State Status	Global Rank	State Rank	CNPS	CDFG
31	***Eremophila alpestris actia***	California horned lark	ABPAT02011			G5T3Q	S3		
32	***Ericameria fasciculata***	Eastwood's goldenbush	PDAST3L080			G2	S2.1	1B.1	
33	***Eriogonum nortonii***	Pinnacles buckwheat	PDPGN08470			G2	S2.3	1B.3	
34	***Erysimum ammophilum***	sand-loving wallflower	PDBRA16010			G2	S2.2	1B.2	
35	***Erysimum menziesii ssp. menziesii***	Menzies' wallflower	PDBRA160E1	Endangered	Endangered	G3?T2	S2.1	1B.1	
36	***Erysimum menziesii ssp. yadonii***	Yadon's wallflower	PDBRA160E4	Endangered	Endangered	G3?T1	S1.1	1B.1	
37	***Eucyclogobius newberryi***	tidewater goby	AFCQN04010	Endangered		G3	S2S3		SC
38	***Euphilotes enoptes smithi***	Smith's blue butterfly	IILEPG2026	Endangered		G5T1T2	S1S2		
39	***Falco mexicanus***	prairie falcon	ABNKD06090			G5	S3		
40	***Fritillaria liliacea***	fragrant fritillary	PMLIL0V0C0			G2	S2.2	1B.2	
41	***Gilia tenuiflora ssp. arenaria***	sand gilia	PDPLM041P2	Endangered	Threatened	G3G4T2	S2.2	1B.2	
42	***Horkelia cuneata ssp. sericea***	Kellogg's horkelia	PDROS0W043			G4T1	S1.1	1B.1	
43	***Lasiurus cinereus***	hoary bat	AMACC05030			G5	S4?		
44	***Lasthenia conjugens***	Contra Costa goldfields	PDAST5L040	Endangered		G1	S1.1	1B.1	
45	***Layia carnosa***	beach layia	PDAST5N010	Endangered	Endangered	G2	S2.1	1B.1	
46	***Linderiella occidentalis***	California linderiella	ICBRA06010			G3	S2S3		
47	***Lupinus tidestromii***	Tidestrom's lupine	PDFAB2B3Y0	Endangered	Endangered	G2	S2.1	1B.1	
48	***Malacothamnus palmeri var. involucratus***	Carmel Valley bush-mallow	PDMAL0Q0B1			G3T2Q	S2.2	1B.2	
49	***Malacothamnus palmeri var. palmeri***	Santa Lucia bush-mallow	PDMAL0Q0B5			G3T2Q	S2.2	1B.2	
50	***Malacothrix saxatilis var. arachnoidea***	Carmel Valley malacothrix	PDAST660C2			G5T2	S2.2	1B.2	
51	***Microseris paludosa***	marsh microseris	PDAST6E0D0			G2	S2.2	1B.2	
52	***Monterey Cypress Forest***	Monterey Cypress Forest	CTT83150CA			G1	S1.2		
53	***Monterey Pine Forest***	Monterey Pine Forest	CTT83130CA			G1	S1.1		
54	***Monterey Pygmy Cypress Forest***	Monterey Pygmy Cypress Forest	CTT83162CA			G1	S1.1		
55	***Northern Bishop Pine Forest***	Northern Bishop Pine Forest	CTT83121CA			G2	S2.2		
56	***Northern Coastal Salt Marsh***	Northern Coastal Salt Marsh	CTT52110CA			G3	S3.2		
57	***Oceanodroma homochroa***	ashy storm-petrel	ABNDC04030			G2	S2		SC
58	***Oncorhynchus mykiss irideus***	steelhead - south/central California coast ESU	AFCHA0209H	Threatened		G5T2Q	S2		SC
59	***Pelecanus occidentalis californicus***	California brown pelican	ABNFC01021	Endangered	Endangered	G4T3	S1S2		
60	***Phrynosoma coronatum (frontale population)***	coast (California) horned lizard	ARACF12022			G4G5	S3S4		SC
61	***Pinus radiata***	Monterey pine	PGPIN040V0			G1	S1.1	1B.1	

	Scientific Name	Common Name	Element Code	Federal Status	State Status	Global Rank	State Rank	CNPS	CDFG
62	***Piperia yadonii***	Yadon's rein orchid	PMORC1X070	Endangered		G2	S2.1	1B.1	
63	***Plagiobothrys uncinatus***	hooked popcorn-flower	PDBOR0V170			G2	S2.2	1B.2	
64	***Potentilla hickmanii***	Hickman's cinquefoil	PDROS1B0U0	Endangered	Endangered	G1	S1.1	1B.1	
65	***Rana draytonii***	California red-legged frog	AAABH01022	Threatened		G4T2T3	S2S3		SC
66	***Reithrodontomys megalotis distichlis***	Salinas harvest mouse	AMAFF02032			G5T1	S1		
67	***Rosa pinetorum***	pine rose	PDROS1J0W0			G2Q	S2.2	1B.2	
68	***Sidalcea malachroides***	maple-leaved checkerbloom	PDMAL110E0			G3G4	S3S4.2	4.2	
69	***Stebbinsoseris decipiens***	Santa Cruz microseris	PDAST6E050			G2	S2.2	1B.2	
70	***Taxidea taxus***	American badger	AMAJF04010			G5	S4		SC
71	***Thamnophis hammondii***	two-striped garter snake	ARADB36160			G3	S2		SC
72	***Tortula californica***	California screw moss	NBMUS7L090			G2G4	S2.2	1B.2	
73	***Trifolium buckwestiorum***	Santa Cruz clover	PDFAB402W0			G1	S1.1	1B.1	
74	***Trifolium polyodon***	Pacific Grove clover	PDFAB402H0		Rare	G1Q	S1.1	1B.1	
75	***Trifolium trichocalyx***	Monterey clover	PDFAB402J0	Endangered	Endangered	G1	S1.1	1B.1	
76	***Valley Needlegrass Grassland***	Valley Needlegrass Grassland	CTT42110CA			G1	S3.1		

CNPS Inventory of Rare and Endangered Plants

v7-09b 4-10-09

Status: search results - Thu, May. 28, 2009 16:24 c

{QUADS_123} =~ m/366D|344A|344B|365B|365C|343B|366A Search

Tip: Words meant to be searched as a unit should be wrapped in quotes, e.g., "coastal dunes".[all tips and help.][search history]

Your Quad Selection: Seaside (366D) 3612157, Mount Carmel (344A) 3612147, Soberanes Point (344B) 3612148, Salinas (365B) 3612166, Spreckels (365C) 3612156, Carmel Valley (343B) 3612146, Marina (366A) 3612167, Monterey (366C) 3612158

Hits 1 to 49 of 49

Requests that specify topo quads will return only Lists 1-3.

To save selected records for later study, click the ADD button.

ADD checked items to Plant Press check all check none

Selections will appear in a new window.

open	save	hits	scientific	common	family	CNPS
		1	**Allium hickmanii**	Hickman's onion	Liliaceae	List 1B.2
		1	**Arctostaphylos edmundsii**	Little Sur manzanita	Ericaceae	List 1B.2
		1	**Arctostaphylos hookeri ssp. hookeri**	Hooker's manzanita	Ericaceae	List 1B.2
		1	**Arctostaphylos montereyensis**	Toro manzanita	Ericaceae	List 1B.2
		1	**Arctostaphylos pajaroensis**	Pajaro manzanita	Ericaceae	List 1B.1
		1	**Arctostaphylos pumila**	sandmat manzanita	Ericaceae	List 1B.2
		1	**Astragalus tener var. tener**	alkali milk-vetch	Fabaceae	List 1B.2
		1	**Astragalus tener var. titi**	coastal dunes milk-vetch	Fabaceae	List 1B.1
		1	**Callitropsis goveniana**	Gowen cypress	Cupressaceae	List 1B.2
		1	**Callitropsis macrocarpa**	Monterey cypress	Cupressaceae	List 1B.2
		1	**Centromadia parryi ssp. congdonii**	Congdon's tarplant	Asteraceae	List 1B.2
		1	**Chorizanthe pungens var. pungens**	Monterey spineflower	Polygonaceae	List 1B.2
		1	**Chorizanthe robusta var. robusta**	robust spineflower	Polygonaceae	List 1B.1
		1	**Clarkia jolonensis**	Jolon clarkia	Onagraceae	List 1B.2

		1	**Collinsia multicolor**	San Francisco collinsia	Scrophulariaceae	List 1B.2
		1	**Cordylanthus rigidus ssp. littoralis**	seaside bird's-beak	Scrophulariaceae	List 1B.1
		1	**Corethrogyne leucophylla**	branching beach aster	Asteraceae	List 3.2
		1	**Delphinium hutchinsoniae**	Hutchinson's larkspur	Ranunculaceae	List 1B.2
		1	**Delphinium umbraculorum**	umbrella larkspur	Ranunculaceae	List 1B.3
		1	**Ericameria fasciculata**	Eastwood's goldenbush	Asteraceae	List 1B.1
		1	**Eriogonum nortonii**	Pinnacles buckwheat	Polygonaceae	List 1B.3
		1	**Erysimum ammophilum**	sand-loving wallflower	Brassicaceae	List 1B.2
		1	**Erysimum menziesii ssp. menziesii**	Menzies' wallflower	Brassicaceae	List 1B.1
		1	**Erysimum menziesii ssp. yadonii**	Yadon's wallflower	Brassicaceae	List 1B.1
		1	**Fritillaria liliacea**	fragrant fritillary	Liliaceae	List 1B.2
		1	**Galium clementis**	Santa Lucia bedstraw	Rubiaceae	List 1B.3
		1	**Gilia tenuiflora ssp. arenaria**	Monterey gilia	Polemoniaceae	List 1B.2
		1	**Grindelia hirsutula var. maritima**	San Francisco gumplant	Asteraceae	List 1B.2
		1	**Horkelia cuneata ssp. sericea**	Kellogg's horkelia	Rosaceae	List 1B.1
		1	**Lasthenia conjugens**	Contra Costa goldfields	Asteraceae	List 1B.1
		1	**Layia carnosa**	beach layia	Asteraceae	List 1B.1
		1	**Leptosiphon croceus**	coast yellow leptosiphon	Polemoniaceae	List 1B.1
		1	**Lupinus tidestromii**	Tidestrom's lupine	Fabaceae	List 1B.1
		1	**Malacothamnus palmeri var. involucratus**	Carmel Valley bush-mallow	Malvaceae	List 1B.2
		1	**Malacothamnus palmeri var. palmeri**	Santa Lucia bush-mallow	Malvaceae	List 1B.2
		1	**Malacothrix saxatilis var. arachnoidea**	Carmel Valley malacothrix	Asteraceae	List 1B.2
		1	**Micropus amphibolus**	Mt. Diablo cottonweed	Asteraceae	List 3.2
		1	**Microseris paludosa**	marsh microseris	Asteraceae	List 1B.2
		1	**Monardella antonina ssp. antonina**	San Antonio Hills monardella	Lamiaceae	List 3
						List

		1	**Pinus radiata**	Monterey pine	Pinaceae	1B.1
		1	**Piperia yadonii**	Yadon's rein orchid	Orchidaceae	List 1B.1
		1	**Plagiobothrys uncinatus**	hooked popcorn-flower	Boraginaceae	List 1B.2
		1	**Potentilla hickmanii**	Hickman's cinquefoil	Rosaceae	List 1B.1
		1	**Rosa pinetorum**	pine rose	Rosaceae	List 1B.2
		1	**Stebbinsoseris decipiens**	Santa Cruz microseris	Asteraceae	List 1B.2
		1	**Tortula californica**	California screw-moss	Pottiaceae	List 1B.2
		1	**Trifolium buckwestiorum**	Santa Cruz clover	Fabaceae	List 1B.1
		1	**Trifolium polyodon**	Pacific Grove clover	Fabaceae	List 1B.1
		1	**Trifolium trichocalyx**	Monterey clover	Fabaceae	List 1B.1

To save selected records for later study, click the ADD button.

ADD checked items to Plant Press check all check none

Selections will appear in a new window.

No more hits.

Appendix E

Cultural Resources Report
(Basin Research/PMC)

CULTURAL RESOURCES REVIEW

GIGLING ROAD AND SOUTH BOUNDARY ROAD IMPROVEMENTS WITHIN FORMER FORT ORD MONTEREY COUNTY, CALIFORNIA

PREPARED FOR

PACIFIC MUNICIPAL CONSULTANTS
585 Cannery Row, Suite 304
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ATTN: Mr. Tad Stearn

BY

BASIN RESEARCH ASSOCIATES
1933 Davis Street, Suite 210
San Leandro, CA 94577

SEPTEMBER 2009

MANAGEMENT SUMMARY

Fort Ord is a former U.S. Army infantry base located in Monterey County; about five miles northeast of the City of Monterey covering nearly 28,000 acres of land that is surrounded by the cities of Marina, Monterey, Del Rey Oaks, Seaside, and Sand City, and unincorporated lands of Monterey County, California. In 1994, the Fort Ord Reuse Authority (FORA) was established to coordinate the redevelopment of Fort Ord for civilian residential, commercial, recreational, and educational uses at a civilian intensity equivalent to the military population of the former base.

FORA proposes to improve two roads - Gigling Road in the City of Seaside and the South Boundary Road in the City of Del Rey Oaks within the former military base of Fort Ord, Monterey County, California (Improvement Project). The improvements are an upgrade from the current configuration, which consists of an unimproved 2-lane rural road with minimal shoulders, and a 2-lane arterial with left-turn channelization and continuous shoulders.

Approximately 4,883 linear feet (0.92 miles) of Gigling Road would be improved as a four-lane urban arterial between General Jim Moore Boulevard and 7th Avenue. The South Boundary Road improvements include relocating the existing South Boundary Road/General Jim Moore Boulevard intersection approximately 300 feet north of the existing intersection location and realigning South Boundary Road approximately 600 linear feet eastward from the realigned intersection. The realigned portion of roadway would join the existing South Boundary Road alignment as a two-lane roadway for approximately 7,050 linear feet eastward towards York Road. The realigned South Boundary Road would have a total length of approximately 7,593 linear feet (1.44 miles). The proposed roadway improvements are intended to implement the *Fort Ord Reuse Plan* transportation network and provide acceptable service levels based on traffic generation estimates for buildout through 2030.

The project's Area of Potential Effects (APE) consists of an approximately 125 foot wide corridor surrounding the current road alignments and proposed new approach and intersection proposed as part of the improvements to the South Boundary Road.

The project is subject to the legal requirements of Section 106 of the National Historic Preservation Act (NHPA) of 1966 and its implementing regulations, as amended, and the California Environmental Quality Act (CEQA) (Public Resources Code 21000 et seq.) 1970, as amended.

Archaeological and historical investigations for the Improvement Project were conducted to comply with regulations and following criteria presented in 36 Code of Federal Regulations (CFR) Part 63 and Section 106 of the NHPA of 1966, as amended. In addition, FORA is also the lead state agency and is required to determine potential impacts on both historical and archaeological cultural resources and mitigate impacts on historically or culturally significant resources located within and near a project in compliance with CEQA

This *Cultural Resources Review* provides supporting materials for both the Section 106 and CEQA identification and evaluation including the results of a records search, a review of pertinent literature, consultation with local Native Americans by FORA, and a field review. The archaeological and historical investigations for the project did not identify any prehistoric sites, historic sites, or buildings within the project APE listed or eligible for inclusion on the National Register of Historic Resources (National Register) or the California Register of Historical Resources (California Register). FORA has determined that a finding of *No historic properties affected* is applicable (36 CFR Part 800.4(d)(1)) for the Improvement Project on the former Fort Ord, Monterey County.

In regard to CEQA, the project will not have a significant effect on archaeological sites or a property of historic or cultural significance to a community or ethnic group eligible for inclusion in the California Register (CEQA *Guidelines*).

No mitigation measures are required. The proposed undertaking will not adversely affect any National Register properties or adversely affect any historic resources eligible for the California Register.

Post-review discoveries of cultural resources shall be treated in accordance with 36 CFR Part 800.13(b). The development of a formal *Post-Review Discovery Plan* is not recommended due to the very low potential for exposing archaeological material within the property. The exposure of any Native American burials shall be handled in accordance with state law.

FORA initiates consultation and requests the SHPO to concur that: (1) the identification effort is complete pursuant to 36 CFR Part 800.4(a)-(c); and, (2) a finding of *No Historic Properties Affected* pursuant to 36 CFR Part 800.4(d)(1) is appropriate as the Improvement Project will have no effect as defined in 36 CFR Part 800.16(i).

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FIGURES

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FIGURE 2A	PROJECT LOCATION: Gigling Road (USGS Marina, Calif. 1983)
FIGURE 2B	PROJECT LOCATION: South Boundary Road (USGS Seaside, Calif. 1983)

CORRESPONDENCE

LETTER 1	REQUEST TO NATIVE AMERICAN HERITAGE COMMISSION
LETTER 2	NATIVE AMERICAN HERITAGE COMMISSION RESPONSE
LOG	TELEPHONE CONTACT LOG
EMAIL	EMAIL Messages

CHRIS/NWIC RECORDS SEARCH

SEARCH	File No. 08-1614 dated 8/26/2009

1.0 INTRODUCTION

Fort Ord is a former U.S. Army infantry base located in Monterey County; about five miles northeast of the City of Monterey covering nearly 28,000 acres of land that is surrounded by the cities of Marina, Monterey, Del Rey Oaks, Seaside, and Sand City, and unincorporated lands of Monterey County, California.

In 1994, the Fort Ord Reuse Authority (FORA) was established to coordinate the redevelopment of Fort Ord for civilian residential, commercial, recreational, and educational uses at a civilian intensity equivalent to the military population of the former base. The FORA Board certified the *Fort Ord Reuse Plan EIR* and adopted the FORP on June 13, 1997. Prior to adopting the FORP, the U.S. Army Corps of Engineers prepared the *Fort Ord Disposal and Reuse Final Environmental Impact Statement* (1993) and the *Fort Ord Disposal and Reuse Supplemental Environmental Impact Statement.*

FORA proposes to improve two roads - Gigling Road in the City of Seaside and the South Boundary Road in the City of Del Rey Oaks within the former Fort Ord. The project is subject to the legal requirements of Section 106 of the National Historic Preservation Act (NHPA) 1966 and its implementing regulations, as amended, and the California Environmental Quality Act (CEQA) (Public Resources Code 21000 et seq.) 1970, as amended (Pacific Municipal Consultants (hereafter PMC) 2009).

The proposed improvements were identified as a part of FORA's FORP - *Capital Improvement Program (CIP)* approved in June 2006 and the bike lane improvements were also identified in the Transportation Agency of Monterey County (TAMC)'s *Regional Transportation Plan (RTP)* prepared in 2005. The improvements are included in the CIP and RTP as an upgrade from the current configuration, which consists of an unimproved 2-lane rural road with minimal shoulders, and a 2-lane arterial with left-turn channelization and continuous shoulders.

Basin Research Associates professional staff conducted the archaeological and historical investigations for the project. Dr. Colin I. Busby was responsible for team management and implementation including report review. Field work for the project was conducted by Christopher Canzonieri (M.A., Physical Anthropologist and Archaeologist). Dr. Donna M. Garaventa compiled the report relying on the records search, archival research, and data provided by PMC including *Archaeological Investigations for the General Jim Moore Boulevard Improvement Project on the Former Fort Ord, Monterey County* (PMC 2004). All of the staff meet or exceed the Secretary of the Interior's Standards and Guidelines for Professional Qualifications.

This *Cultural Resources Review* provides supporting materials for both the Section 106 and CEQA identification and evaluation including the results of a records search, a review of pertinent literature, consultation with local Native Americans by FORA, and a systematic field inventory. The archaeological and historical investigations for the project did not identify any prehistoric sites, historic sites, or buildings within the project APE listed or eligible for inclusion on the National Register of Historic Resources (National Register) or the California Register of Historical Resources (California

Register). FORA has determined that a finding of *No historic properties affected* is applicable (36 CFR Part 800.4(d)(1)) for the Improvement Project on the former Fort Ord, Monterey County.

In regard to CEQA, the project will not have a significant effect on archaeological sites or a property of historic or cultural significance to a community or ethnic group eligible for inclusion in the California Register (CEQA *Guidelines*).

No mitigation measures are required. The proposed undertaking will not adversely affect any National Register properties or adversely affect any historic resources eligible for the California Register.

Post-review discoveries of cultural resources shall be treated in accordance with 36 CFR Part 800.13(b). The development of a formal *Post-Review Discovery Plan* is not recommended due to the very low potential for exposing archaeological material within the property. The exposure of any Native American burials shall be handled in accordance with state law.

FORA initiates consultation and requests the SHPO to concur that: (1) the identification effort is complete pursuant to 36 CFR Part 800.4(a)-(c); and, (2) a finding of *No Historic Properties Affected* pursuant to 36 CFR Part 800.4(d)(1) is appropriate as the Improvement Project will have no effect as defined in 36 CFR Part 800.16(i).

2.0 PROJECT LOCATION AND DESCRIPTION

The Fort Ord Reuse Authority (FORA) proposes to improve two roads Gigling Road in the City of Seaside and South Boundary Road in the City of Del Rey Oaks on the former Fort Ord, Monterey County, California [Figs. 1-2]. These roadway improvements are planned as part of a larger series of transportation improvements required to implement the circulation elements of the FORP-CIP and to mitigate the impacts of the development of proposed future uses. The proposed roadway improvements are intended to implement the FORP transportation network and provide acceptable service levels based on traffic generation estimates for buildout through 2030.

The project's Area of Potential Effects (APE) consists of an approximately 125 foot wide corridor surrounding the current road alignments and proposed new approach and intersection proposed as part of the improvements to the South Boundary Road.

2.1 GIGLING ROAD

The Gigling Road APE extends for approximately 0.9 miles from General Jim Moore Boulevard on the west to about 7th Avenue on the east, a block south of the southern boundary of California State University Monterey in the City of Seaside, on the former Fort Ord in Monterey County California (USGS Marina, Calif. 1983; Township 15 South Range 1-2 East, unsectioned) [Fig. 2A].

Gigling Road is a 2-lane roadway that has curbs, gutters, and sidewalks on both sides of the majority of the road. Gigling Road is an east-west alignment in the central part of the

former Fort Ord aligned south of Light Fighter Drive. It connects with several north-south streets, including General Jim Moore Boulevard, which provides access to Light Fighter Drive and the Main Gate. Gigling Road begins approximately 0.6 miles west of General Jim Moore Boulevard when Noumea Road turns into Gigling Road, intersects with General Jim Moore Boulevard and progresses east away from the City of Seaside. The roadway serves as the major roadway serving the Parker Flats area immediately south of the California State University Monterey Bay (CSUMB) campus. The intersection of Gigling Road/General Jim Moore Boulevard is signal controlled. The Gigling Road/6th Avenue intersection is stop sign controlled in all directions.

Gigling Road Improvement Area

The proposed action/project involves improving Gigling Road along its current alignment, which is located within the Fort Ord Reuse Area of the City of Seaside. Approximately 4,883 linear feet (0.92 miles) of the roadway would be improved as a four-lane urban arterial between General Jim Moore Boulevard and 7th Avenue. The proposed roadway improvements would disturb approximately 11.7 acres. Improvements would include construction of a four-lane collector with an 18-foot median for a 115-foot minimum right-of-way and would include the installation of streetlights, bikeway, and sidewalks.

2.2 SOUTH BOUNDARY ROAD

The South Boundary Road APE extends for approximately 1.4 miles from General Jim Moore Boulevard southeasterly to a point between Ragsdale Drive and York Road in Del Rey Oaks and unincorporated Monterey County in the far southwestern portion of the former Fort Ord, Monterey County California (USGS Seaside, Calif. 1983; Township 15 South Range 1 East, unsectioned) [Fig. 2B].

South Boundary Road is a 2-lane roadway with no curb, gutter, or sidewalks and is located within the FORA area of the cities of Del Rey Oaks and Monterey and Monterey County. South Boundary Road begins just north of State Route 218 at General Jim Moore Boulevard, which is identified as the major north-south roadway through the southern part of the former Fort Ord. South Boundary Road progresses southeast along the southern boundary of Fort Ord, traveling north of State Route 218 and ending at State Route 68 approximately five linear miles from its intersection with General Jim Moore Boulevard. However, the roadway is gated off just east of Rancho Saucito Lane and is only open to the public during events at the Mazda Raceway at Laguna Seca. There are stop-sign controlled intersections at General Jim Moore Boulevard and Rancho Saucito Lane.

South Boundary Road Improvement Area

The proposed action/project involves improving the existing South Boundary Road within the FORA area of the cities of Del Rey Oaks and Monterey. The South Boundary Road improvements include relocating the existing South Boundary Road/General Jim Moore Boulevard intersection approximately 300 feet north of the existing intersection

location and realigning South Boundary Road approximately 600 linear feet eastward from the realigned intersection. The realigned portion of roadway would join the existing South Boundary Road alignment as a two-lane roadway for approximately 7,050 linear feet eastward towards York Road. The realigned South Boundary Road would have a total length of approximately 7,593 linear feet (1.44 miles). Approximately 7,073 linear feet of the improvement would be located within the City of Del Rey Oaks and approximately 520 linear feet would be within the City of Monterey. The proposed roadway improvements would disturb approximately 17.8 acres. Improvements would include the construction of a 16-foot striped median for a minimum 80-foot right-of-way, and would include the installation of streetlights, and sidewalk improvements.

3.0 IDENTIFICATION EFFORT

A prehistoric and historic site record and literature search for the proposed project was completed by the California Historical Resources Information System, Northwest Information Center, Sonoma State University (CHRIS/NWIC File No. 08-1614 by Hagel 2009). The search mapped sites and compliance reports within 0.25 miles of the two alignments. Copies of site record forms and compliance reports were reviewed by Basin Research.

Specialized listings consulted include the *Historic Properties Directory* for Monterey County (CAL/OHP 2009a) with the most recent updates of the National Register of Historic Places, California Historical Landmarks, and California Points of Historical Interest as well as other evaluations of properties reviewed by the State of California Office of Historic Preservation. Other sources consulted *California History Plan* (CAL/OHP 1973); *California Inventory of Historic Resources* (CAL/OHP 1976); *California Historical Landmarks* (CAL/OHP 1990); *California Points of Historical Interest* (CAL/OHP 1992); *Five Views: An Ethnic Sites Survey for California* (CAL/OHP 1988); and *Archaeological Determinations of Eligibility* for Monterey County (CAL/OHP 2009b).

The alignment of the Juan Bautista de Anza National Historic Trail [1776], including campsites, as mapped by the National Park Service was also checked (USNPS 1995).

A field inventory of the two project APEs was conducted Mr. Christopher Canzonieri (M.A.) an archaeologist meeting the qualifications of the Secretary of the Interior on June 24, 2009.

The State of California Native American Heritage Commission (NAHC) was contacted for a review of the Sacred Lands Inventory (Busby 2009a).

No local historical societies and planning departments were contacted regarding landmarks, potential historic sites or structures in or adjacent to the proposed project.

4.0 ENVIRONMENTAL CONTEXT

The project is located on the biologically diverse California central coast. The diverse resources and ecosystems in the area attracted prehistoric and historic Native American and Euroamerican populations.

4.1 GEOGRAPHY

The former Fort Ord is in the transition zone between the Santa Lucia Range and the Sierra de la Salinas Mountains toward the south and the lowlands of the Salinas River Valley toward the north. The topography of the base ranges from 900 feet above mean sea level at its eastern boundary to sea level at the beach and its western boundary. The northern and western portions of the base are primarily composed of dune sand deposits (Norris and Webb 1990; www.fortordcleanup.com). In these areas of the base the topography slopes gently toward the west and northwest and natural drainage is generally absent because of the permeability of the dune sand. Consequently, well-developed drainage channels are absent in the area, and closed drainage depressions, typical of dune topography, are common (Norris and Webb 1990; www.fortordcleanup.com). The southeastern portion of the base, on the other hand, is composed of relatively well-defined eastward trending drainage channels with steep sloping canyons (www.fortordcleanup.com). This area of the base drains into the Salinas River and Salinas Valley.

The climate of the Monterey Bay area is characterized by warm, dry summers and cool, rainy winters. The Pacific Ocean influences the regional climate causing fog and onshore winds that generally maintain temperatures in the range of 40-70 degrees.

4.2 GEOLOGY

The former Fort Ord is within the Coast Range geomorphic province. This area primarily consists of northwest trending mountain ranges, broad basins, and elongated valleys that generally parallel the coast (Norris and Webb 1990; www.fortordcleanup.com). The base has older rock exposed near the ground surface along its southern boundary, but these rocks become buried under more recent, poorly consolidated deposits moving from the south toward the north end of the base. The principal geologic components in the area include: Mesozoic granite and metamorphic rocks; Miocene marine sedimentary rocks of the Monterey Formation; Upper Miocene to lower Pliocene marine sandstone of the Santa Margarita Formation; Plio-Pleistocene alluvial fan, lake, and fluvial deposits of the Paso Robles Formation; Pleistocene eolian and fluvial sands of Aromas Sand; and Pleistocene to Holocene valley fill deposits including gravel, silt, sand, clay, and dune sands (Norris and Webb 1990; www.fortordcleanup.com). The Miocene Monterey Formation is generally composed of beds of diatomaceous shales, which are interbedded with siliceous cherts varying in color from black to tan to white (Norris and Webb 1990). The geologic landscape of the project area also reflects a long and complex history of shifting drainages, lake and lagoon development, marine and eolian sedimentation, and erosion.

The Monterey Formation is not only interesting from a geological viewpoint, but also from an archaeological perspective. These formations provided an accessible and plentiful source of chert for tool manufacture use by the both prehistoric and historic Native American populations.

4.3 FLORA AND FAUNA

The former Fort Ord is in a biologically diverse area that supports a wide range of plant and animal communities. The base consists of a variety of habitats including: central maritime chaparral; coastal oak woodlands; central coastal scrub; stabilized dunes; foredune grasslands; seasonally wet grasslands; marine habitats; and urban environments (Mayer and Laudenslayer 1988; www.fortordcleanup.com). Maritime chaparral covers approximately 12,500 acres of the base and is its most extensive habitat. Coastal oak woodlands and grasslands, each encompassing approximately 5,000 acres, cover the remainder of the undeveloped areas of the base. The remaining approximately 4,000 acres of the base are urban, landscaped environments (www.fortordcleanup.com). The chaparral and coastal oak woodlands provide potential habitat for wildlife such as quail, turkey, squirrel, and deer. The marine environment is habitat for a great variety of sea mammals (e.g., sea otters, sea lions, whales), fish, and invertebrates. The urban environments across the former Fort Ord are generally landscaped and have experienced numerous episodes of disturbance (e.g., road construction, residential construction, and installation of infrastructure).

5.0 CULTURAL CONTEXT

Prehistoric and historic Native American populations and Euroamerican populations exploited, to varying degrees, all the habitats of former Fort Ord and the surrounding area. These different ecological areas provided a rich, varied, and relatively stable resource base for local Native Americans. Similarly, Euroamerican were attracted to the area because of its diverse resources and agricultural potential.

5.1 NATIVE AMERICAN

5.1A Regional Prehistory

The proposed Improvement Project is located in an area with a long history of use by both Native American and Euroamerican populations. Archaeological data suggests that Native American populations have occupied the area for 10,000 years. Spanish exploration/settlement of the area dates to the 1600s.

Archaeological work in vicinity of Monterey Bay dates to 1875, when Saxe tested the Sand Hill Bluff site, CASCR-7, just north of Santa Cruz (Saxe 1875). Early research was continued by Kroeber (1915), who recorded nine sites near Monterey Bay, and by Golomshtok (1921-1922), Hill (1929), and Wood (1930) all of whom conducted surveys near Elkhorn Slough. Following this early work, virtually no archaeological research was conducted in the area until the late 1940s and 1950s. Research during this period is highlighted by the work of Arnold Pilling (1948) who identified numerous sites in Monterey County and specifically Elkhorn Slough. Greengo (1951) sampled

shellmounds near Elkhorn Slough, and Broadbent (1951a-b) who tested the Berwick Park site (CA-MNT-107). Most of this work is classified as exploratory, and tended to be site specific rather than integrative in focus. One of the first major site reports in the Monterey Bay area was completed by Pritchard (1968) for CA-MNT-101. Since the completion of Pritchard's report, archaeological research and interest in the Monterey Bay area has steadily grown. A catalyst to this development is the implementation and completion of numerous cultural resource management projects. These projects have expanded the archaeological database for the area and also have made significant contributions to our understanding of its prehistory.

This recent archaeological work involved the development of regional chronologies and models of culture change for Monterey Bay and its immediate environs. Significant contributions in this regard have been presented by: Breschini (1983); Breschini et al. (1983); Breschini and Haversat (1992); Cartier (1993); Dietz (1985); Dietz et al. (1988); Dietz and Jackson (1981); Hildebrandt and Mikkelsen (1993); Jones and Hylkema (1988); Jones (1993); Jones et al. (1992); Jones and Jones (1992); and, Patch and Jones (1984).

Breschini and Haversat (1980, 1983) proposed two archaeological "patterns" for the Monterey Bay area: the Sur Pattern and the Monterey Pattern. They suggest that the Sur Pattern represents an early "forager" subsistence strategy and a very generalized economy. The Sur Pattern appears by 3000 B.P., and its sites reflect a variety of activities, with both inland and coastal sites exhibiting similar artifact assemblages. Breschini and Haversat associate the Sur Pattern with Hokan speaking ancestors of historic Esselen populations. By contrast, Breschini and Haversat suggest the later Monterey Pattern represents a "collector" subsistence strategy. This pattern appears in the Monterey Bay area after 2450 B.P., and its sites reflect two different strategies of resource exploitation. Coastal sites highlight exploitation of marine resources, while sites located further inland exhibit evidence of more diversified subsistence activities. Breschini and Haversat associate the Monterey Pattern with Penutian speaking ancestors of historic Costanoan populations (1980).

Dietz' and Jackson's (1981) archaeological investigations at 19 sites along the northern shore of Monterey Peninsula confirmed the presence of two archaeological "populations" in the area comparable to the Sur and Monterey Patterns consisting of foragers and collectors. The foraging group, which dated to approximately 4,000 B.P., was probably the Hokan-speaking ancestors of the Esselen. The subsequent group of collectors entered the area about 2000 B.P. and either absorbed or replaced the foragers inhabiting the area. These groups of collectors were probably early Costanoan populations. The early Costanoans exploited both the coastal and inland areas, establishing temporary camps along the shore and permanent residential base camps further inland.

The initial research by Breschini and Haversat (1980) and Dietz and Jackson (1981) has been thoroughly revised by Dietz et al. (1988), Jones and Hylkema (1988), Hylkema (1991), Hildebrandt and Mikkelsen (1993), and Jones (1993). Current research proposes a series of seven cultural periods for the Monterey Bay area. These seven periods and their associated dates are: Paleo-Indian 10,000-8,000 B.C.; Millingstone 8,000-3,500

B.C.; Early 3,500-600 B.C.; Middle 600 B.C.-A.D. 1200; Late A.D. 1200-1769; and Historic. All seven periods are represented in the Monterey Bay area, but are only formally established for the Early, Middle, and Late periods.

The Paleo-Indian and Millingstone periods are identified as local expressions of the Paleo-Coastal Tradition (Jones et al. 1996). The Early period is best represented at CA-Mnt-391, and is characterized by Class L Olivella beads, contracting stem Rossi Square-stemmed projectile points, mortars and pestles, and handstones and milling slabs (Cartier 1993). The Middle Period is represented at CA-SCR-9, and is characterized by Class G2 Olivella beads and at Ano Nuevo, long-stemmed and contracting stem Rossi Square-stemmed projectile points, mortars and pestles, and handstones and milling slabs are present (see Hylkema 1991). The Late Period has been difficult to define in the Monterey Bay area. Sites CA-MNT-1485/H and MNT-1486/H, however, represent this period and are characterized by Class E, K, and M Olivella beads, Desert Side-notched projectile points, bedrock mortars, and pestles (Breschini and Haversat 1992).

5.1B Ethnography

At the time of Euroamerican contact (ca. 1769); Native American groups of the Costanoan language family occupied the area from San Francisco Bay to southern Monterey Bay and the lower Salinas River. The Costanoan language family consists of eight separate and distinct languages, and approximately 50 tribelets (Levy 1978). The Monterey Bay area was primarily occupied by speakers of three different Costanoan languages: *Awaswas* speakers occupied northern Monterey Bay near Aptos; *Mutsun* speakers occupied the Pajaro River drainage; and *Rumsen* speakers occupied the drainages of the lower Salinas, Carmel, and Sur Rivers. The tribelets of *Kalendaruc* and possibly *Guachiron* dominated the central Monterey Bay area (Jones et al. 1996).

The study area appears to have been situated in an area between subgroups of the Costanoan (present-day Ohlone) in either the Mutsun subgroup or the Rumsen subgroup (Kroeber 1925:465, Fig. 42; Levy 1978:485, Fig. 1; Milliken 1987:53; Breschini and Haversat 1994:184-185, Fig. 6.1 after Milliken 1992).

No known ethnographic or contemporary Native American resources including Ohlone/Costanoan-Esselen Nation Residential Areas appear to have been located in or adjacent to the APE (op cit.; Ohlone/Costanoan - Esselen Nation ca. 1999-2000).

No major trails appear to have been located near any of the APEs. The closest, located to the north of the APEs ran southeasterly from the vicinity of the Salinas River to present-day Paso Robles (Davis 1961:Map 1). Further north a major trail proceeded north of the general study area from Elkhorn Slough at Monterey Bay up the Pajaro River and onward (Elsasser 1986:48-49, Fig. 10).

Unfortunately, Costanoan culture was dramatically affected by missionization, and information (e.g., mission records and travelers logs) regarding its pre-contact organization is incomplete and inconsistent. Indeed, Costanoan languages were probably

extinct by 1935, and in 1971 the remaining Costanoan descendants united as a corporate entity identified as the Ohlone Indian Tribe (Levy 1978).

Settlement, Social Organization, and Subsistence Patterns

Costanoans lived in the region extending from San Francisco Bay to Monterey Bay. This large area was subdivided among several individual tribelets occupying specific territories. Each tribelet consisted of approximately 200 individuals, who were grouped into clans and moieties, usually controlled by a headman (Harrington 1933, 1942; Levy 1978). The position of headman was passed patrilineally, usually from father to son, with succession being subject to approval by the community. If no suitable male heir was available, a woman could also assume the role of headman. Tribelet political organization also included a council of elders, official speakers, and shamans (Levy 1978).

Costanoan tribelets experienced both friendly and hostile relations with each other and with neighboring cultural groups such as the Salinan and Yokuts. Interaction between these groups involved marriage, trade, and warfare. Intermarriage usually occurred between adjacent tribes, and was rare between tribes at greater distances (Milliken et al. 1993). Trade was a regular activity among the tribes of the area, with resources such as shell, pinyon, and obsidian moving between coastal and inland groups. Warfare is a common theme in many historical accounts of various groups of Costanoans, and is usually associated with territorial disputes and/or access to and control of particular resources (Broadbent 1972; Langsdorff 1968).

Costanoans usually moved between several semi-permanent camps and villages to take full advantage of seasonally available resources. Dwellings at these camps and villages were dome-shaped, with pole frameworks and thatch for roof and walls. Other structures typically found in a Costanoan village included: acorn granaries; sweathouses; menstrual houses; and dance and/or assembly houses, generally located in the center of a village (Broadbent 1972).

A wide variety of ecological zones, including foothills, valleys, sloughs, and coastal areas, were exploited by Costanoans to obtain subsistence resources. These resources included: various seeds; nuts (e.g., acorn, buckeye, laurel, and hazelnuts); berries; grasses; corms; roots; insects; birds (e.g., geese, mallard, and coot); fish (e.g., steelhead, salmon, and sturgeon); shellfish (e.g., abalone, mussel and clam); and both marine and terrestrial mammals (e.g., sea otter, sea lion, harbor seal, deer, elk, grizzly bear, rabbits, antelope, raccoon, and squirrels) (Levy 1978).

Technology

Costanoan technology highlights exploitation of both marine and terrestrial resources. Tule balsas were used for transportation, fishing, and hunting. Hunting weaponry and facilities included: sinew-backed and self-bows; wooden arrow shafts; projectile points and other flaked stone tools made from locally available chert or obsidian obtained through trade; and nets. Costanoans utilitarian tools and facilities included: baskets,

primarily twined, for food and water collection, food storage, and food preparation; portable stone mortars and bedrock mortars; pestles; metates; soaproot brushes; stone bowls; and bone awls. Clothing, robes, and blankets were made of various animal skins (Levy 1978).

Steatite, serpentine, bone, and abalone were used for personal ornaments. In addition, Olivella and other shell were cut and ground into beads. Some Costanoans also decorated themselves with pigment and tattoos (Levy 1978).

5.2 HISTORIC ERA

5.2A Euroamerican Contact

Sebastian Vizcaino's landing at present day Monterey in 1602 is the earliest documented contact with Native Americans in the area. Following Vizcaino's landing, other Spanish ships may have stopped at Monterey, but contact was minimal until the initial overland exploration of the area by Gaspar de Portola in 1769 (Hoover et al. 1990). Portola's expedition followed the coast, while subsequent exploration of the region by Pedro Fages in 1770 and 1772, Fernando Javier de Rivera in 1774, and Juan Bautista de Anza in 1776 traveled on the east side of the Santa Cruz Mountains, along a route which became known as El Camino Real (Beck and Haase 1974). The expedition also visited Mission San Carlos, camped nearby and reached the Presidio of Monterey March 9, 1776. They were escorted to Mission San Carlos where the very ill Anza recuperated. The Juan Bautista de Anza National Historic Trail [1776] places their route south and west of the Gigling Road APE and both north and south as well as west (the mission) of the South Boundary APE (Hoover et al. 1966:216-217, 219; Beck and Haase 1974:#17; Brown 1994:2-3, Fig. 1; Milliken 1995:33, Map 3; USNPS 1995:Monterey County Map 5; USNPS 1996:opposite page 20).

The first Spanish outpost in the general study area was the Presidio of Monterey founded in June 1770, the second of four established in California. The town, the civilian settlement of Monterey was established in 1777 and was made a city by royal decree in 1813. Monterey was the focal point for both the region and the province under Spanish and Mexican rule (Beck and Haase 1974:#19; Hart 1987:314, 316, 328; Clark 1991:320, 421).

Padre Junipero Serra founded *Mission San Carlos Borromeo del Rio Carmelo* (*San Carlos Borromeo de Carmelo, El Carmelo* or "Mission Carmel") on the same day as the Presidio within the first Presidio grounds at Monterey. Shortly thereafter in December 1771 it was moved by Father Junipero Serra to "*Eslenes*" near the Carmel River about five miles south of the Presidio. Other missions in the general study area, such as Mission Santa Cruz founded in 1791 and Mission San Juan Bautista founded in 1797, also had a dramatic effect on Native American populations. The Spanish attempted to convert the Native American population to Catholicism and incorporate them into the "mission system." The process of missionization disrupted traditional Costanoan cultural practices, and they were generally slow to adapt to the mission system. The Spanish, however, were intent on implementing it, and by 1810 most Native Americans in the area were either incorporated or relocated into local missions. This factor, coupled with

exposure to European diseases, virtually ended the traditional life of Native Americans in and around Monterey Bay (Hart 1987:324, 433; de La Perouse 1989; Jones et al. 1996).

5.2B Mexican Period

The Mexican Period (ca. 1821-1848) in California was an outgrowth of the Mexican Revolution, and its accompanying social and political views affected the mission system. In 1833, the missions were secularized and their lands divided among the Californios as land grants called Ranchos. These ranchos facilitated the growth of a semi-aristocratic group that controlled the larger ranchos. Owners of ranchos used local populations, including Native Americans, essentially as forced labor to accomplish work on their large tracts of land. Consequently, Costanoans, and other Native American groups across California, were forced into a marginalized existence as peons or vaqueros on the large ranchos. Ranchos in the general project area include: Monterey City Lands; Monterey County Tracts; *Rincon de las Salinas*; *Las Salinas*; and *Noche Buena* (Beck and Haase 1974).

Ranchos, Tracts, and Roads

No known Hispanic Period resources - dwellings or features (e.g., corrals, orchards, etc.) - have been identified in or adjacent. Both Gigling Road and South Boundary Road are within City Lands of Monterey. The west end of the Gigling Road APE and north end of the South Boundary APE terminate at the former boundary with *Rancho Noche Buena* (USGS 1983).

5.2C American Period

The end of the Mexican-American War and the signing of the Treaty of Guadalupe Hidalgo in 1848 marked the beginning of the American Period (ca. 1848-Present) in California history. The onset of this period, however, did nothing to change the economic condition of the Native American populations working on the ranchos. The rancho system generally remained intact until 1862-1864, when a drought forced many landowners to sell off or subdivide their holdings. At this time landowners started to fence ranges and the economy began a shift from cattle ranching to dairy farming and agriculture based on new crops such as wheat and sugar beets. Regardless of the change of economic focus, the plight of Native American populations remained, at best, relatively unchanged (e.g., the U.S. Senate rejected treaties between the government and Native Americans in 1851 and 1852, and military reserves were established to maintain various groups) (Heizer 1974).

The latter half of the nineteenth century witnessed an ongoing and growing immigration of Anglo-Americans into the area, an influx also accompanied by regional cultural and economic changes. Indeed, Anglo-American culture expanded at the expense of Hispanic culture. Dispersed farmsteads slowly replaced the immense Mexican ranchos and the farming of various crops slowly replaced cattle ranching as the primary economic activity in the region. The advent of the railroad in the area in the mid to late 1800s, and the mechanization of farming with steam-driven machinery, once again altered the

economy of the region. For example, larger and larger tracts of land were opened for farming. Some of this land consisted of areas reclaimed from sloughs and lowlands, but corporations specializing in crops grown for export soon purchased many of these farms. These agricultural developments demanded a large labor force and sparked a new wave of immigration into the region. Groups of Chinese were the first new immigrants in the area, and were followed by Japanese, Filipino, and Mexican laborers.

Fort Ord

The former Fort Ord has a long history dating to the end of the Civil War when it was named Ord Barracks. The fort was inactive, however, until the Spanish-American War when troops returning from the Philippines were stationed at Ord Barracks. Regardless, the formal establishment of the fort dates to 1917 when it was named Camp Gigling[1] (www.globalsecurity.org; www.fortordcleanup.com). At this time the Army purchased agricultural lands adjacent to the existing military facility and used the area for training cavalry and artillery troops. The Army did not make any permanent improvements on the base until the late 1930s. Subsequently, in 1939 Camp Gigling became Camp Ord and then Fort Ord in 1940 (www.globalsecuritv.org, www.fortordclean up.com). The Main Garrison of the base was constructed from 1940 through the 1960s, beginning in the northwest corner of the base and extending toward the south and then east. Fort Ord served as a basic training center from 1947 to 1975, and maneuvers with heavy tanks, other armored vehicles, and artillery were routinely conducted across the base. Consequently, for many years much of the existing base has been used for maneuvers and as target range for a variety of weapons.

The Defense Base Realignment and Closure Commission placed Fort Ord on the base closure list in 1991. Fort Ord was officially closed in 1994. Currently, FORA is working to facilitate conversion of the base to civilian use.

Fort Ord is listed on *The California History Plan* for the American Era under the theme of military and reportedly was on the County Inventory at the time (CAL/OHP 1973:107).[2]

6.0 ARCHAEOLOGICAL FIELD SURVEYS

6.1 PREVIOUS SURVEYS

Gigling Road had not been subject to an archaeological survey or field review prior to the proposed project.

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1. Named the Gigling Reservation for the Gigling or Geigling family who had lived on a bluff overlooking the Salinas River. Valentine Geigling settled in the county prior to 1857. Gigling, a former Southern Pacific station along the Monterey Bay was named about 1920 (Clark 1991:186-187; Gudde 1998:144).

2. It does not appear on the *California Inventory of Historic Resources* (CAL/OHP 1976).

South Boundary Road has been surveyed previously. Brief summaries of these three surveys and survey/shovel testing are provided below.

> A sampling strategy placed South Boundary Road in "Stratum 3, Holocene Stabilized Dunes," a High Probability Area (HPA). The subsequent survey of the entire South Boundary Road APE within HPA #13 consisted of a pedestrian survey with shovel testing in selected areas. Findings were negative (Waite 1995:34, 36/S-18372).[3]
>
> Portions of South Boundary Road were surveyed for connectors between York Road and South Boundary Road and Ryan Ranch Road to South Boundary Road. Findings were negative (Doane and Haversat 2001/20059).
>
> Approximately 0.4 miles of South Boundary Road between General Jim Moore Boulevard and an unpaved road shown on the USGS Seaside topographic quadrangle was also surveyed with negative findings (Doane and Haversat 2006/S-32385).
>
> The South Boundary Road APE from the unpaved road south was subject to pedestrian survey with some minor areas of "windshield" (vehicle) survey for the proposed California-American Water (CAW) Monterey County Coastal Water Project (CWP). No evidence of prehistoric cultural material was observed (Busby 2005/S-34216).

6.2 PROJECT SURVEY

Mr. Christopher Canzonieri, M.A. conducted an archaeological field survey of the *Gigling Road* and *South Boundary Road* segments of the proposed Fort Ord Road Improvements on June 24, 2009. No evidence of prehistoric or historic era cultural material was observed during the field reviews.

Gigling Road: The proposed road widening along Gigling Road is bounded by General Jim Moore Boulevard on the west and 7th Avenue on the east. A number of military buildings, many of which are no longer in use,[4] are adjacent to the APE along both sides of the road with the most on the north side. A sidewalk is present along the entire length of the north side of the road and part of the south side of the road from General Jim Moore Boulevard east to the Department of Defense Building (400 Gigling Road) just east of Parker Flats (Thomas Bros 2004:Sheet 1115 "CTO" or Cut Off). The numerous utilities along the alignment include buried utilities along both sides of the road and overhead utilities including the Salinas Circuit 1 and 2 line on the north side of Gigling Road.

Field transects were spaced approximately 1-5 meters apart and oriented parallel to the existing road alignment with minor deviations into open areas. Surface visibility varied

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3. S-# assigned by the CHRIS/NWIC.

4. BRAC/Environmental Offices occupy Building 4463 Gigling Road (PMC 2004:Fig. 3).

along both sides of the road from 50-90%. The south side of the road from Parker Flats to General Jim Moore Boulevard is the most vegetated with ice-plant groundcover (*Carpobrotus edulis*) and oak trees. Numerous rodent burrows were inspected for subsurface indications of prehistoric and historic archaeological resources.

The Gigling Road APE has been previously disturbed by activities associated with: road construction (i.e., the construction of Gigling Road); construction of military buildings and other structures; construction of sidewalks along most of the existing roadway; landscaping areas adjacent to the existing roadway; and, installation of utilities near the existing roadway.

South Boundary Road: The field inventory of the *South Boundary Road* consisted of a proposed road widening and new intersection at General Jim Moore Boulevard southeasterly to between Ragsdale Drive and York Road. The approach to be constructed is situated northeast of the existing the South Boundary Road from STA 76+00 (300 feet southeast of the intersection of South Boundary Road and *Rancho Saucito* Road) to STA 1+00 along South Boundary Road.

Though the project alignment had been previously cleared of unexploded ordinance, an employee of Weston Solutions UXOSO escorted Mr. Canzonieri as a precaution. The existing two lane road is well maintained and delineated by barbed wire fence. Several gated dirt/sand access roads are present along the north/northeast side of the road. Access into the future road alignment widening and intersection was gained through the gate at Austin Road.[5] A portion of this future road follows an existing dirt/sand road.

Field transects were spaced approximately 5-10 meters apart and oriented parallel to the future and existing South Boundary Road alignments with minor deviations into open areas. Surface visibility within the road alignment varied from nearly 100% along the dirt/sand access roads and immediately parallel to South Boundary Road to less than 5% in the dense wooded areas. Most the project area is covered in dense vegetation ranging from Oak trees, coyote brush, scrub brushes, and copious amounts of poison oak interspersed with occasional open areas covered with moderate to dense grasses. An effort was made to access all open areas within the project. Numerous rodent burrows were also inspected. A 24-inch corrugated steel drain pipe was observed on the south side of South Boundary Road near STA 4+00. This pipe is associated with a concrete retaining wall or head-wall on the north side of the road.

The South Boundary Road APE has been previously disturbed by activities associated with road construction (i.e., the construction of South Boundary Road); fencing/gates; and installation of utilities and other infrastructure.

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[5]. Name after road sign; Austin Road does not appear on contemporary street maps (e.g., Thomas Bros Maps 2004).

7.0 RESULTS

This Cultural Resources Review was prepared to identify historic properties which may be listed, determined or potentially eligible for inclusion on the National Register of Historic Places and/or California Register of Historical Resources in or immediately adjacent to two alignments for proposed road improvements.

7.1 RECORDS SEARCH AND LITERATURE RESULTS

No prehistoric or historic sites have been recorded or reported in or adjacent to each APE or within 0.25 miles of each APE.

Nine (9) cultural resource compliance reports on file at the CHRIS/NWIC include the Gigling Road APE and/or South Boundary Road APE or adjacent areas. These reports include overviews, predictive/probability strategies, and cultural resources assessments including pedestrian surveys. None of the reports included Gigling Road - only the area adjacent along General Jim Moore Boulevard. No potentially significant cultural resources have been identified in or adjacent to the Gigling Road or South Boundary Road APE. These reports are listed below in S-# order assigned by the CHRIS/NWIC.

Cultural Resources Literature Search and Overview Fort Ord, California (Roberts and Zahniser ca. 1979/S-3671).

Predictive Model of Cultural Resources at Fort Ord. "A Reconnaissance Cultural Resources Survey of Fort Ord, California." (Swernoff 1982/S-5210; Draft Swernoff 1981/S-27949).

Cultural Resource Assessment of the Proposed Effluent Disposal System, Fort Ord, Monterey County, California (Ann S. Peak & Associates 1978/S-3418)

A Cultural Resources Survey of 783 Hectares Fort Ord, Monterey County, California (Waite 1995/S-18372).

Negative Archaeological Survey Report [ASR] for the Fort Ord Network Improvements Project Including State Highway 68 and South Boundary Road in Monterey, Monterey County, California (Doane and Haversat 2001/20059).

Stratification and Sampling Procedures Inventory Archaeological Survey Fort Ord, Monterey, California (Isaacson 1993/S-27948).

Phase 1 Archaeological Reconnaissance for the Marina Coast Water District Regional Urban Water Augmentation Project, Recycled Water Component, Northern Segment, in Marina and Seaside, Monterey County, California (Doane and Haversat 2006/S-32385).

Cultural Resources Assessment - Technical Report for Proponent's Environmental Assessment (PEA), California American Water, Monterey County Coastal Water Project (Busby 2005/S-34216).

7.2 INDIVIDUALS, GROUPS AND AGENCIES CONSULTED

The State of California Native American Heritage Commission (NAHC) was contacted for a review of the Sacred Lands Inventory (Busby 2009a). The Native American Heritage Commission search of the *Sacred Lands Inventory* was negative and recommended contacting 13 individuals/groups "for information regarding known and recorded sites" (Sanchez 2009) [see Attachments for Correspondence]. This consultation was undertaken by Pacific Municipal Consultants (PMC).

Three Native American provided responses on July 14, 2009. No other communications were received. Two Native Americans recommended the presence of either an archaeological monitor or a Native American or both during ground disturbing construction. The other response referred PMC to another party.

7.3 ARCHAEOLOGICAL FIELDWORK

No evidence of significant or potentially significant prehistoric or historically significant archaeological resources or architectural resources was observed during the field review conducted for the proposed project or during previously surveys which include the APE.

7.4 NATIVE AMERICAN RESOURCES

No known prehistoric, ethnographic, traditional or contemporary Native American resources have been identified in or adjacent to the APE.

7.5 HISTORIC ERA RESOURCES

No known Hispanic Era expeditions, adobe dwellings, or other structures, features, etc. have been reported in or adjacent to the proposed project.

No American era sites have been recorded or reported in or adjacent to the proposed project.

No potentially significant sites have been identified in the APE as a result of research and/or surveys conducted.

7.6 LISTED HISTORIC PROPERTIES

No historic properties listed, determined eligible, or potentially eligible for inclusion on the National Register of Historic Places (NRHP) have been identified in or adjacent to the proposed project.

No local, state or federal historically or architecturally significant structures, landmarks, or points of interest have been identified in or adjacent to the project.

8.0 FINDING OF EFFECT

FORA has made a reasonable and good faith effort to identify historic properties listed, determined, or potentially eligible for inclusion on the NRHP (36 CFR Part 800.4) within or immediately adjacent the project's APE pursuant to the NHPA of 1966 (as amended) (16 U.S.C., Section 470f) and its implementing regulations. The identification effort included a records search, literature review, consultation with local Native Americans, and a field inventory.

FORA has determined that a finding of *No historic properties affected* is applicable (36 CFR Part 800.4(d)(1)). The regulations implementing Section 106 of the NHPA define an effect as any action that would alter the characteristics of the property that may qualify the property for inclusion in the NRHP; and, diminish the integrity of a property's location, setting, design, materials, workmanship, feeling or association (36 CFR Part 800.5(a)(1-2)). A determination of *No Historic Properties Affected* is as no historic properties are present within the APEs for the proposed project.

In regard to CEQA, the project will not have a significant effect on archaeological sites or a property of historic or cultural significance to a community or ethnic group eligible for inclusion in the California Register (CEQA *Guidelines*).

9.0 MITIGATION MEASURES AND POST-REVIEW DISCOVERY PROCEDURES

No mitigation measures are required. The proposed undertaking will not affect adversely effect any NRHP listed, determined or potentially eligible properties.

In the event of post-review discoveries of cultural resources,[6] FORA shall be notified so

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6. Significant prehistoric cultural materials may include:

   a. Human bone - either isolated or intact burials.
   b. Habitation (occupation or ceremonial structures as interpreted from rock rings/features, distinct ground depressions, differences in compaction (e.g., house floors).
   c. Artifacts including chipped stone objects such as projectile points and bifaces; groundstone artifacts such as manos, metates, mortars, pestles, grinding stones, pitted hammerstones; and, shell and bone artifacts including ornaments and beads.
   d. Various features and samples including hearths (fire-cracked rock; baked and vitrified clay), artifact caches, faunal and shellfish remains (which permit dietary reconstruction), distinctive changes in soil stratigraphy indicative of prehistoric activities.
   e. Isolated artifacts

   Significant historic cultural materials may include finds from the late 19th through early 20th centuries. Objects and features associated with the Historic Period can include:

   a. Structural remains or portions of foundations (bricks, cobbles/boulders, stacked field stone, postholes, etc.).
   b. Trash pits, privies, wells and associated artifacts.
   c. Isolated artifacts or isolated clusters of manufactured artifacts (e.g., glass bottles, metal cans, manufactured wood items, etc.).
   d. Human remains.

   In addition, cultural materials including both artifacts and structures that can be attributed to Hispanic, Asian and other ethnic or racial groups are potentially significant. Such features or

that these discoveries may be treated in accordance with 36 CFR Part 800.13(b).

The exposure of any Native American burials shall be handled in accordance with state law.

10.0 REFERENCES CITED AND CONSULTED

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clusters of artifacts and samples include remains of structures, trash pits, and privies.

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Abbreviations

n.d.	no date	v.d.	various dates
N.P.	no publisher noted	n.p.	no place of publisher noted

The abbreviated phrase "CHRIS/NWIC, Sonoma State University, Rohnert Park" is used for material on file at the California Historical Resources Information System, Northwest Information Center, California State University Sonoma, Rohnert Park.

ATTACHMENTS

FIGURES

FIGURE 1	GENERAL PROJECT LOCATIONS
FIGURE 2A	PROJECT LOCATION: Gigling Road (USGS Marina, Calif. 1983)
FIGURE 2B	PROJECT LOCATION: South Boundary Road (USGS Seaside, Calif. 1983)

CORRESPONDENCE

LETTER 1	REQUEST TO NATIVE AMERICAN HERITAGE COMMISSION
LETTER 2	NATIVE AMERICAN HERITAGE COMMISSION RESPONSE
LOG	TELEPHONE CONTACT LOG
EMAIL	EMAIL Messages

CHRIS/NWIC RECORDS SEARCH

SEARCH	File No. 08-1614 dated 8/26/2009

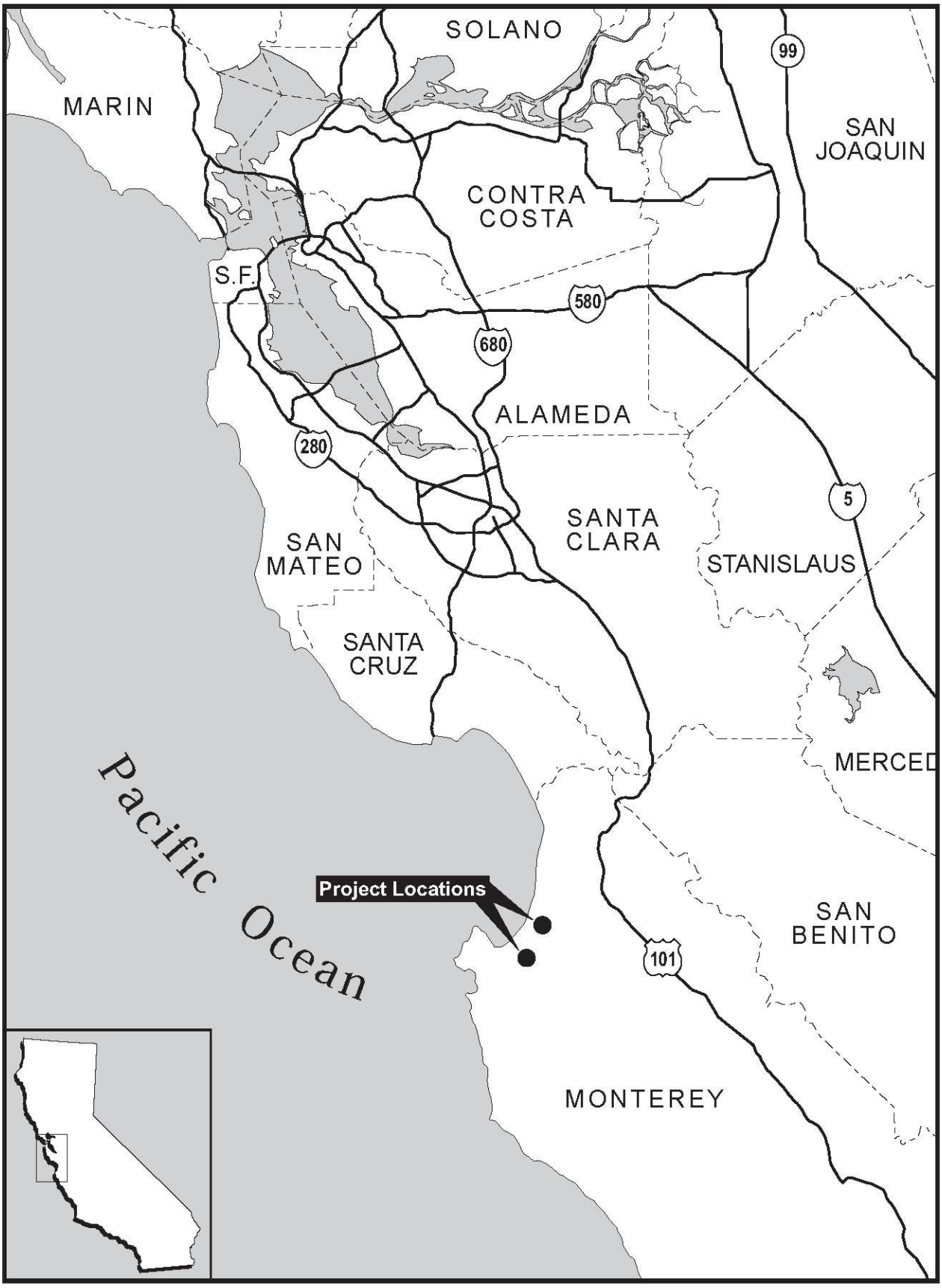


Figure 1: General Project Locations

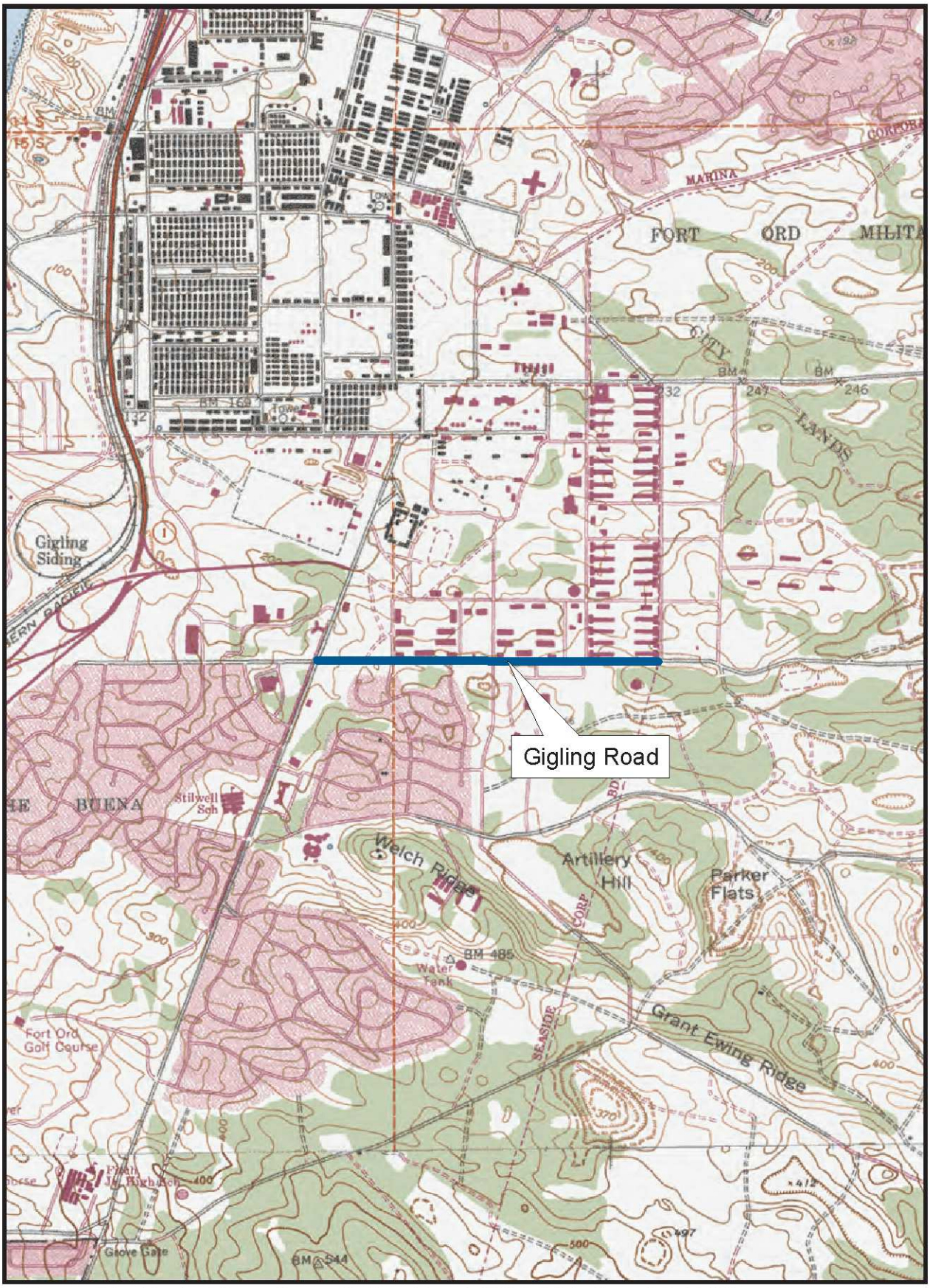


Figure 2A: Project Location - Gigling Road (USGS Marina, CA 1983)

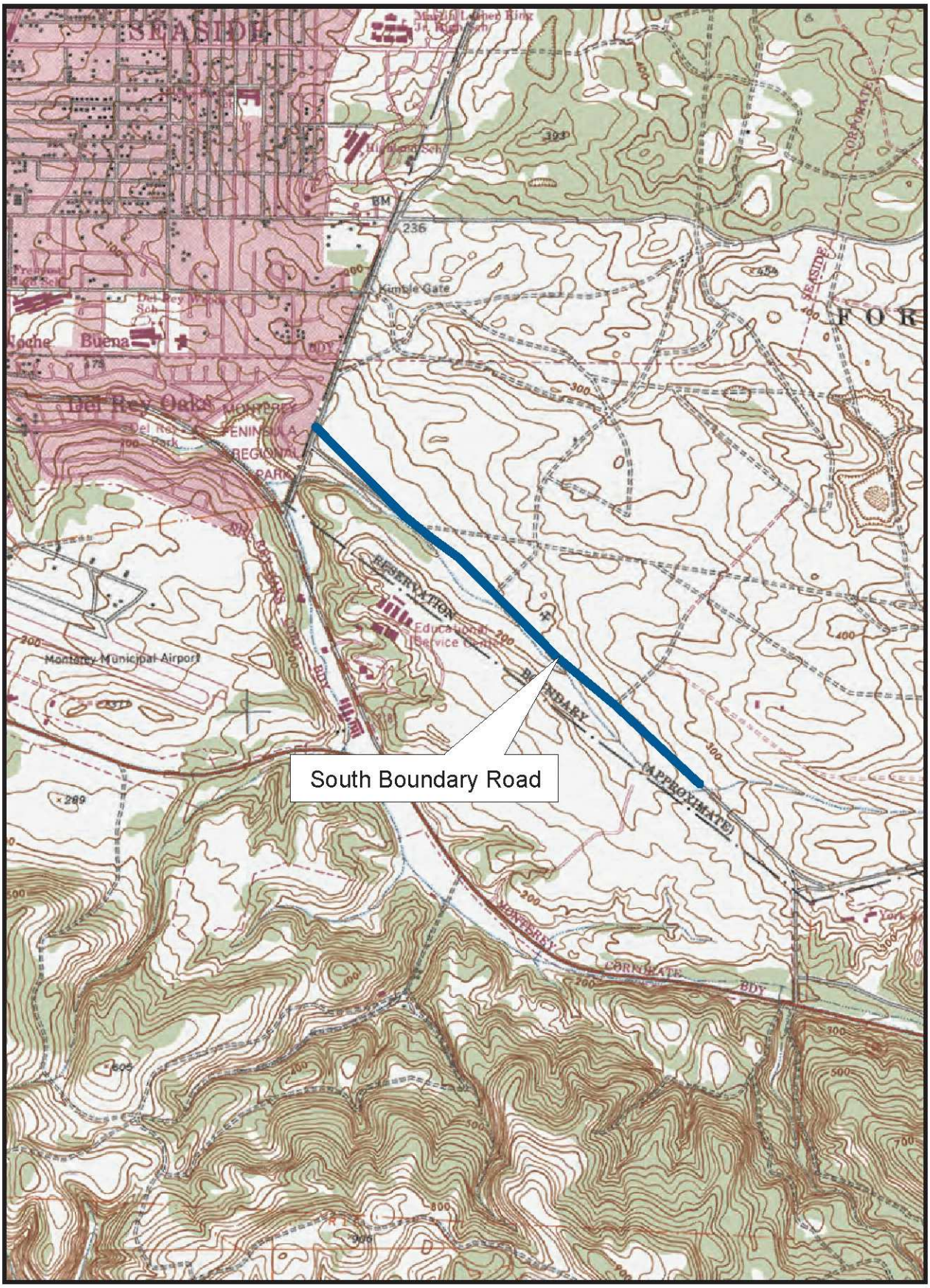
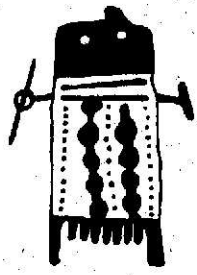


Figure 2B: Project Location - South Boundary Road (USGS Seaside, CA 1983)



June 16, 2009

BASIN
RESEARCH
ASSOCIATES

1933 DAVIS STREET
SUITE 210
SAN LEANDRO, CA 94577
VOICE (510) 430-8441
FAX (510) 430-8443

Mr. Larry Meyers
Executive Secretary
Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, CA 95814

RE: Request for Review of Sacred Lands Inventory
Fort Ord Roads, Monterey County

Dear Mr. Meyers,

Please let this letter stand as our request for the Native American Heritage Commission (NAHC) to conduct a review of the NAHC *Sacred Lands Inventory* to determine if any listed properties are present within or adjacent to the above proposed project area (see enclosed USGS map).

The proposed project consists of road improvements within a Fort Ord redevelopment area.

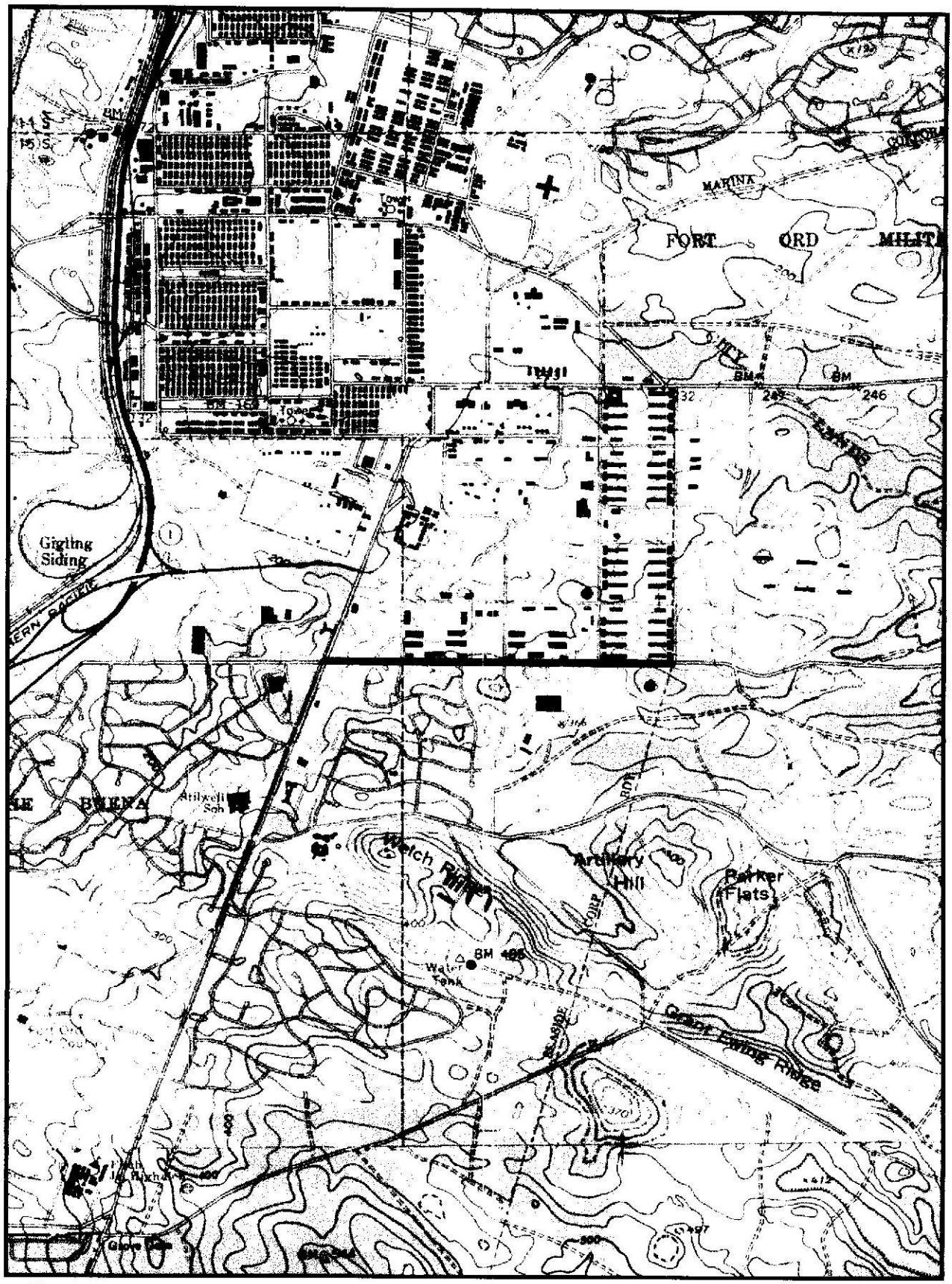
Information from the NAHC *Sacred Lands Inventory* will be used in an letter report as part of a California Environmental Quality Act (CEQA) level review.

If I can provide any further information, please don't hesitate to contact me (510 430-8441 or Basinres1@Gmail.com). Thank you for your timely review of our request.

Sincerely yours,

Colin I. Busby
Principal

CIB/m
Enclosures - Location Map



Gigling Road Proposed Project T15S R1E, 2E (USGS Marina, CA 1983)

South Boundary Road Proposed Project T15S R1E (USGS Seaside, CA 1983)

STATE OF CALIFORNIA Arnold Schwarzenegger, Governor

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

June 22, 2009

Colin I. Busby
Principal
BASIN Research Associates
1933 Davis Street, Suite 210
San Leandro, CA 94577

Sent by Fax: 510-430-8443
Number of Pages: 3

RE: Fort Ord Roads, Monterey County

Dear Mr. Busby:

A record search of the sacred lands file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4040.

Sincerely,

Katy Sanchez

Katy Sanchez
Program Analyst

Native American Contact
Monterey County
June 22, 2009

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28 Ohlone/Costanoan
Hollister , CA 95024
ams@garlic.com
831-637-4238

Trina Marine Ruano Family
Ramona Garibay, Representative
16010 Halmar Lane Ohlone/Costanoan
Lathrop , CA 95330 Bay Miwok
soaproot@msn.com Plains Miwok
209-629-8619 Patwin

Jakki Kehl
720 North 2nd Street Ohlone/Costanoan
Patterson , CA 95363
jakki@bigvalley.net
(209) 892-1060

Amah MutsunTribal Band
Valentin Lopez, Chairperson
3015 Eastern Ave, #40 Ohlone/Costanoan
Sacramento , CA 95821
vlopez@amahmutsun.org
(916) 481-5785

Coastanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
3929 Riverside Drive Ohlone/Costanoan
Chino , CA 91710
(909) 622-1564
(909) 464-2074

Amah/MutsunTribal Band
Irene Zwierlein, Chairperson
789 Canada Road Ohlone/Costanoan
Woodside , CA 94062
amah_mutsun@yahoo.com
(650) 851-7747 - Home
(650) 851-7489 - Fax

Ohlone/Coastanoan-Esselen Nation
Louise Miranda-Ramirez, Chairperson
PO Box 1301 Esselen
Monterey , CA 93942 Ohlone/Costanoan
408-629-5189
408-205-7579 - cell

Ohlone/Coastanoan-Esselen Nation
Christianne Arias, Vice Chairperson
PO Box 552 Esselen
Soledad , CA 93960 Ohlone/Costanoan
831-235-4590

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

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

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Fort Ord Roads; Monterey County.

Native American Contact
Monterey County
June 22, 2009

Amah MutsunTribal Band
Edward Ketchum
35867 Yosemite Ave Ohlone/Costanoan
Davis , CA 95616 Northern Valley Yokuts
aerieways@aol.com

Amah/MutsunTribal Band
Jean-Marie Feyling
19350 Hunter Court Ohlone/Costanoan
Redding , CA 96003
amah_mutsun@yahoo.com
530-243-1633

Amah/Mutsun Tribal Band
Joseph Mondragon, Tribal Administrator
882 Bay view Avenue Ohlone/Costanoan
Pacific Grove , CA 94062
831-372-9015
831-372-7078 - fax

Amah/Mutsun Tribal Band
Melvin Ketchum III, Environmental Coordinator
7273 Rosanna Street Ohlone/Costanoan
Gilroy , CA 95020
408-842-3220

Ohlone/Coastanoan-Esselen Nation
Pauline Martinez-Arias, Tribal Council woman
1116 Merlot Way Esselen
Gonzales , CA 93926 Ohlone/Costanoan
831-596-9897

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

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This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Fort Ord Roads; Monterey County.

PMC®

JUNE 29, 2009

Edward Ketchum
Amah Mutsun Tribal Band
35867 Yosemite Ave
Davis, CA 95616

RE: FORT ORD ROADS, MONTEREY COUNTY

Dear Mr. Ketchum:

I obtained your name from the Native American Heritage Commission in order to inform you of the proposed South Boundary Road and Gigling Road Roadway improvement project collectively known as the Fort Ord Roads project. Our firm, PMC is conducting environmental review on behalf of the Fort Ord Reuse Authority (FORA).

The proposed project is to occur on former Fort Ord lands in Monterey County. The Fort Ord Reuse Authority intends to prepare an Initial Study/Environmental Assessment (IS/EA) for the Fort Ord Roads Project. The IS/EA is being prepared to assess the potenital for environmental impacts (including cultural resource impacts) associated with the widening and associated improvements of approximately three (3) linear miles of improved roadways, intersections, sidewalks, bicycle paths/lanes, water and recycled water transmission lines, wastewater gravity and force main pipelines, gas lines, electric lines, cable television and communication facilities, and street lighting along South Boundary Road and Gigling Road. A detailed archaeological investigation and cultural resource data base search is currently underway. A map showing the location of each roadway project is provided below.

As part of the required consultation process, you are invited to share any information regarding possible Native American or tribal resources that could potentially exist on the project site or immediate vicinity. Please send your questions or comments to the address provided below.

Sincerely,

PMC

Jacob Garza
Assistant Planner
PMC
585 Cannery Row Suite 304
Monterey, CA 93940

PMC®

JUNE 29, 2009

Jean-Marie Feyling
Amah/Mutsun Tribal Band
19350 Hunter Court
Redding, CA 96003

RE: FORT ORD ROADS, MONTEREY COUNTY

Dear Ms. Feyling:

I obtained your name from the Native American Heritage Commission in order to inform you of the proposed South Boundary Road and Gigling Road Roadway improvement project collectively known as the Fort Ord Roads project. Our firm, PMC is conducting environmental review on behalf of the Fort Ord Reuse Authority (FORA).

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Sincerely,

PMC

Jacob Garza
Assistant Planner
PMC
585 Cannery Row Suite 304
Monterey, CA 93940

PMC®

JUNE 29, 2009

Joseph Mondragon
Amah/Mutsun Tribal Band
882 Bay View Avenue
Pacific Grove,, CA 94062

RE: FORT ORD ROADS, MONTEREY COUNTY

Dear Mr. Mondragon:

I obtained your name from the Native American Heritage Commission in order to inform you of the proposed South Boundary Road and Gigling Road Roadway improvement project collectively known as the Fort Ord Roads project. Our firm, PMC is conducting environmental review on behalf of the Fort Ord Reuse Authority (FORA).

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Sincerely,

PMC

Jacob Garza
Assistant Planner
PMC
585 Cannery Row Suite 304
Monterey, CA 93940

PMC®

JUNE 29, 2009

Melvin Ketchum, III
Amah/Mutsun Tribal Band
7273 Rosanna Street
Gilroy, CA 95020

RE: FORT ORD ROADS, MONTEREY COUNTY

Dear Mr. Ketchum, III:

I obtained your name from the Native American Heritage Commission in order to inform you of the proposed South Boundary Road and Gigling Road Roadway improvement project collectively known as the Fort Ord Roads project. Our firm, PMC is conducting environmental review on behalf of the Fort Ord Reuse Authority (FORA).

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Sincerely,

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Jacob Garza
Assistant Planner
PMC
585 Cannery Row Suite 304
Monterey, CA 93940

PMC®

JUNE 29, 2009

Pauline Martinez-Arias
Ohlone/Coastanoan-Esselen Nation
1116 Merlot Way
Gonzales, CA 93926

RE: FORT ORD ROADS, MONTEREY COUNTY

Dear Ms. Martinez-Arias:

I obtained your name from the Native American Heritage Commission in order to inform you of the proposed South Boundary Road and Gigling Road Roadway improvement project collectively known as the Fort Ord Roads project. Our firm, PMC is conducting environmental review on behalf of the Fort Ord Reuse Authority (FORA).

The proposed project is to occur on former Fort Ord lands in Monterey County. The Fort Ord Reuse Authority intends to prepare an Initial Study/Environmental Assessment (IS/EA) for the Fort Ord Roads Project. The IS/EA is being prepared to assess the potenital for environmental impacts (including cultural resource impacts) associated with the widening and associated improvements of approximately three (3) linear miles of improved roadways, intersections, sidewalks, bicycle paths/lanes, water and recycled water transmission lines, wastewater gravity and force main pipelines, gas lines, electric lines, cable television and communication facilities, and street lighting along South Boundary Road and Gigling Road. A detailed archaeological investigation and cultural resource data base search is currently underway. A map showing the location of each roadway project is provided below.

As part of the required consultation process, you are invited to share any information regarding possible Native American or tribal resources that could potentially exist on the project site or immediate vicinity. Please send your questions or comments to the address provided below.

Sincerely,

PMC

Jacob Garza
Assistant Planner
PMC
585 Cannery Row Suite 304

PMC®

JUNE 29, 2009

Ann Marie Sayers
Indian Canyon Mutsun Band of Costanoan
P.O. Box 28
Hollister, CA 95024

RE: FORT ORD ROADS, MONTEREY COUNTY

Dear Ms. Marie Sayers:

I obtained your name from the Native American Heritage Commission in order to inform you of the proposed South Boundary Road and Gigling Road Roadway improvement project collectively known as the Fort Ord Roads project. Our firm, PMC is conducting environmental review on behalf of the Fort Ord Reuse Authority (FORA).

The proposed project is to occur on former Fort Ord lands in Monterey County. The Fort Ord Reuse Authority intends to prepare an Initial Study/Environmental Assessment (IS/EA) for the Fort Ord Roads Project. The IS/EA is being prepared to assess the potenital for environmental impacts (including cultural resource impacts) associated with the widening and associated improvements of approximately three (3) linear miles of improved roadways, intersections, sidewalks, bicycle paths/lanes, water and recycled water transmission lines, wastewater gravity and force main pipelines, gas lines, electric lines, cable television and communication facilities, and street lighting along South Boundary Road and Gigling Road. A detailed archaeological investigation and cultural resource data base search is currently underway. A map showing the location of each roadway project is provided below.

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Sincerely,

PMC

Jacob Garza
Assistant Planner
PMC
585 Cannery Row Suite 304

PMC®

JUNE 29, 2009

Ramona Garlbay
Trina Marine Ruano Family
16010 Halmar Lane
Lathrop, CA 95330

RE: FORT ORD ROADS, MONTEREY COUNTY

Dear Ms. Garlbay:

I obtained your name from the Native American Heritage Commission in order to inform you of the proposed South Boundary Road and Gigling Road Roadway improvement project collectively known as the Fort Ord Roads project. Our firm, PMC is conducting environmental review on behalf of the Fort Ord Reuse Authority (FORA).

The proposed project is to occur on former Fort Ord lands in Monterey County. The Fort Ord Reuse Authority intends to prepare an Initial Study/Environmental Assessment (IS/EA) for the Fort Ord Roads Project. The IS/EA is being prepared to assess the potenital for environmental impacts (including cultural resource impacts) associated with the widening and associated improvements of approximately three (3) linear miles of improved roadways, intersections, sidewalks, bicycle paths/lanes, water and recycled water transmission lines, wastewater gravity and force main pipelines, gas lines, electric lines, cable television and communication facilities, and street lighting along South Boundary Road and Gigling Road. A detailed archaeological investigation and cultural resource data base search is currently underway. A map showing the location of each roadway project is provided below.

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Sincerely,

PMC

Jacob Garza
Assistant Planner
PMC
585 Cannery Row Suite 304

PMC®

JUNE 29, 2009

Jakki Kehl
720 North 2nd Street
Patterson, CA 95363

RE: FORT ORD ROADS, MONTEREY COUNTY

Dear Ms. Kehl:

I obtained your name from the Native American Heritage Commission in order to inform you of the proposed South Boundary Road and Gigling Road Roadway improvement project collectively known as the Fort Ord Roads project. Our firm, PMC is conducting environmental review on behalf of the Fort Ord Reuse Authority (FORA).

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Sincerely,

PMC

Jacob Garza
Assistant Planner
PMC
585 Cannery Row Suite 304
Monterey, CA 93940

PMC®

JUNE 29, 2009

Tony Cerda
Coastanoan Rumsen Carmel Tribe
3929 Riverside Dr
Chino, CA 91710

RE: FORT ORD ROADS, MONTEREY COUNTY

Dear Mr. Cerda:

I obtained your name from the Native American Heritage Commission in order to inform you of the proposed South Boundary Road and Gigling Road Roadway improvement project collectively known as the Fort Ord Roads project. Our firm, PMC is conducting environmental review on behalf of the Fort Ord Reuse Authority (FORA).

The proposed project is to occur on former Fort Ord lands in Monterey County. The Fort Ord Reuse Authority intends to prepare an Initial Study/Environmental Assessment (IS/EA) for the Fort Ord Roads Project. The IS/EA is being prepared to assess the potenital for environmental impacts (including cultural resource impacts) associated with the widening and associated improvements of approximately three (3) linear miles of improved roadways, intersections, sidewalks, bicycle paths/lanes, water and recycled water transmission lines, wastewater gravity and force main pipelines, gas lines, electric lines, cable television and communication facilities, and street lighting along South Boundary Road and Gigling Road. A detailed archaeological investigation and cultural resource data base search is currently underway. A map showing the location of each roadway project is provided below.

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Sincerely,

PMC

Jacob Garza
Assistant Planner
PMC
585 Cannery Row Suite 304

PMC®

JUNE 29, 2009

Louise Miranda-Ramirez
Ohlone/Coastanoan-Esselen Nation
P.O. Box 1301
Monterey, CA 93942

RE: FORT ORD ROADS, MONTEREY COUNTY

Dear Ms. Miranda-Ramirez:

I obtained your name from the Native American Heritage Commission in order to inform you of the proposed South Boundary Road and Gigling Road Roadway improvement project collectively known as the Fort Ord Roads project. Our firm, PMC is conducting environmental review on behalf of the Fort Ord Reuse Authority (FORA).

The proposed project is to occur on former Fort Ord lands in Monterey County. The Fort Ord Reuse Authority intends to prepare an Initial Study/Environmental Assessment (IS/EA) for the Fort Ord Roads Project. The IS/EA is being prepared to assess the potenital for environmental impacts (including cultural resource impacts) associated with the widening and associated improvements of approximately three (3) linear miles of improved roadways, intersections, sidewalks, bicycle paths/lanes, water and recycled water transmission lines, wastewater gravity and force main pipelines, gas lines, electric lines, cable television and communication facilities, and street lighting along South Boundary Road and Gigling Road. A detailed archaeological investigation and cultural resource data base search is currently underway. A map showing the location of each roadway project is provided below.

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Sincerely,

PMC

Jacob Garza
Assistant Planner
PMC
585 Cannery Row Suite 304

PMC®

JUNE 29, 2009

Valentin Lopez
Amah Mutsun Tribal Band
3015 Eastern Ave
Suite #40
Sacramento, CA 95821

RE: FORT ORD ROADS, MONTEREY COUNTY

Dear Mr. Lopez:

I obtained your name from the Native American Heritage Commission in order to inform you of the proposed South Boundary Road and Gigling Road Roadway improvement project collectively known as the Fort Ord Roads project. Our firm, PMC is conducting environmental review on behalf of the Fort Ord Reuse Authority (FORA).

The proposed project is to occur on former Fort Ord lands in Monterey County. The Fort Ord Reuse Authority intends to prepare an Initial Study/Environmental Assessment (IS/EA) for the Fort Ord Roads Project. The IS/EA is being prepared to assess the potenital for environmental impacts (including cultural resource impacts) associated with the widening and associated improvements of approximately three (3) linear miles of improved roadways, intersections, sidewalks, bicycle paths/lanes, water and recycled water transmission lines, wastewater gravity and force main pipelines, gas lines, electric lines, cable television and communication facilities, and street lighting along South Boundary Road and Gigling Road. A detailed archaeological investigation and cultural resource data base search is currently underway. A map showing the location of each roadway project is provided below.

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Sincerely,

PMC

Jacob Garza
Assistant Planner
PMC
585 Cannery Row Suite 304

PMC®

JUNE 29, 2009

Irene Zwierlein
Amah/Mutsun Tribal Band
789 Canada Road
Woodside, CA 94062

RE: FORT ORD ROADS, MONTEREY COUNTY

Dear Ms. Zwierlein:

I obtained your name from the Native American Heritage Commission in order to inform you of the proposed South Boundary Road and Gigling Road Roadway improvement project collectively known as the Fort Ord Roads project. Our firm, PMC is conducting environmental review on behalf of the Fort Ord Reuse Authority (FORA).

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Sincerely,

PMC

Jacob Garza
Assistant Planner
PMC
585 Cannery Row Suite 304

PMC®

JUNE 29, 2009

Christianne Arias
Oholone/Coastanoan-Esselen Nation
P.O. Box 552
Soledad, CA 93960

RE: FORT ORD ROADS, MONTEREY COUNTY

Dear Ms. Arias:

I obtained your name from the Native American Heritage Commission in order to inform you of the proposed South Boundary Road and Gigling Road Roadway improvement project collectively known as the Fort Ord Roads project. Our firm, PMC is conducting environmental review on behalf of the Fort Ord Reuse Authority (FORA).

The proposed project is to occur on former Fort Ord lands in Monterey County. The Fort Ord Reuse Authority intends to prepare an Initial Study/Environmental Assessment (IS/EA) for the Fort Ord Roads Project. The IS/EA is being prepared to assess the potenital for environmental impacts (including cultural resource impacts) associated with the widening and associated improvements of approximately three (3) linear miles of improved roadways, intersections, sidewalks, bicycle paths/lanes, water and recycled water transmission lines, wastewater gravity and force main pipelines, gas lines, electric lines, cable television and communication facilities, and street lighting along South Boundary Road and Gigling Road. A detailed archaeological investigation and cultural resource data base search is currently underway. A map showing the location of each roadway project is provided below.

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Sincerely,

PMC

Jacob Garza
Assistant Planner
PMC
585 Cannery Row Suite 304

Telephone log for proposed Fort Ord Roads Improvement Project

NATIVE AMERICAN CONTACTS	DATE/ COMMENTS	TIME CALLED / EMAILED	CALLER
Edward Ketchum Amah Mutsun Tribal Band 35867 Yosemite Ave Davis, CA 95616 aerieways@aol.com	July 14, 2009 Sent email. See attached.	9:10 am	Jacob Garza
Jean-Marie Feyling Amah/Mutsun Tribal Band 19350 Hunter Court Redding, CA 96003 530-243-1633	July 14, 2009 Recommended to have archeologist on hand and a NA on call to avoid delays in project	9:19 am	Jacob Garza
Joseph Mondragon Amah/Mutsun Tribal Band 882 Bay View Avenue Pacific Grove,, CA 94062 831-372-9015	July 14, 2009 Number disconnected; Contacted NA commission	9:30 am	Jacob Garza
Melvin Ketchum, III Amah/Mutsun Tribal Band 7273 Rosanna Street Gilroy, CA 95020 408-842-3220	July 14, 2009 Left message with instructions to call back.	9:34 am	Jacob Garza
Pauline Martinez-Arias Ohlone/Coastanoan-Esselen Nation 1116 Merlot Way Gonzales, CA 93926 831-596-9897	July 14, 2009 In opportune time to speak; left call back number to speak at a later time.	9:36 am	Jacob Garza
Ann Marie Sayers Indian Canyon Mutsun Band of Costanoan P.O. Box 28 Hollister, CA 95024 831-637-4238	July 14, 2009 Recommends a NA monitor and Archeologist monitor be present during earth moving. Requested to be contacted when Database Search was completed and more information available.	10.30 am	Jacob Garza

Ramona Garlbay Trina Marine Ruano Family 16010 Halmar Lane Lathrop, CA 95330 209-629-8619	July 14, 2009 Recommended contact Andrew Galven for more relevant information of the area and volunteered to be an on-call monitor.	11:30 am	Jacob Garza
Jakki Kehl 720 North 2nd Street Patterson, CA 95363 209-892-1060	July 14, 2009 Left message with instructions to call me back	1:50 pm	Jacob Garza
Tony Cerda Coastanoan Rumsen Carmel Tribe 3929 Riverside Dr Chino, CA 91710 909-622-1564 909-464-2074	7/6/09 received ltr w/ return to sender stamp; contacted Mr. Cerda via phone numbers provided, numbers no longer in service/did not answer; contacted NA Commission and left message. 7/9/09 Message returned stating no new contact information available for Tony.	2:30pm 4:00 pm	Jacob Garza Jacob Garza
Louise Miranda-Ramirez Ohlone/Coastanoan-Esselen Nation P.O. Box 1301 Monterey, CA 93942 408-629-5189	July 14, 2009 Left message with instructions to call back	1:57 pm	Jacob Garza
Valentin Lopez Amah Mutsun Tribal Band 3015 Eastern Ave Suite #40 Sacramento, CA 95821 916-481-5785	July 14, 2009 Voicemail box full unable to leave message	2:00 pm	Jacob Garza

Irene Zwierlein Amah/Mutsun Tribal Band 789 Canada Road Woodside, CA 94062 650-851-7747	July 14, 2009 Left message with instructions to call back	2:07 pm	Jacob Garza
Christianne Arias Oholone/Coastanoan-Esselen Nation P.O. Box 552 Soledad, CA 93960 831-235-4590	July 14, 2009 Left message with instructions to call back	2:09 pm	Jacob Garza

From: Jacob Garza
Sent: Tuesday, July 14, 2009 9:10 AM
To: 'aerieways@aol.com'
Subject: FORA Roads Project

Attachments: Figure 2.2_Project Site.pdf
Dear Mr. Ketchum:

I am contacting you this morning to confirm that you did receive the letter I sent to your address at 35867 Yosemite Ave. Davis, CA 95616 on June 29, 2009 and to again invite you to share any information regarding the possible Native American cultural resources which could potentially exist on the project site (please see attached file.)

Please reply via email or at my extension provided below to confirm receipt of both the letter and this email.

Thank you,

Jacob Garza
Assistant Planner
PMC
585 Cannery Row Suite 304
Monterey, Ca 93940
831-644-9174 ext. 11209

From: Aerieways@aol.com
Sent: Tuesday, July 14, 2009 9:24 PM
To: Jacob Garza
Subject: Re: FORA Roads Project

I don't recall receiving the letter.
I don't have any specific information on this site. I suggest that you contact Esselen Nation to see if they do.

Ed

Can love help you live longer? Find out now.

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

ALAMEDA
COLUSA
CONTRA COSTA
LAKE
MARIN
MENDOCINO
MONTEREY
NAPA
SAN BENITO
SAN FRANCISCO
SAN MATEO
SANTA CLARA
SANTA CRUZ
SOLANO
SONOMA
YOLO

Northwest Information Center
Sonoma State University
1303 Maurice Avenue
Rohnert Park, California 94928-3609
Tel: 707.664.0880 - Fax: 707.664.0890
E-mail: leigh.jordan@sonoma.edu
http://www.sonoma.edu/nwic

FILE

RECEIVED 8/27/2009

INFORMATION CENTER ACCESS AGREEMENT

FILE NO.: 08-1614

I, the undersigned, have been granted access to historical resources information on file at the Northwest Information Center (NWIC) of the California Historical Resources Information System.

I understand that any CHRIS Confidential Information I receive shall not be disclosed to individuals who do not qualify for access to such information, as specified in Section III (A-E) of the CHRIS Information Center Rules of Operation Manual, or in publicly distributed documents without written consent of the Information Center Coordinator.

I agree to submit historical Resource Records and Reports based in part on the CHRIS information released under this Access Agreement to the Information Center within sixty (60) calendar days of completion.

I agree to pay for CHRIS services provided under this Access Agreement within sixty (60) calendar days of receipt of billing.

I understand that failure to comply with this Access Agreement shall be grounds for denial of access to CHRIS Information.

***** PLEASE SIGN AND RETURN THIS FORM. SEE ATTACHED INVOICE *****

Print Name: Donna Garaventa Date: 8/27/2009 fax

Signature: Donna M. Garaventa

Affiliation: Basin Research Associates, Inc.

Address: 1933 Davis Street, Suite 210 City/State/Zip: San Leandro, CA 94577-1258

Billing Address (if different than above):

Telephone: 510-430-8441 x201 Fax: 8443 Email:

Purpose of Access: Project Planning

Reference (project name or number, title of study, and street address if applicable):
PMC – Fort Ord Roads

County: Monterey Township/Range/UTMs:

USGS 7.5' Quad: Marina & Seaside 7.5'

----------**STAFF USE ONLY**----------

Date request rec'd: Mail 6/17/09 Phone 6/16/09 Fax In person
Date of response: Mail 8/26/09 Phone 8/25,26/09 Fax In person

CHECK IN: CHECK OUT:

Staff processing:	2	hour(s) @ $150/hour	$ 300.00
In person research:		hour(s) @ $100/hour/person	$
Xerox/Computer Search:	284	page(s) @ $0.15/page	$ 42.50
Labor Charge:		hour(s) @ $40.00/hour	$
Fax @ $1/page			$
Other:			$
		SUBTOTAL	$
Rapid Response surcharge of 50% of total cost:		SURCHARGE	$

Lisa C. Hagel
Information Center Staff

Invoice N12289

TOTAL $ 342.50

Lisa C. Hagel

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

ALAMEDA
COLUSA
CONTRA COSTA
LAKE
MARIN
MENDOCINO
MONTEREY
NAPA
SAN BENITO
SAN FRANCISCO
SAN MATEO
SANTA CLARA
SANTA CRUZ
SOLANO
SONOMA
YOLO

Northwest Information Center
Sonoma State University
1303 Maurice Avenue
Rohnert Park, California 94928-3609
Tel: 707.664.0880 • Fax: 707.664.0890
E-mail: leigh.jordan@sonoma.edu
http://www.sonoma.edu/nwic

MEMO

Date: 26 August 2009

To: Donna Garaventa, Basin Research Associates, Inc., 1933 Davis Street, Suite 210, San Leandro, CA 94577-1258

From: Lisa Hagel

Re: PMC – Fort Ord Roads, NWIC File #: 08-1614

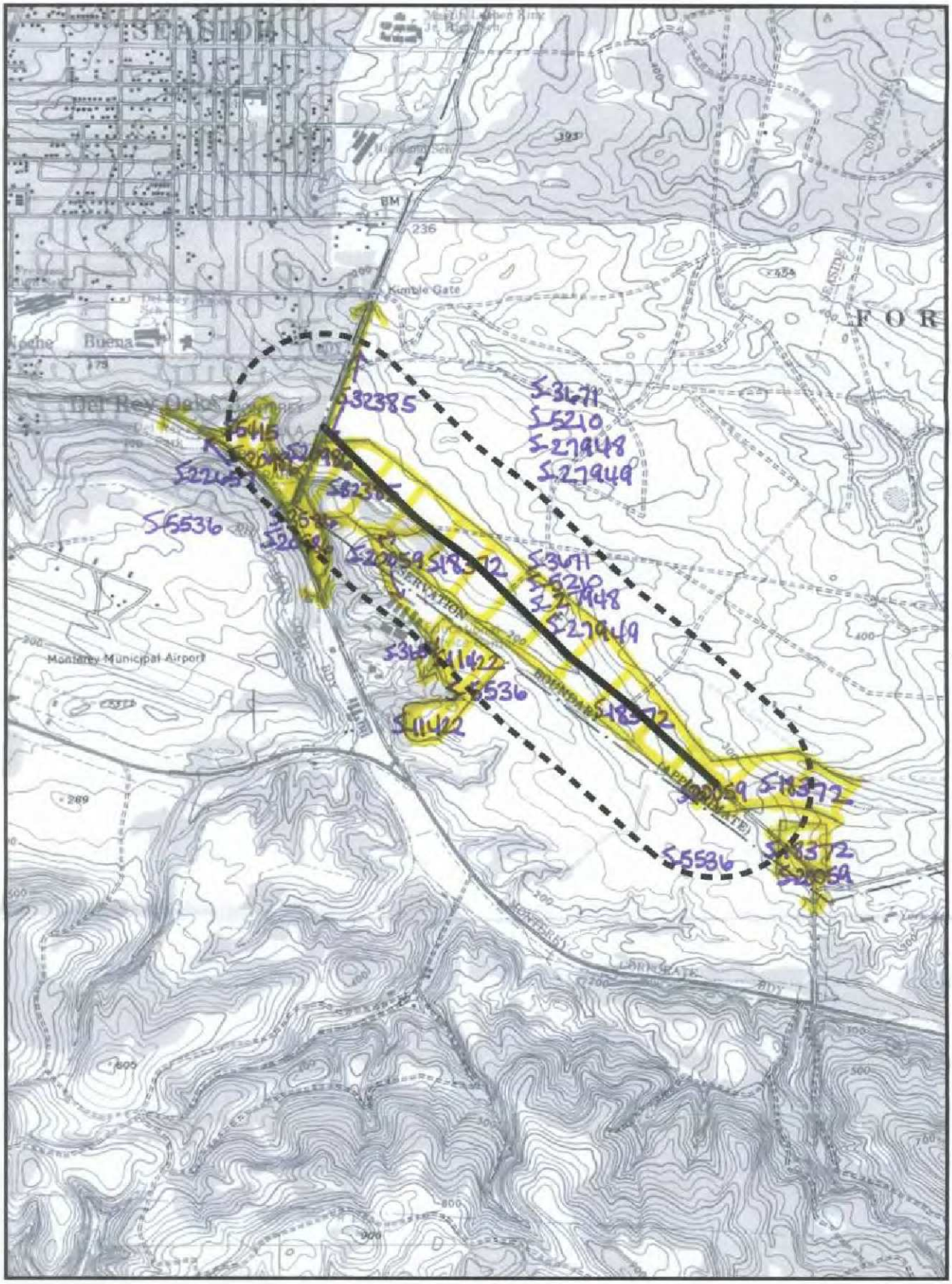
Marina & Seaside 7.5'

Sites in or within 1/4 mile radius of the project areas: There were no recorded sites within the project areas or within ¼ mile of the projects.

Studies in or within 1/4 mile radius of the project areas: S-5210, 27949*, 3671, 27948*, 20059*, 32385*, 18372*, & 3418 are within or adjacent to the project areas. S-20720, 25416, 5536, 20986, 5415, 22657, 3586, 11422, & 3654 are within ¼ mile of the projects. The study locations are plotted on your maps. * = Xeroxed.

OHP Historic Properties Directory: Copied the indices for Marina & Seaside (updated 5/27/09), and the Archaeological Determinations of Eligibility for Monterey County (updated 4/30/09).

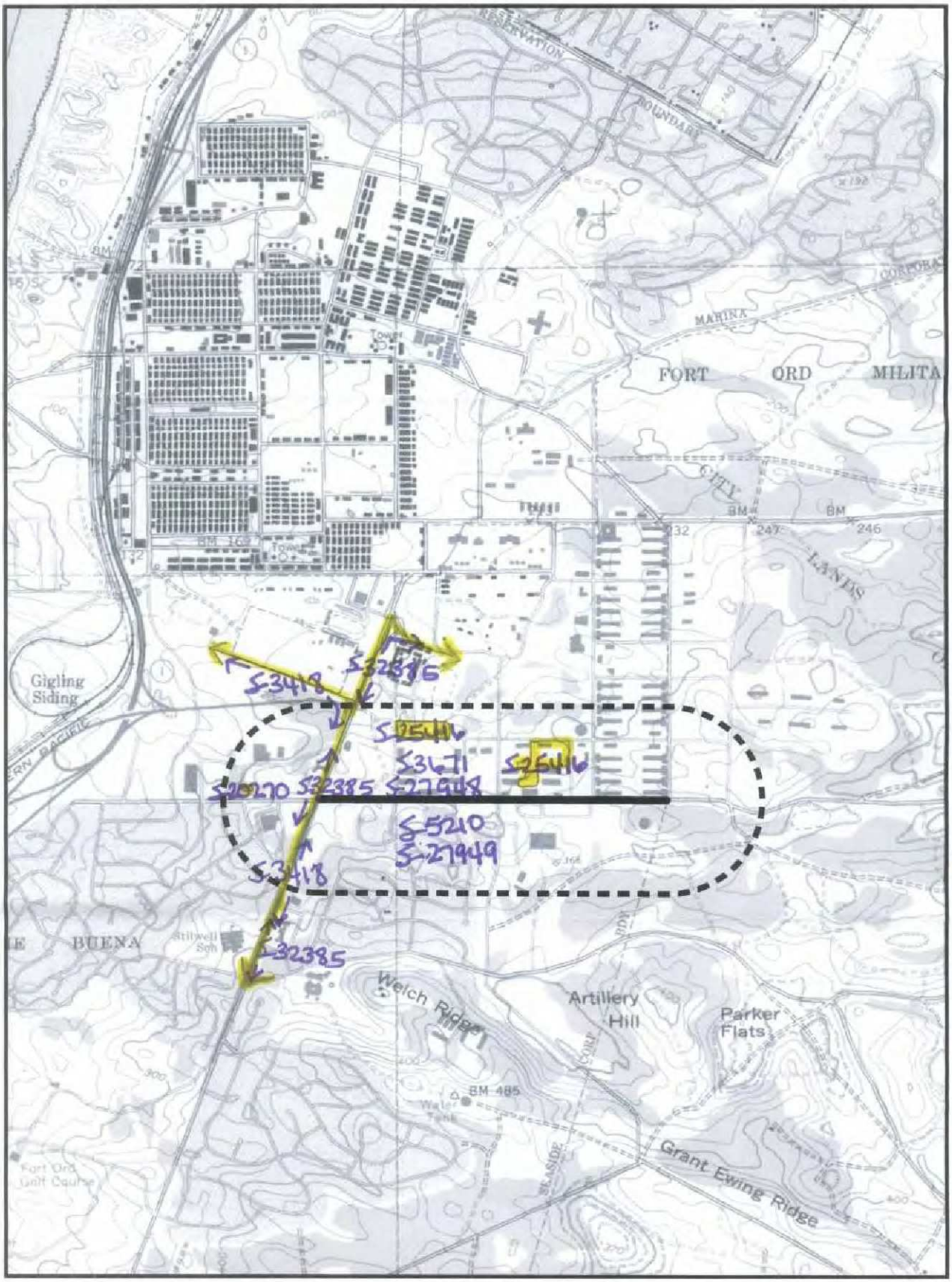
Historic maps: Copied the pertinent section of the 1913 USGS Monterey Quadrangle.
Nothing was shown in the vicinity of the projects on the 1870 GLO Plat Map for T15S, R2E; 1890 GLO Plat Map for T16S, R1E, or the 1869 & 1890 Rancho Plat Maps for the City Lands of Monterey. We do not have a GLO Plat Map for T15S, R1E.



South Boundary Road Proposed Project (USGS Seaside, CA 1983)

PMC - Fort Ord Roads
CHRIS/NWIC File No. 08-1614
Dated August 26, 2009

p. 4 of 4



Gigling Road Proposed Project (USGS Marina, CA 1983)

PMC-Fort Ord Roads
CHRIS/NWIC File No 08-1614
Dated August 26, 2009

P. 3 of 4

Appendix F

Geotechnical Investigation
(Pacific Crest Engineering Inc.)

GEOTECHNICAL INVESTIGATION
FOR
GIGLING AND SOUTH BOUNDARY
ROAD IMPROVEMENTS
SEASIDE, CALIFORNIA

FOR
CREEGAN + D'ANGELO
MONTEREY, CALIFORNIA

BY
PACIFIC CREST ENGINEERING INC.
CONSULTING GEOTECHNICAL ENGINEERS
0760-M242-D52
OCTOBER 2007
www.4pacific-crest.com

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Page No.

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Laboratory Investigation	3
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Seismic Hazards	6

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LIMITATIONS AND UNIFORMITY OF CONDITIONS

IMPORTANT INFORMATION ABOUT...

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Pacific Crest Engineering Inc. www.4pacific-crest.com

444 Airport Blvd, Suite 106
Watsonville, CA 95076
Phone: 831-722-9446
Fax: 831-722-9158

October 9, 2007 Project No. 0760-M242-D52

Creegan + D'Angelo
225 Cannery Row, Suite H
Monterey, CA 93940

Attention: Mr. David Leggett

Subject: Geotechnical Investigation
Gigling and South Boundary Road Improvements
Seaside, California

Dear Mr. Leggett,

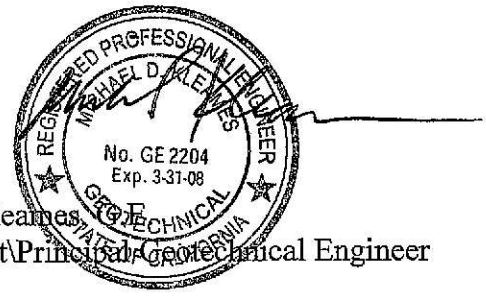
In accordance with your authorization, we have performed a geotechnical investigation for the above referenced project located on Gigling Road and South Boundary Road in Seaside, California.

The accompanying report presents our conclusions and recommendations as well as the results of the geotechnical investigation on which they are based. If you have any questions concerning the data, conclusions or recommendations presented in this report, please call our office.

Very truly yours,

PACIFIC CREST ENGINEERING INC.

Cara L. Russo
Staff Geologist



Michael D. Kleames, G.E.
Vice-President\Principal Geotechnical Engineer
G.E. 2204
Exp. 3/31/08

Copies: 5 to Client

GEOTECHNICAL INVESTIGATION

PURPOSE AND SCOPE

This report describes the geotechnical investigation and presents results, including recommendations, for your road improvement project located on Gigling Road and South Boundary Road, in Seaside, California. Our scope of services for this project has consisted of:

1. Discussions with you.

2. Review of the pertinent published material concerning the site including County planning maps, preliminary site plans, grading plans, foundation plans, geologic and topographic maps, and other available literature.

3. Marking the proposed test boring locations in white paint and contacting Underground Service Alert (USA) at least 72 hours prior to performing the field investigation.

4. Subcontracting out NORCAL Utility Locating, a private underground locator to assist in clearing out proposed test boring locations.

5. The drilling and logging of 7 test borings.

6. Laboratory analysis of retrieved soil samples.

7. Engineering analysis of the field and laboratory results.

8. Preparation of this report documenting our investigation and presenting recommendations for the design of the project.

LOCATION AND DESCRIPTION

The Fort Ord Reuse Authority (FORA) intends to make street improvements to two major streets within the Seaside area. Please refer to Figure No. 1, Regional Site Map, for the approximate locations. These projects are located and the following latitude and longitude and include the following:

1. Gigling Road – 4,850 1f. +/-
   4-Lane Collector + 18 ft. median
   115 ft minimum ROW
   Landscaping — trees and seeding

Lighting — metal poles – Cobra Head
Latitude: 36.644079
Longitude: -121.798296

2. South Boundary Road to York Road – 6,600 1f. +\-
   4-Lane Arterial with median
   115 ft. min ROW
   Landscaping – trees and seeding
   Lighting – metal poles – Cobra Head
   This project may be only a 2-lane arterial and 6,500 feet long.
   Latitude: 36.585864
   Longitude: -121.820605

At the time of our site visit, both roads were subject to steady traffic flow. Gigling Road runs perpendicular to General Jim Moore Boulevard through the Presidio of Monterey. Military buildings, sidewalks, and some landscaping bound the north and south sides of the proposed improvement location. The proposed site is also bound by General Jim Moore Boulevard to the west and 7th Avenue to the east. South Boundary Road runs through undeveloped property owned by the military within Del Rey Oaks. Most of this undeveloped land is fenced off due to buried explosives within this area. The north and south sides of the road is bound by the undeveloped area. The proposed improvement location is bound by General Jim Moore Boulevard to the west and Ranch Saucito to the east.

FIELD INVESTIGATION

Soil Borings

Seven 6 inch diameter test borings were drilled on the site on August 31, 2007. The location of the test borings are shown on Figure No. 2, Site Plan Showing Test Borings. The drilling method used was hydraulically operated continuous flight augers. A geologist from Pacific Crest Engineering Inc. was present during the drilling operations to log the soil encountered and to choose soil sampling type and locations.

Relatively undisturbed soil samples were obtained at various depths by driving a split spoon sampler 18 inches into the ground. This was achieved by dropping a 140 pound down hole safety hammer through a vertical height of 30 inches. The number of blows needed to drive the sampler for each 6 inch portion is recorded and the total number of blows needed to drive the last 12 inches is reported as the Standard Penetration Test (SPT) value. The outside diameter of the samplers used in this investigation was either 3 inches or 2 inches, and is noted respectively as "L" or "T" on the boring logs. All standard penetration test data has been normalized to a 2 inch O.D. sampler so as to be the SPT "N" value.

The soils encountered in the borings were continuously logged in the field and visually described in accordance with the Unified Soil Classification System (ASTM D2488

(Modified), Figure No. 3). The soil classification was verified and or modified upon completion of laboratory testing.

Appendix A contains the site plan showing the locations of the test borings and the Log of Test Borings presenting the soil profile explored in each boring, the sample locations, and the SPT "N" values for each sample. Stratification lines on the boring logs are approximate as the actual transition between soil types may be gradual.

LABORATORY INVESTIGATION

The laboratory testing program was developed to help in evaluating the engineering properties of the materials encountered on the site. Laboratory tests performed include:

a. Moisture Density relationships in accordance with ASTM test D2937.

b. Direct Shear tests in accordance with ASTM test D3080.

c. Unconfined Compression tests in accordance with ASTM test D2166.

d. "R" Value tests in accordance with California test 301.

e. Gradation tests in accordance with ASTM test D1140 and D422.

f. Corrosivity testing including pH, resistivity, chloride concentration, and sulfate concentration.

The results of the laboratory tests are presented on the boring logs opposite the sample tested.

SOIL CONDITIONS

Regional Geologic Maps

The surficial geology in the area of the project site is mapped as Older Stabilized Dune and Drift Sand for Gigling Road and Older Stablized Dune and Drift Sand, Older Alluvium, and Aromas Red Sand for South Boundary Road (Dibblee, 1999; Brabb, 1989; Dupre', 1990). The Older Stabilized Dune and Drift Sand are described as poorly graded sand that does not contain fluvial deposits. These deposits resemble the Aromas Sands. The Older Alluvium is described as unconsolidated, poorly graded silt and sand with lenses of clay and silty clay. Large amounts of gravel may also be encountered. The Aromas Red Sand is described as yellowish brown to reddish brown fine grained sand deposited by the wind. It is likely to encounter weakly indurated segments of the Aromas Red Sand. The native soils and bedrock encountered in the test borings are consistent with this description.

Soil Borings

Our borings encountered a variety of soil including: silty sand, clayey sand, silt, sandy silt, and sand. Borings No. 1, 2, and 3 were drilled on Gigling Road. All three borings were on the south side of the road. Boring No. 1 was closest to the intersection of Gigling Road and General Jim Moore Boulevard. Boring No. 2 was near the intersection of Parker Flats Cut-Off. Lastly, Boring No. 3 was near the intersection of 7th Avenue. Borings No. 4, 5, 6, and 7 were drilled along South Boundary Road. Borings No. 4, 5, and 6 were drilled on the south side of South Boundary Road. Boring No. 7 was drilled on a dirt road within a locked area. Boring No. 4 was near the intersection of South Boundary Road and General Jim Moore Boulevard. Boring No. 6 was near the intersection with Rancho Saucito. Lastly, Boring No. 5 was drilled in between Borings No. 4 and 6. The following describes the subsurface conditions encountered within each of the test borings.

Boring No. 1 encountered brown silty sand in the upper 5 feet. The sample was very fine to medium grained and contained leaves and bark near 3 feet. At this depth the density was described as loose. From 4 feet to the maximum depth explored of 21 ½ feet the soil was classified as sand. The color within these depths varied from variegated brown, light brown, and reddish tan to variegated tan and reddish tan to yellowish tan. The samples were fine to medium grained, sub-rounded shaped, and poorly graded. The samples also coarsened downward. At these depths, the density ranged from medium dense to dense.

Boring No. 2 encountered sand to the maximum depth explored of 11 ½ feet. The sand changed in color from blackish brown, reddish brown, and tan to brown, then to dark reddish tan. The samples were fine to medium grained, sub-rounded shaped, and poorly graded. The samples also coarsened downward. The densities ranged from loose to medium dense.

Boring No. 3 encountered blackish brown and brown silty sand in the upper 9 ½ feet. The samples changed color to pinkish tan at 5 feet and were described as very fine to fine grained and poorly graded. The densities ranged from medium dense to very dense. From 9 ½ feet to the maximum depth explored of 21 ½ feet the soil was classified as yellowish brown sand. The samples were fine to medium grained, sub-rounded shaped, and poorly graded. The samples also became better cemented with depth. The densities ranged from medium dense to dense.

Boring No. 4 encountered variegated brown and gray silty sand in the upper 4 ½ feet. The sample was very fine to fine grained, sub-rounded shaped, and poorly graded. At this depth the density was described as very dense. From 4 ½ to 9 ½ feet the soil was classified as variegated brown and gray sand. The sample was fine to medium grained, sub-rounded shaped, and poorly graded. At this depth the density was described as very dense. From 9 ½ feet to 14 feet the boring encountered gray clayey sand. The sample was very fine to lower medium grained, sub-rounded shaped, and poorly graded. The density was described as loose at this depth. From 14 feet to 19 ½ feet the soil was classified as gray silt. The sample was very fine grained and sub-rounded to round in shape. At this depth the density was described as dense. From 19 ½ feet to the maximum depth explored of 21 ½ feet the boring encountered gray sand. The sample was very fine to fine grained, sub-rounded to rounded, and poorly graded. The density was described as very dense at this depth.

Boring No. 5 encountered tan sand in the upper 9 feet. The samples were described as very fine to fine grained, sub-rounded shaped, and poorly graded. The densities ranged from medium dense to dense. From 9 feet to 14 ½ feet the soil was classified as grayish tan silt. The sample was very fine to fine grained, sub-rounded shaped, and contained was well cemented near 10 ½ feet. At this depth the density was described as very hard. From 14 ½ to 19 ½ feet the boring encountered gray sandy silt. The sample was very fine to fine grained, sub-rounded shaped and contained mottled oxidation. The density was described as dense at this depth. From 19 ½ to the maximum depth explored of 21 ½ feet the soil was classified as gray sand. The sample was described as very fine to fine grained, sub-rounded to rounded, and poorly graded. At this depth the density was described as very dense.

Boring No. 6 encountered brown and tan sand in the upper 10 feet. The samples were described as very fine to fine grained, sub-rounded shaped, and poorly graded. The densities ranged from loose to medium dense. From 10 feet to the maximum depth explored of 15 ½ feet the soil was classified as gray silty sand. The samples were described as very fine to fine grained and sub-rounded shaped. The densities were described as very dense within these depths.

Boring No. 7 encountered yellowish brown silty sand in the upper 9 ½ feet. The cuttings changed color to yellowish reddish brown near 5 feet. The samples were described as very fine to fine grained, sub-rounded to round, and poorly graded. Grasses were observed within a sample near 6 ½ feet. The densities were described as medium dense within these depths. From 9 ½ feet to the maximum depth explored of 21 ½ feet the soil was classified as yellowish tan sand. The color of the cuttings and samples changed to gray near 20 feet. The samples were described as very fine to medium grained, sub-rounded to rounded, and poorly graded. The samples became coarse and better cemented with depth. The densities ranged from medium dense to dense.

Groundwater was not encountered in any of the test borings to a maximum explored depth of 21 ½ feet.

REGIONAL SEISMIC SETTING

The seismic setting of the site is one in which it is reasonable to assume that the site will experience significant seismic shaking during the lifetime of the project. Based upon our review of the fault maps for the Monterey area (Clark, Dupre', and Rosenberg, 1997), and the Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada (CDMG, 1998), active or potentially active faults which may significantly affect the site include those listed in the Table No. 1, below.

TABLE No. 1, Faults in the Monterey Area – Gigling Road

Fault Name	Distance (miles)	Distance (km.)	Direction	Slip Rate* (mm/yr.)	M_w Max*
San Andreas – 1906 Segment	19.9	32.1	Northeast	24	7.9
Palo Colorado – Sur	13.6	21.9	Southwest	3	7.0
Rinconada	3.2	5.1	Northeast	1	7.5
Monterey Bay – Tularcitos	5.2	8.3	Southwest	0.5	7.3

*Source: CDMG, February, 1998

TABLE No. 2, Faults in the Monterey Area – South Boundary Road

Fault Name	Distance (miles)	Distance (km.)	Direction	Slip Rate* (mm/yr.)	M_w Max*
San Andreas – 1906 Segment	23.7	38.1	Northeast	24	7.9
Palo Colorado – Sur	10.5	16.9	Southwest	3	7.0
Rinconada	6.9	11.1	Northeast	1	7.5
Monterey Bay – Tularcitos	1.9	3.1	Southwest	0.5	7.3

*Source: CDMG, February, 1998

SEISMIC HAZARDS

A detailed investigation of seismic hazards is beyond our scope of services for this project. In general however, seismic hazards which may affect project sites in the Monterey Bay area include ground shaking, ground surface fault rupture, liquefaction and lateral spreading, and seismically induced slope instabilities. Geotechnical aspects of these issues are discussed below:

Ground Shaking

Ground shaking will be felt on the site. Structures founded on thick soft soil deposits are more likely to experience more destructive shaking, with higher amplitude and lower frequency, than structures founded on bedrock. Generally, shaking will be more intense closer to earthquake epicenters. Thick soft soil deposits large distances from earthquake epicenters, however, may result in seismic accelerations significantly greater than expected in bedrock. Structures built in accordance with the latest edition of the California Building Code have an increased potential for experiencing relatively minor damage which should be repairable. The seismic design of the project should be based on the 2007 California

Building Code (CBC) as it has incorporated the most recent seismic design parameters. The following values for the seismic design of the project site were derived or taken from the 2007 CBC:

TABLE No. 3, The 2007 CBC Seismic Design Parameters – Gigling Road

Design Parameter	Specific to Site	Reference*
Site Class	D, Stiff Soil	Table 1613.5.2
Mapped Spectral Acceleration for Short Periods	Ss = 1.284 g	Fig. 22-3, ASCE 7-05
Mapped Spectral Acceleration for 1-second Period	S_1 = 0.557 g	Fig. 22-4, ASCE 7-05
Short Period Site Coefficient	Fa = 1.0	Table 1613.5.3(1)
1-Second Period Site Coefficient	Fv = 1.5	Table 1613.5.3(2)
MCE Spectral Response Acceleration for Short Period	S_{MS} = 1.284 g	Section 1613.5.3
MCE Spectral Response Acceleration for 1-Second Period	S_{M1} = 0.836 g	Section 1613.5.3
5% Damped Spectral Response Acceleration for Short Period	S_{DS} = 0.856 g	Section 1613.5.4
5% Damped Spectral Response Acceleration for 1-Second Period	S_{D1} = 0.557 g	Section 1613.5.4

TABLE No. 4, The 2007 CBC Seismic Design Parameters – South Boundary Road

Design Parameter	Specific to Site	Reference*
Site Class	D, Stiff Soil	Table 1613.5.2
Mapped Spectral Acceleration for Short Periods	Ss = 1.326 g	Fig. 22-3, ASCE 7-05
Mapped Spectral Acceleration for 1-second Period	S_1 = 0.564 g	Fig. 22-4, ASCE 7-05
Short Period Site Coefficient	Fa = 1.0	Table 1613.5.3(1)
1-Second Period Site Coefficient	Fv = 1.5	Table 1613.5.3(2)
MCE Spectral Response Acceleration for Short Period	S_{MS} = 1.326 g	Section 1613.5.3
MCE Spectral Response Acceleration for 1-Second Period	S_{M1} = 0.845 g	Section 1613.5.3
5% Damped Spectral Response Acceleration for Short Period	S_{DS} = 0.884 g	Section 1613.5.4
5% Damped Spectral Response Acceleration for 1-Second Period	S_{D1} = 0.564 g	Section 1613.5.4

*Note: Design values may also have been obtained by using the Ground Motion Parameter Calculator available on the USGS website at http://earthquake.usgs.gov/research/hazmaps/design/index.php.

Ground Surface Fault Rupture

Ground surface fault rupture occurs along the surficial trace(s) of active faults during significant seismic events. Pacific Crest Engineering Inc., has not performed a specific investigation for the presence of active faults on the project site. The nearest known active or potentially active fault is mapped approximately 3.2 miles (approximately 5.1 km) from Gigling Road and approximately 1.9 miles (approximately 3.1 km) from South Boundary Road (Clark, Dupre', Rosenberg, 1997, and CDMG, 1998), the potential for ground surface fault rupture at this site is low.

Liquefaction

Liquefaction tends to occur in loose, saturated fine grained sands or coarse silts. Based upon our review of the regional liquefaction maps (Dupre', 1975; Dupre' and Tinsley, 1980) the site is located in an area classified as having a low potential for liquefaction.

Our site specific investigation of this project site, including the nature of the subsurface soil, the location of the ground water table, and the estimated ground accelerations, leads to the conclusion that the liquefaction potential is low.

Liquefaction Induced Lateral Spreading

Liquefaction induced lateral spreading occurs when a liquefied soil mass fails toward an open slope face, or fails on an inclined topographic slope. Our analysis of the project site indicates that the potential for liquefaction to occur is low, and consequently the potential for lateral spreading is also low. However, there is potential for liquefaction to occur at freater depths which our test borings did not detect.

Landsliding

Seismically induced landsliding is a hazard which may affect the slopes on this property. Seismically induced landsliding is a hazard with low potential for affecting your site since the site is relatively flat.

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

GENERAL

1. The results of our investigation indicate that from a geotechnical engineering standpoint the road projects may be developed as proposed provided these recommendations are included in the design and construction.

2. Our laboratory testing indicates that the near surface soils possess low expansive properties.

3. Grading and foundation plans should be reviewed by Pacific Crest Engineering Inc. during their preparation and prior to contract bidding.

4. Pacific Crest Engineering Inc. should be notified at least four (4) working days prior to any site clearing and grading operations on the property in order to observe the stripping and disposal of unsuitable materials, and to coordinate this work with the grading contractor. During this period, a pre-construction conference should be held on the site, with at least you or your representative, the grading contractor, a county representative and one of our engineers present. At this meeting, the project specifications and the testing and inspection responsibilities will be outlined and discussed.

5. Field observation and testing must be provided by a representative of Pacific Crest Engineering Inc., to enable them to form an opinion as to the degree of conformance of the exposed site conditions to those foreseen in this report, the adequacy of the site preparation, the acceptability of fill materials, and the extent to which the earthwork construction and the degree of compaction comply with the specification requirements. **Any work related to grading or foundation excavation that is performed without the full knowledge and direct observation of Pacific Crest Engineering Inc., the Geotechnical Engineer of Record, will render the recommendations of this report invalid, unless the Client hires a new Geotechnical Engineer who agrees to take over complete responsibility for this report's findings, conclusions and recommendations.** The new Geotechnical Engineer must agree to prepare a Transfer of Responsibility letter. This may require additional test borings and laboratory analysis if the new Geotechnical Engineer does not completely agree with our prior findings, conclusions and recommendations.

PRIMARY GEOTECHNICAL CONSIDERATIONS

6. The project site is located within a seismically active area and strong seismic shaking is expected to occur within the design lifetime of the project. Improvements should be designed and constructed in accordance with the most current CBC and the recommendations of this report to minimize reaction to seismic shaking. Structures built in accordance with the

latest edition of the California Building Code for Seismic Zone 4 have an increased potential for experiencing relatively minor damage, which should be repairable, however strong seismic shaking could result in architectural damage and the need for post-earthquake repairs.

SITE PREPARATION

7. The initial preparation of the site will consist of the removal of any trees or brush as required and any debris. Tree and brush removal should include the entire stump and root ball. Septic tanks and leaching lines, if found, must be completely removed. The extent of this soil removal will be designated by a representative of Pacific Crest Engineering Inc. in the field. This material must be removed from the site.

8. Any voids created by removal of tree and root balls, septic tanks, and leach lines must be backfilled with properly compacted native soils that are free of organic and other deleterious materials or with approved imported fill.

9. Any wells encountered shall be capped in accordance with the requirements and approval of the County Health Department. The strength of the cap shall be equal to the adjacent soil and shall not be located within 5 feet of a structural footing.

10. Removal of any existing pavement sections should include all concrete, asphaltic concrete, aggregate base, and subbase sections until the underlying native soil is completely exposed.

11. Surface vegetation, tree roots and organically contaminated topsoil should then be removed ("stripped") from the area to be graded. In addition, any remaining debris or large rocks must also be removed (this includes asphalt or rocks greater than 2 inches in greatest dimension). This material may be stockpiled for future landscaping. It is anticipated that the depth of stripping may be 2 to 4 inches, however the required depth of stripping must be based upon visual observations of a representative of Pacific Crest Engineering Inc., in the field. The depth of stripping will vary upon the type and density of vegetation across the project site and with the time of year. Areas with dense vegetation or groves of trees may require an increased depth of stripping.

12. It is possible that there are areas of man-made fill on the project site that our field investigation did not detect. Areas of man-made fill, if encountered on the project site will need to be completely excavated to undisturbed native material. The excavation process should be observed and the extent designated by a representative of Pacific Crest Engineering Inc., in the field. Any voids created by fill removal must be backfilled with properly compacted approved native soils that are free of organic and other deleterious materials, or with approved imported fill.

13. Following the stripping, the area should be excavated to the design grades. The exposed soils in the building and paving areas should be scarified, moisture conditioned, and compacted as an engineered fill except for any contaminated material noted by a representative of Pacific Crest Engineering Inc. in the field. The moisture conditioning procedure will depend on the time of year that the work is done, but it should result in the soils being 1 to 3 percent over their optimum moisture content at the time of compaction. Compaction of the exposed subgrade soils should extend 5 feet beyond all building and pavement areas.

Note: If this work is done during or soon after the rainy season, the on-site soils and other materials may be too wet in their existing condition to be used as engineered fill. These materials may require a diligent and active drying and/or mixing operation to reduce the moisture content to the levels required to obtain adequate compaction as an engineered fill. If the on-site soils or other materials are too dry, water may need to be added.

14. The soil on the project site should be compacted as follows:

a. In pavement areas the upper 8 inches of subgrade, and all aggregate subbase and aggregate base, should be compacted to a minimum of 95% of its maximum dry density,
b. In pavement areas all utility trench backfill should be compacted to 95% of its maximum dry density,
c. The remaining soil on the project site should be compacted to a minimum of 90% of its maximum dry density.

15. The maximum dry density will be obtained from a laboratory compaction curve run in accordance with ASTM Procedure #D1557. This test will also establish the optimum moisture content of the material. Field density testing will be in accordance with ASTM Test #D2922.

16. Should the use of imported fill be necessary on this project, the fill material should be:

a. free of organics, debris, and other deleterious materials,
b. free of "recycled" materials such as asphaltic concrete, concrete, brick, etc.,
c. granular in nature, well graded, and contain sufficient binder to allow utility trenches to stand open,
d. free of rocks in excess of 2 inches in size,
e. have a Plasticity Index between 4 and 12,
f. have low corrosion potential,
g. have a minimum Resistance "R" Value of 30, and be non-expansive.

17. Samples of any proposed imported fill planned for use on this project should be submitted to Pacific Crest Engineering Inc. for appropriate testing and approval not less than 4 working days before the anticipated jobsite delivery. Imported fill material delivered to the

project site without prior submittal of samples for appropriate testing and approval must be removed from the project site.

CUT AND FILL SLOPES

18. All fill slopes should be constructed with engineered fill meeting the minimum density requirements of this report and have a gradient no steeper than 2:1 (horizontal to vertical). Fill slopes should not exceed 15 feet in vertical height unless specifically reviewed by Pacific Crest Engineering Inc. Where the vertical height exceeds 15 feet, intermediate benches must be provided. These benches should be at least 6 feet wide and sloped to control surface drainage. A lined ditch should be used on the bench.

19. Fill slopes should be keyed into the native slopes by providing a 10 foot wide base keyway sloped negatively at least 2% into the bank. The depth of the keyways will vary, depending on the materials encountered. It is anticipated that the depth of the keyways may be 3 to 6 feet, but at all locations shall be at least 2 feet into firm material.

20. Subsequent keys may be required as the fill section progress upslope. Keys will be designated in the field by a representative of Pacific Crest Engineering Inc. See Figure No. 20 for general details.

21. Cut slopes shall not exceed a 2:1 (horizontal to vertical) gradient and a 15 foot vertical height unless specifically reviewed by a representative of Pacific Crest Engineering Inc. Where the vertical height exceeds 15 feet, intermediate benches must be provided. These benches should be at least 6 feet wide and sloped to control surface drainage. A lined ditch should be used on the bench.

22. The above slope gradients are based on the strength characteristics of the materials under conditions of normal moisture content that would result from rainfall falling directly on the slope, and do not take into account the additional activating forces applied by seepage from spring areas. Therefore, in order to maintain stable slopes at the recommended gradients, it is important that any seepage forces and accompanying hydrostatic pressure encountered be relieved by adequate drainage. Drainage facilities may include subdrains, gravel blankets, rock fill surface trenches or horizontally drilled drains. Configurations and type of drainage will be determined by a representative of Pacific Crest Engineering Inc. during the grading operations.

23. The surfaces of all cut and fill slopes should be prepared and maintained to reduce erosion. This work, at a minimum, should include track rolling of the slope and effective planting. The protection of the slopes should be installed as soon as practicable so that a sufficient growth will be established prior to inclement weather conditions. It is vital that no slope be left standing through a winter season without the erosion control measures having been provided.

24. The above recommended gradients do not preclude periodic maintenance of the slopes, as minor sloughing and erosion may take place.

25. If a fill slope is to be placed above a cut slope, the toe of the fill slope should be set back at least 8 feet horizontally from the top of the cut slope. A lateral surface drain should be placed in the area between the cut and fill slopes.

EROSION CONTROL

26. The surface soils are classified as having a high potential for erosion. Therefore, the finished ground surface should be planted with ground cover and continually maintained to minimize surface erosion. For specific and detailed recommendations regarding erosion control on and surrounding the project site, you should consult your civil engineer or an erosion control specialist.

UTILITY TRENCHES

27. Utility trenches that are parallel to the sides of any structures (such as building footings, retaining wall footings, etc.) should be placed so that they do not extend below a line sloping down and away at a 2:1 (horizontal to vertical) slope from the bottom outside edge of all footings.

28. Utility pipes should be designed and constructed so that the top of pipe is a minimum of 24 inches below the finish subgrade elevation of any road or pavement areas. Any pipes within the top 24 inches of finish subgrade should be concrete encased, per design by the Project Civil Engineer.

29. For the purpose of this section of the report, backfill is defined as material placed in a trench starting one foot above the pipe, and bedding is all material placed in a trench below the backfill.

30. Unless concrete bedding is required around utility pipes, free-draining clean sand should be used as bedding. Sand bedding should be compacted to at least 95 percent relative compaction.

31. Approved imported clean sand or native soil should be used as utility trench backfill. Backfill in trenches located under and adjacent to structural fill, foundations, concrete slabs and pavements should be placed in horizontal layers no more than 8 inches thick. This includes areas such as sidewalks, patios, and other hardscape areas. Each layer of trench backfill should be water conditioned and compacted to at least 95 percent relative compaction. Clean sand is defined as 100 percent passing the #4 sieve, and less than 5 percent passing the #200 sieve.

32. Utility trenches should be backfilled with controlled density fill (such as 2-sack sand\cement slurry) below perimeter footing areas to help minimize potential moisture intrusion below slabs. The width of the plug should be at least three times the width of the footing or grade beam at the building perimeter, but no less than 36 inches. A representative from Pacific Crest Engineering Inc. should be contacted to observe the placement of slurry plugs.

33. A representative from our firm should be present to observe the bottom of all trench excavations, prior to placement of utility pipes and conduits. In addition, we should observe the condition of the trench prior to placement of sand bedding, and to observe compaction of the sand bedding, in addition to any backfill planned above the bedding zone.

34. Jetting of the trench backfill is not recommended as it may result in an unsatisfactory degree of compaction.

35. Trenches must be shored as required by the local agency and the State of California Division of Industrial Safety construction safety orders.

LATERAL PRESSURES

36. Retaining walls with full drainage should be designed using the following criteria:

a. The following lateral earth pressure values should be used for design:

TABLE No. 5, Active and At-Rest Earth Pressure Values

Backfill Slope (H:V)	Active Earth Pressure (psf/ft of depth)	At-rest Earth Pressure (psf/ft of depth)
Level	30	40
3:1	35	45
2:1	50	60

37. Active earth pressure values may be used when walls are free to yield an amount sufficient to develop the active earth pressure condition (about ½% of height). The effect of wall rotation should be considered for areas behind the planned retaining wall (pavements, foundations, slabs, etc.). **When walls are restrained at the top or to design for minimal wall rotation, use the at-rest earth pressure values.**

b. For resisting passive earth pressure use 300 psf/ft of depth.

c. A "coefficient of friction" between base of foundation and soil of 0.35.

d. Wall footings may be designed for the following allowable bearing capacities of 2,000 psf for Dead plus Live Load, with a 1/3rd increase for short term loads.

e. To develop the resisting passive earth pressure, the retaining wall footings should be embedded a minimum of 18 inches below the lowest adjacent grade. There should be a minimum of 5 feet of horizontal cover as measured from the outside edge of the footing.

f. Any live or dead loads which will transmit a force to the wall, refer to Figure No. 21.

g. The resultant seismic force on the wall is $12H^2$ and acts at a point 0.6H up from the base of the wall. This force has been estimated using the Mononobe-Okabe method of analysis as modified by Whitman (1990), and assumes a yielding wall condition. If seismic loads on non-yielding walls are required for this project, our office should be contacted for additional recommendations.

Please note: Should the slope behind the retaining walls be other than shown in Table No.4, supplemental design criteria will be provided for the active earth or at rest pressures for the particular slope angle.

38. The above criteria are based on **fully drained conditions**. Therefore, we recommend that permeable material meeting the State of California Standard Specification Section 68-1.025, Class 1, Type A, be placed behind the wall, with a minimum width of 12 inches and extending for the full height of the wall to within 1 foot of the ground surface. The permeable material should be covered with Mirafi 140N filter fabric or equivalent and then compacted native soil placed to the ground surface. A 4 inch diameter perforated rigid plastic drain pipe should be installed within 3 inches of the bottom of the permeable material and be discharged to a suitable, approved location such as the project storm drain system. The perforations should be located and oriented on the lower half of the pipe. Neither the pipe nor the permeable material should be wrapped in filter fabric. Please refer to Figure No. 22, Typical Retaining Wall Drain Detail.

39. The area behind the wall and beyond the permeable material should be compacted with approved material to a minimum relative dry density of 90%.

PAVEMENT DESIGN

40. The soils that will comprise the pavement subgrade will in all likelihood be the sands predominating on the sites. The "R" Value results were 71 for Gigling Road and ranged from 64 to 72 for South Boundary Road. We will use an "R" Value of 71 for design of the pavement sections noted below for Gigling Road and an "R" Value of 68 for South Boundary Road. This must be verified in the field and, if necessary, modifications made to these tentative sections.

41. The following table provides a flexible pavement design which is based on the Caltrans Highway Design Manual – Chapter 600 (last updated July 1, 1995).

The following pavement sections are suggested based on a range of potential Traffic Indices:

TABLE No.6, Recommended Pavement Sections – Gigling Road

Material	Traffic Index			
	5	6	8	10
Asphalt Concrete	3.0 inches	3.5 inches	5.0 inches	6.0 inches
Class 2 Aggregate Base, R=78 min.	6.0 inches	6.0 inches	6.0 inches	6.0 inches
Class 2 Aggregate Sub-base, R=50 min.	-- inches	-- inches	-- inches	-- inches

TABLE No.7, Recommended Pavement Sections – South Boundary Road

Material	Traffic Index			
	5	6	8	10
Asphalt Concrete	3.0 inches	3.5 inches	5.0 inches	6.0 inches
Class 2 Aggregate Base, R=78 min.	6.0 inches	6.0 inches	6.0 inches	6.0 inches
Class 2 Aggregate Sub-base, R=50 min.	-- inches	-- inches	-- inches	-- inches

42. To have the selected pavement sections perform to their greatest efficiency, it is very important that the following items be considered:

a. Properly scarify and moisture condition the upper 8 inches of the subgrade soil and compact it to a minimum of 95% of its maximum dry density, at a moisture content 1 to 3% over the optimum moisture content for the soil.

b. Provide sufficient gradient to prevent ponding of water.

c. Use only quality materials of the type and thickness (minimum) specified. All aggregate base and subbase must meet Caltrans Standard Specifications for Class 2 materials, and be angular in shape. All Class 2 aggregate base should be ¾ inch maximum in aggregate size.

d. The use of "recycled" materials, such as asphaltic concrete for aggregate base or subbase is not recommended.

e. Compact the base and subbase uniformly to a minimum of 95% of its maximum dry density.

f. Use ½ inch maximum, Type "A" medium graded asphaltic concrete. Place the asphaltic concrete only during periods of fair weather when the free air temperature is within prescribed limits by Cal Trans Specifications.

g. Place ¼ gallon per square yard of SG-70 prime coat over the aggregate base section, prior to placement of the asphaltic concrete.

h. Maintenance should be undertaken on a routine basis.

SOIL CORROSIVITY

43. Corrosivity tests were run on one representative surface soil sample collected on the project site. These results are summarized as follows:

TABLE No.8, Corrosivity Test Summary

Sample	Chloride	Sulfate (water soluble)	pH
	mg/kg	mg/kg	
2-1-1	5	8	5.7
4-1-1	19	8	6.5

44. Cal Trans considers a site to be corrosive to foundation elements if one or more of the following conditions exist at the site:

a. Chloride concentration is greater than or equal to 500 mg/Kg (ppm)
b. Sulfate concentration is greater than or equal to 2000 mg/Kg (ppm)
c. The soil pH is 5.5 or less

Refer to Cal Trans Corrosion Guidelines, version 1.0 (September, 2003) for additional information.

45. Based on the results of the chloride, sulfate and pH, it appears that the conditions in the shallow existing soil should be assumed to be non-corrosive based on Cal Trans guidelines. The corrosion potential for any imported select fill should also be checked for corrosivity.

46. Please refer to Appendix A for the specific results of the corrosivity testing by the analytical laboratory.

PLAN REVIEW

47. We respectfully request an opportunity to review the plans during preparation and before bidding to insure that the recommendations of this report have been included and to provide additional recommendations, if needed. Misinterpretation of our recommendations or omission of our requirements from the project plans and specifications may result in changes to the project design during the construction phase, with the potential for additional costs and delays in order to bring the project into conformance with the requirements outlined within this report.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. This Geotechnical Investigation was prepared specifically for you and for the specific project and location described in the body of this report. This report and the recommendations included herein should be utilized for this specific project and location exclusively. This Geotechnical Investigation should not be applied to nor utilized on any other project or project site. Please refer to the ASFE "Important Information about Your Geotechnical Engineering Report" attached with this report.

2. The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed in the borings. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that planned at the time, our firm should be notified so that supplemental recommendations can be provided.

3. This report is issued with the understanding that it is the responsibility of the owner, or his representative, to insure that the information and recommendations contained herein are called to the attention of the Architects and Engineers for the project and incorporated into the plans, and that the necessary steps are taken to insure that the Contractors and Subcontractors carry out such recommendations in the field.

4. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they are due to natural process or the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or partially, by changes outside of our control. This report should therefore be reviewed in light of future planned construction and then current applicable codes. This report should not be considered valid after a period of two (2) years without our review.

5. This report was prepared upon your request for our services in accordance with currently accepted standards of professional geotechnical engineering practice. No warranty as to the contents of this report is intended, and none shall be inferred from the statements or opinions expressed.

6. The scope of our services mutually agreed upon for this project did not include any environmental assessment or study for the presence of hazardous or toxic materials in the soil, surface water, groundwater, or air, on or below or around this site.

Important Information About Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

ASFE
The Best People on Earth

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APPENDIX A

Regional Site Plan
Site Plan Showing Test Borings
Boring Log Explanation
Log of Test Borings
Direct Shear Test Results
R Value Results
Caltrans Corrosion Analysis
Keyway Detail
Surcharge Pressure Diagram
Typical Retaining Wall Drain Detail

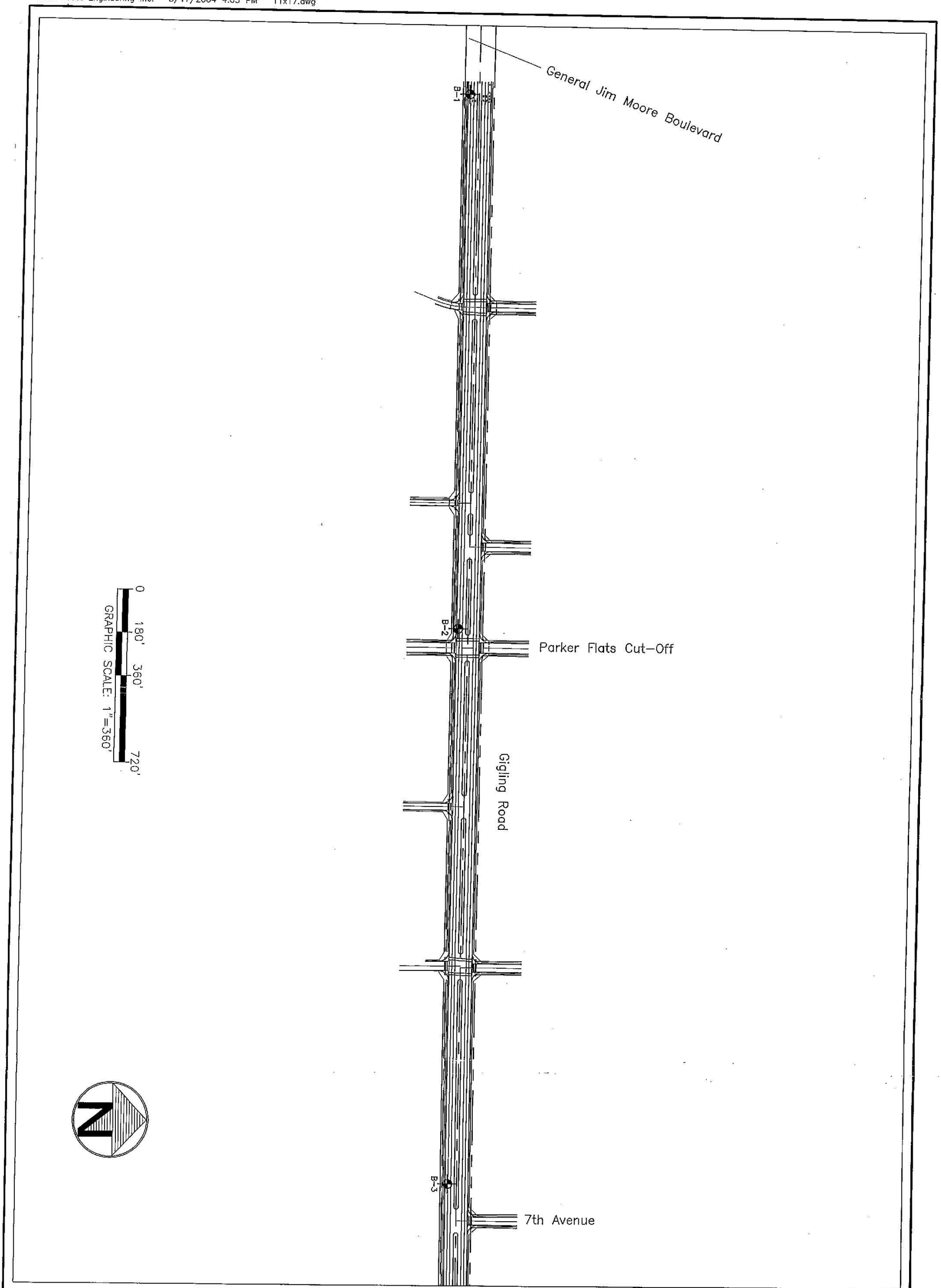
0 4481 ft.

Approximate Scale

N

Base Map from Google Earth Pro

Pacific Crest Engineering Inc. 444 Airport Blvd., Suite 106 Watsonville, CA 95076	**Regional Site Map** Gigling and South Boundary Road Seaside, California	Figure No. 1 Project No. 0760 Date: 10/09/07



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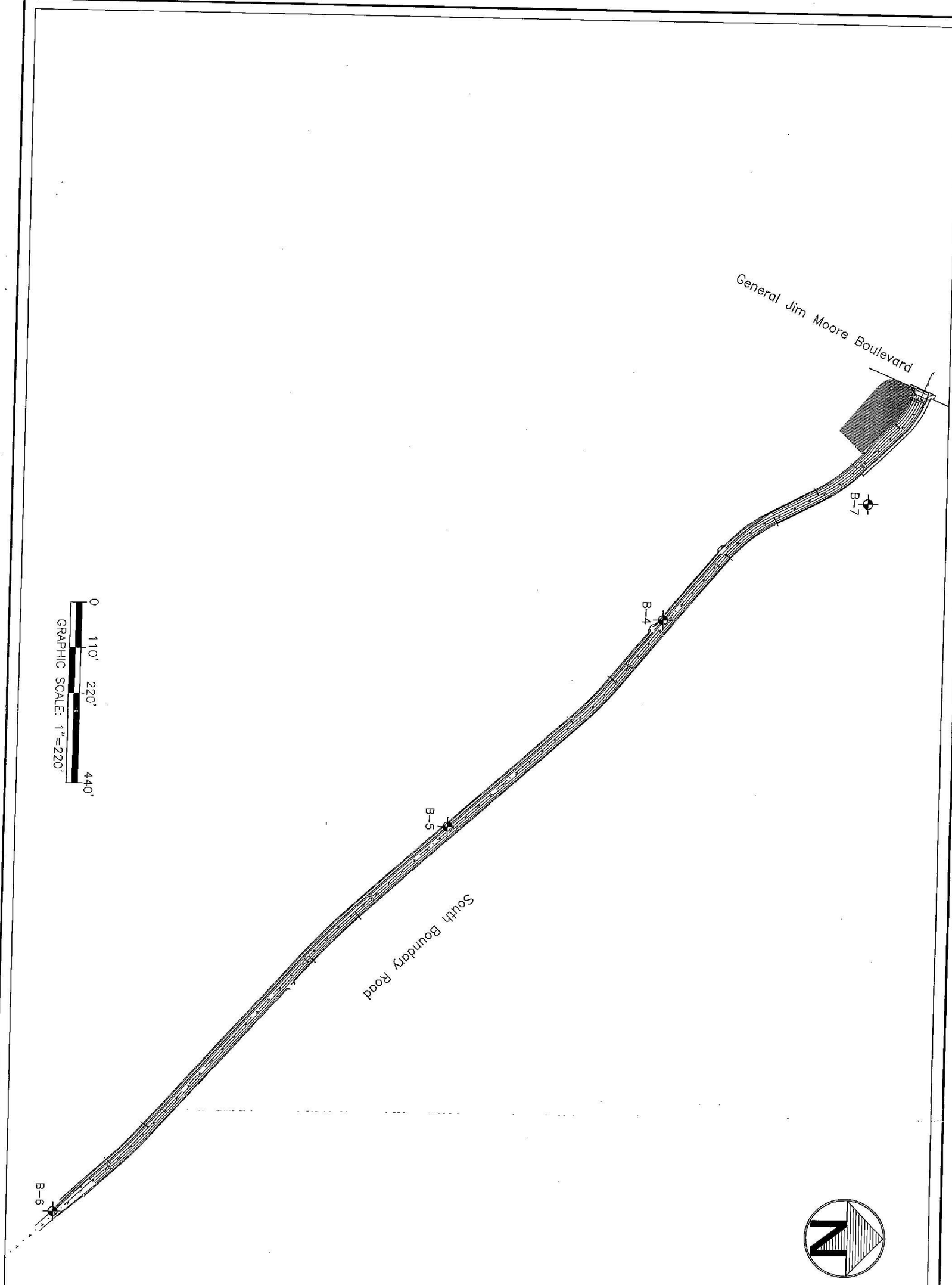
Site Map Showing Boring Locations
Gigling Road

Seaside, California

10/09/07 0760
REV. 0 MDK

FIGURE 2A

Pacific Crest Engineering Inc. 3/17/2004 4:03 PM 11x17.dwg



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Site Map Showing Boring Locations
South Boundary Road

Seaside, California

10/09/07 0760
REV. 0 MDK

FIGURE 2B

UNIFIED SOIL CLASSIFICATION SYSTEM - ASTM D2488 (Modified)

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS MORE THAN HALF OF MATERIAL IS LARGER THAN #200 SIEVE SIZE	**GRAVELS** MORE THAN HALF OF COARSE FRACTION IS LARGER THAN #4 SIEVE	**CLEAN GRAVELS** (LESS THAN 5% FINES)	GW	Well graded gravels, gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels or gravels-sand mixtures, little or no fines
		GRAVELS (MORE THAN 12% FINES)	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines
	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN #4 SIEVE	**CLEAN SANDS** (LESS THAN 5% FINES)	SW	Well graded sands, gravelly sands, little or no fines
			SP	Poorly graded sands or gravelly sands, little or no fines
		SANDS (MORE THAN 12% FINES)	SM	Silty sands, sand-silt mixtures, non-plastic fines
			SC	Clayey sands, sand-clay mixtures, plastic fines
FINE GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN #200 SIEVE SIZE	**SILTS AND CLAYS** LIQUID LIMIT IS LESS THAN 35%		ML	Inorganic silts and very fine clayey sand silty sands, with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly, sand, silty or lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS LIQUID LIMIT IS BETWEEN 35% AND 50%		MI	Inorganic silts, clayey silts and silty fine sands of intermediate plasticity
			CI	Inorganic clays, gravelly/sandy clays and silty clays of intermediate plasticity
			OI	Organic clays and silty clays of intermediate plasticity
	SILTS AND CLAYS LIQUID LIMIT IS GREATER THAN 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH	Organic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			PT	Peat and other highly organic soils

BORING LOG EXPLANATION

LOGGED BY_____ DATE DRILLED_____ BORING DIAMETER_____ BORING NO.____

Depth, ft.	Sample No. and Type	Symbol	SOIL DESCRIPTION	Unified Soil Classification	SPT "N" Value	Plasticity Index	Dry Density, p.c.f.	Moisture % of Dry Wt.	MISC. LAB RESULTS
1			← Ground water elevation						NOTE: All blows/foot are normalized to 2" outside diameter sampler size
2	1-1 L		←Soil Sample Number ←Soil Sampler Size/Type L = 3" Outside Diameter M = 2.5" Outside Diameter T = 2" Outside Diameter ST = Shelby Tube BAG = Bag Sample						
3									
4									
5									

RELATIVE DENSITY

SANDS AND GRAVELS	BLOWS/FOOT
VERY LOOSE	0-4
LOOSE	4-10
MEDIUM DENSE	10-30
DENSE	30-50
VERY DENSE	OVER 50

CONSISTENCY

SILTS AND CLAYS	BLOWS/FOOT
VERY SOFT	0-2
SOFT	2-4
FIRM	4-8
STIFF	8-16
VERY STIFF	16-32
HARD	OVER 32

Pacific Crest Engineering Inc. 444 Airport Blvd., Suite 106 Watsonville, CA 95076	**Boring Log Explanation** Gigling and South Boundary Road Seaside, California	Figure No. 3 Project No. 0760 Date: 10/09/07

LOGGED BY CLR DATE DRILLED 8/31/07 BORING DIAMETER 6" BORING NO. 1

Depth (feet)	Sample No. and Type	Symbol	Soil Description	Unified Soil Classification	SPT "N" Value	Plasticity Index	Dry Density (pcf)	Moisture % of Dry Wt.	Misc. Lab Results
			AC: 5.5"						
1			Brown Silty SAND, very fine to medium grained, sub-rounded shaped, poorly graded, leaves and bark near 3 feet, damp, loose	SM					
2	1-1 L								Direct Shear C= 215 psf Φ= 30°
3					6				
4			Variegated brown, light brown, and reddish brown SAND, fine to medium grained, sub-rounded shaped, poorly graded, damp, medium dense	SP					
5	1-2 L								
6					13		115.5	8.3	
7									
8									
9									
10	1-3 L		Color change to variegated tan and reddish tan, slight increase in coarseness of sand, coarsening downward, damp, medium dense						
11					12		103.6	6.0	
12									
13									
14									
15	1-4 L		Color change to yellowish tan, small mica flakes scattered throughout the sample, slightly damp, medium dense						
16					22		101.9	4.5	
17									
18									
19									
20	1-5 L		Patch of coarse grained sand near 21 and 1/2 feet, coarsening downward, better cemented, slightly damp, dense						
21					36		100.8	4.2	
22			Boring terminated at 21 1/2 feet. No groundwater encountered.						
23									
24									

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Log of Test Borings
Gigling and South Boundary Road
Seaside, California

Figure No. 4
Project No.0760
Date: 10/09/07

LOGGED BY CLR DATE DRILLED 8/31/07 BORING DIAMETER 6" BORING NO. 2

Depth (feet)	Sample No. and Type	Symbol	Soil Description	Unified Soil Classification	SPT "N" Value	Plasticity Index	Dry Density (pcf)	Moisture % of Dry Wt.	Misc. Lab Results
			AC: 5.5"						
1			Variegated blackish brown, reddish brown, and tan SAND, poorly graded, fine to medium grained, sub-rounded shaped, small mica flakes scattered throughout the sample, damp, medium dense	SP					
2	2-1 L								
3					30				
4									
5	2-2 L		Color change to brown, some rounded coarse grains and rounded very fine grains scattered throughout the sample, slightly damp, loose						
6					10		108.9	4.7	
7									
8									
9									
10	2-3 L		Color change to dark reddish tan, increase in coarseness of sand, coarsening downward, slightly damp, medium dense						
11					20		110.2	6.9	
12			Boring terminated at 11 1/2 feet. No groundwater encountered.						
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									

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Log of Test Borings
Gigling and South Boundary Road
Seaside, California

Figure No. 5
Project No.0760
Date: 10/09/07

LOGGED BY CLR DATE DRILLED 8/31/07 BORING DIAMETER 6" BORING NO. 3

Depth (feet)	Sample No. and Type	Soil Description	Unified Soil Classification	SPT "N" Value	Plasticity Index	Dry Density (pcf)	Moisture % of Dry Wt.	Misc. Lab Results
		AC: 5"						
1		Variegated blackish brown and brown Silty SAND, very fine to fine grained, small mica flakes scattered throughout the sample, some rounded coarse pebbles scattered throughout the sample, damp, very dense	SM					
2	3-1 L							Direct Shear C= 400 psf Φ= 42°
3				50/5"				
4								
5	3-2 L	Color change to pinkish tan, lack of rounded coarse pebbles, poorly graded, fairly well cemented, slightly damp, medium dense						
6				22		101.9	3.1	16.5% Passing # 200 Sieve
7								
8								
9								
10	3-3 L	Yellowish brown SAND, poorly graded, fine to medium grained, sub-rounded shaped, small mica flakes scattered throughout the sample, fairly well cemented, slightly damp, medium dense	SP					
11				27		107.3	3.4	
12								
13								
14								
15	3-4 L	Increase in coarseness and cementation, fine to coarse grained, coarsening downward, better cemented, damp, very dense						
16				50/5"		107.9	4.2	
17								
18								
19								
20	3-5 L	Decrease in coarseness and cementation, fine to medium grained, fining downward, not as well cemented, slightly damp, medium dense						
21				29		94.5	3.2	
22		Boring terminated at 21 1/2 feet. No groundwater encountered.						
23								
24								

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Log of Test Borings
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Figure No. 6
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Date: 10/09/07

LOGGED BY CLR DATE DRILLED 8/31/07 BORING DIAMETER 6" BORING NO. 4

Depth (feet)	Sample No. and Type	Symbol	Soil Description	Unified Soil Classification	SPT "N" Value	Plasticity Index	Dry Density (pcf)	Moisture % of Dry Wt.	Misc. Lab Results
			AC: 3"						
1			Variegated brown and gray Silty SAND, very fine to fine grained, sub-rounded shaped, poorly graded, small mica flakes scattered throughout the sample, better cementation near 2.5 feet, damp, very dense	SM					
2	4-1 L				50/5"				
3									
4									
5	4-2 L		Variegated brown and gray SAND, fine to medium grained, sub-rounded shaped, poorly graded, small mica flakes scatted throughout the sample, slightly damp, very dense	SP	50/5"		97.3	8.9	
6									
7									
8									
9									
10	4-3 T		Gray Clayey SAND, poorly graded, very fine to lower medium grained, sub-rounded shaped, small mica flakes and oxidation patches scattered throughout the sample, damp, loose	SP					
11					10			17.6	
12									
13									
14			Gray SILT, very fine grained, sub-rounded to rounded shaped, oxidation patches and small mica flakes scattered throughout the sample, fairly well cemented, damp, dense	ML					
15	4-4 T								
16					46			32.1	
17									
18			Down for 15 minutes for hammer repair						
19									
20	4-5 T		Gray SAND, poorly graded, very fine to fine grained, sub-rounded to rounded shaped, small mica flakes scattered throughout the sample, seepage zone, wet, very dense	SP					
21					50/6"			16.7	
22			Boring terminated at 21 1/2 feet. No free groundwater encountered.						
23									
24									

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Log of Test Borings
Gigling and South Boundary Road
Seaside, California

Figure No. 7
Project No.0760
Date: 10/09/07

LOGGED BY CLR DATE DRILLED 8/31/07 BORING DIAMETER 6" BORING NO. 5

Depth (feet)	Sample No. and Type	Symbol	Soil Description	Unified Soil Classification	SPT "N" Value	Plasticity Index	Dry Density (pcf)	Moisture % of Dry Wt.	Misc. Lab Results
			AC: 1"						
1			Tan SAND, very fine to fine grained, sub-rounded shaped, poorly graded, small mica flakes and oxidation patches scattered throughout the sample, damp, dense	SP					
2	5-1 T								
3					38			4.7	
4									
5	5-2 T		Not as well cemented, damp, medium dense						
6					13			13.2	
7									
8									
9									
10	5-3 T		Grayish tan SILT, very fine to fine grained, sub-rounded to rounded shaped, small mica flakes scattered throughout the sample, well cemented near 10 1/2 feet, slightly damp to dry, very hard	ML	50/5"			21.5	
11			Hard drilling						
12									
13									
14									
15	5-4 T		Gray Sandy SILT, very fine to fine grained, sub-rounded shaped, small mica flakes scattered throughout the sample, mottled oxidation, bottom 3 inches of sample was completely oxidized, damp, dense	ML					
16					40			21.4	
17									
18									
19									
20	5-5 T		Gray SAND, poorly graded, very fine to fine grained, sub-rounded to rounded shaped, small mica flakes throughout the sample, well cemented, damp, very dense	SP					
21					60			9.7	
22			Boring terminated at 21 1/2 feet. No groundwater encountered.						
23									
24									

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Log of Test Borings
Gigling and South Boundary Road
Seaside, California

Figure No. 8
Project No.0760
Date: 10/09/07

LOGGED BY CLR DATE DRILLED 8/31/07 BORING DIAMETER 6" BORING NO. 6

Depth (feet)	Sample No. and Type	Symbol	Soil Description	Unified Soil Classification	SPT "N" Value	Plasticity Index	Dry Density (pcf)	Moisture % of Dry Wt.	Misc. Lab Results
			AC: 6"						
1			Brown and tan SAND very fine to fine grained, sub-rounded shaped, poorly graded, small mica flakes scattered throughout the sample, damp, medium dense	SP					
2	6-1 L								Direct Shear C= 405 psf Φ= 36°
3					15				
4									
5	6-2 L		Not as well cemented, poorly graded, slightly damp to dry, loose						
6					5		103.7	6.0	
7									
8									
9									
10	6-3 L		Gray Silty SAND, very fine to fine grained, sub-rounded shaped, small mica flakes scattered throughout the sample, well cemented near 10 1/2 feet, slightly damp to dry, very dense	SM	50/6"		92.4	8.7	
11									
12									
13									
14									
15	6-4 T		Not as well cemented, dry, very dense		50/6"			6.0	
16			Boring terminated at 15 1/2 feet. No groundwater encountered.						
17									
18									
19									
20									
21									
22									
23									
24									

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Log of Test Borings
Gigling and South Boundary Road
Seaside, California

Figure No. 9
Project No.0760
Date: 10/09/07

LOGGED BY CLR DATE DRILLED 8/31/07 BORING DIAMETER 6" BORING NO. 7

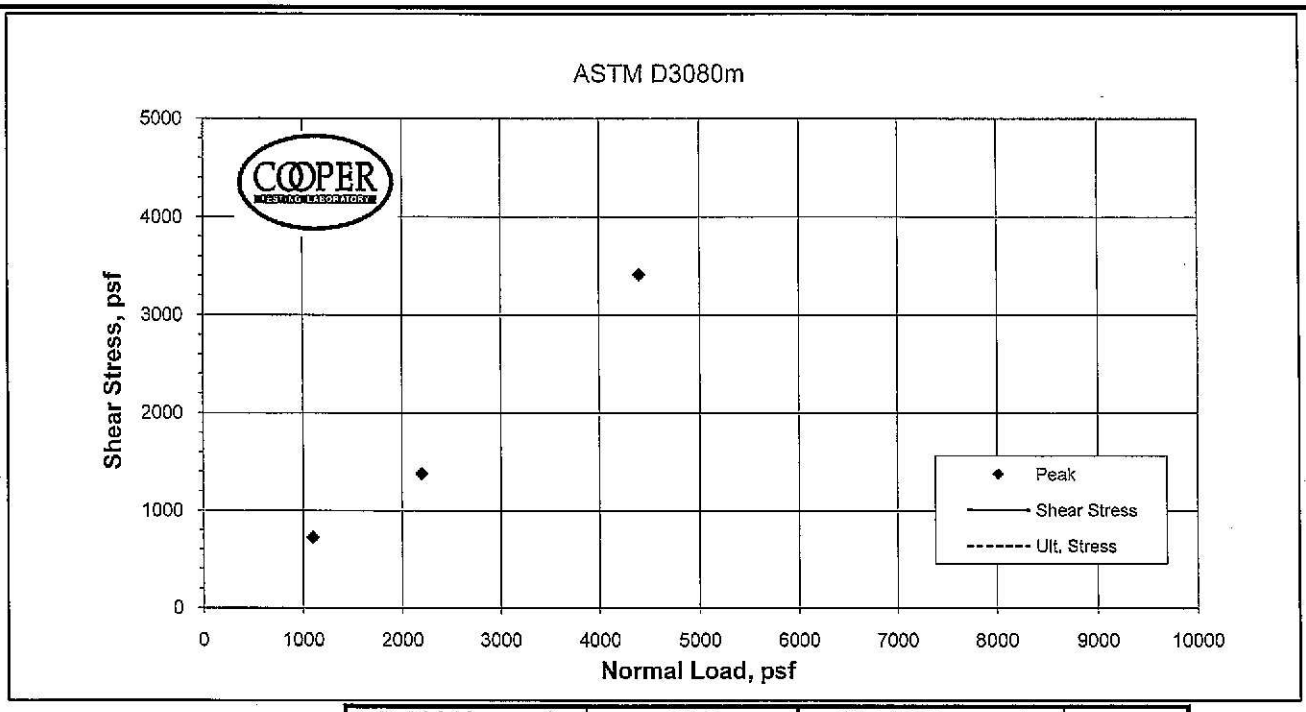
Depth (feet)	Sample No. and Type	Symbol	Soil Description	Unified Soil Classification	SPT "N" Value	Plasticity Index	Dry Density (pcf)	Moisture % of Dry Wt.	Misc. Lab Results
1			Yellowish brown Silty SAND, very fine to fine grained, sub-rounded to rounded shaped, poorly graded, small mica flakes scattered throughout the sample, dry, medium dense	SM					
2	7-1 L								
3					14		103.1	4.6	Direct Shear C= 270 psf ϕ= 36°
4									
5	7-2 L		Color change to yellowish reddish brown, grasses near 6 1/2 feet, slight increase in coarseness of sand, very fine to medium grained, coarsening downward, dry, medium dense						
6					16		87.5	6.4	
7									
8									
9									
10	7-3 L		Yellowish tan SAND, very fine to medium grained sub-rounded to rounded shaped, small mica flakes scattered throughout the sample, poorly graded, dry medium dense	SP					
11					19		100.3	4.6	8.5% Passing #200 Sieve
12									
13									
14									
15	7-4 L		Less fines, coarsening downward, slightly damp, medium dense						
16					30		113.6	7.8	
17									
18									
19									
20	7-5 L		Color change to gray, oxidation nodes scattered throughout the sample, fairly well cemented, damp, dense						
21					35				
22			Boring terminated at 21 1/2 feet. No groundwater encountered.						
23									
24									

Pacific Crest Engineering Inc.
444 Airport Blvd., Suite 106
Watsonville, CA 95076

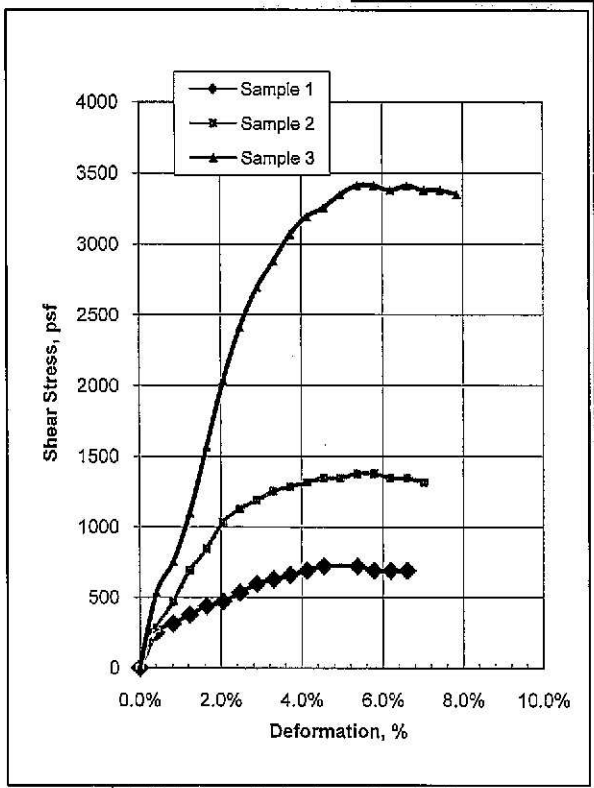
Log of Test Borings
Gigling and South Boundary Road
Seaside, California

Figure No. 10
Project No.0760
Date: 10/09/07

Direct Shear



P. Phi (degrees)	30.0	Ult. Phi (degrees)	
P. Cohesion(psf)	215	Ult. Cohesion (psf)	



	Sample Data: Initial			
	1	2	3	4
Moisture %	6.8	7.1	6.5	
Dry Dens., pcf	99.0	100.8	101.7	
Void Ratio	0.703	0.672	0.657	
Saturation %	26.0	28.7	26.8	
Diameter	2.42	2.42	2.42	
Height	1.00	1.00	1.00	
	Sample Data: At Test			
Moisture %	15.4	14.5	12.8	
Dry Dens., pcf	101.5	101.5	104.5	
Void Ratio	0.660	0.660	0.612	
Saturation %	63.0	59.5	56.4	
Diameter	2.42	2.42	2.42	
Height	0.97	0.99	0.97	
Normal Stress, psf	1100	2200	4400	
Shear Stress, psf	720	1378	3412	
Strengths picked at Ult. Stress, psf	5.4%	5.8%	6.6%	
Strain Rate, in/min	0.020	0.020	0.020	

CTL #	416-312
Client:	Pacific Crest Engineering
Project	FORA Road Improvements - 0760
Tested By:	MD
Reduced By:	RU/MD
Date:	9/19/2007

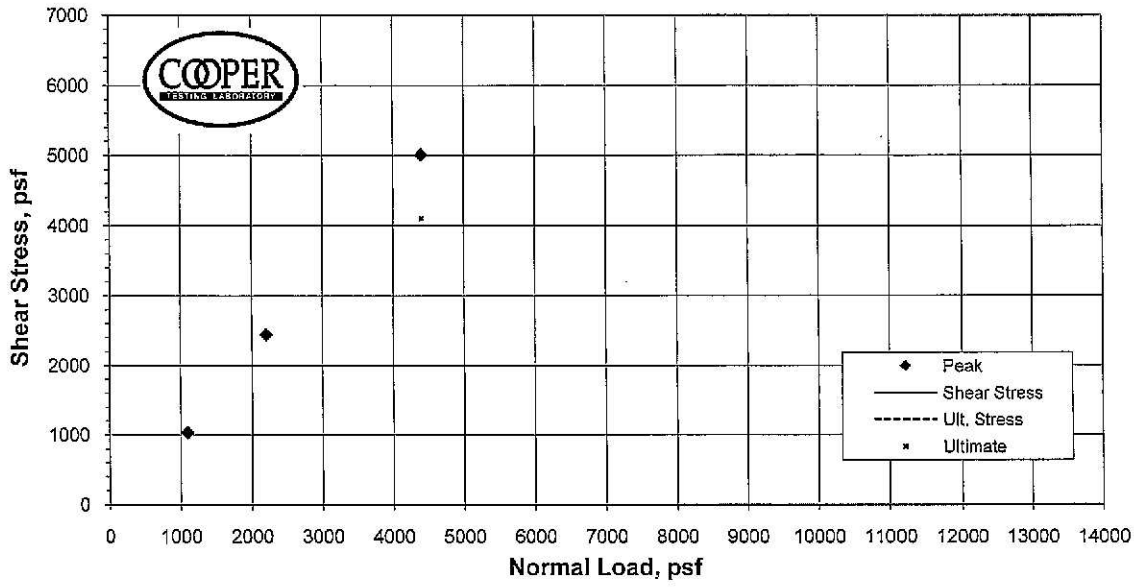
Specimen #	Boring:	Sample:	Depth, ft:	Visual Soil Classification
1		1-1-1		Brown Silty SAND
2		1-1-1		Brown Silty SAND
3		1-1-1		Brown Silty SAND
4				

Remarks: *DS-CU* - A fully undrained condition may not be attained in this test.

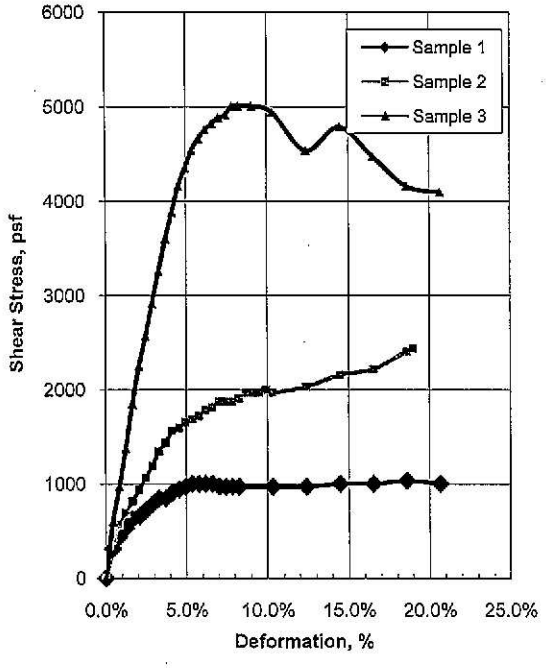
Figure No. 11
Project No. 0760
Date: 10/09/07

Direct Shear

ASTM D3080m



P. Phi (degrees)	42.0	Ult. Phi (degrees)	
P. Cohesion(psf)	400	Ult. Cohesion (psf)	



	Sample Data: Initial			
	1	2	3	4
Moisture %	10.1	9.3	9.8	
Dry Dens., pcf	102.5	96.3	105.3	
Void Ratio	0.645	0.750	0.601	
Saturation %	42.3	33.4	44.2	
Diameter	2.42	2.42	2.42	
Height	1.00	1.00	1.00	
	Sample Data: At Test			
Moisture %	16.9	18.2	16.4	
Dry Dens., pcf	104.3	102.2	110.0	
Void Ratio	0.615	0.650	0.532	
Saturation %	74.1	75.7	83.1	
Diameter	2.42	2.42	2.42	
Height	0.98	0.94	0.96	
Normal Stress, psf	1100	2200	4400	
Shear Stress, psf	1033	2442	5009	
Strengths picked at	18.6%	19.0%	9.1%	
Ult. Stress, psf	1002	2411	4101	
Strain Rate, in/min	0.020	0.020	0.020	

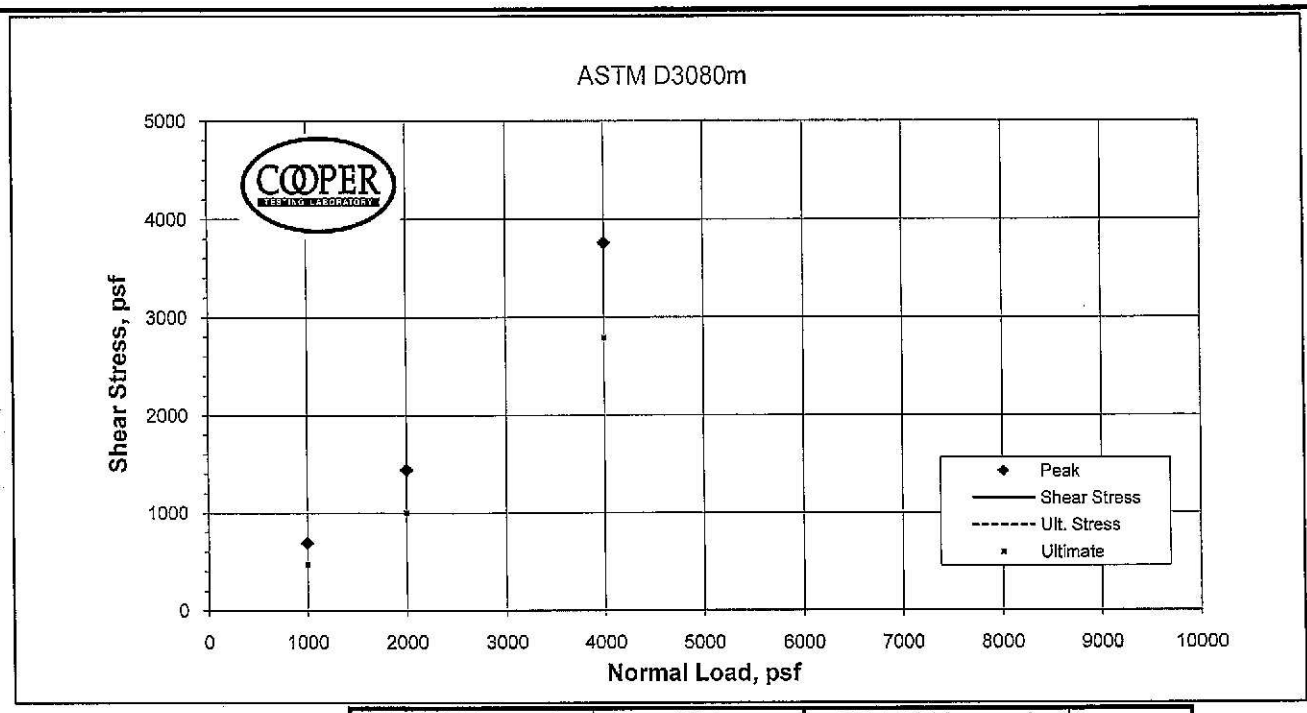
CTL #	416-312
Client:	Pacific Crest Engineering
Project	FORA Road Improvements - 0760
Tested By:	MD
Reduced By:	RU/MD
Date:	

Specimen #	Boring:	Sample:	Depth, ft:	Visual Soil Classification
1		3-1-1		Olive Clayey SAND w/ Gravel
2		3-1-1		Olive Clayey SAND w/ Gravel
3		3-1-1		Olive Clayey SAND w/ Gravel
4				

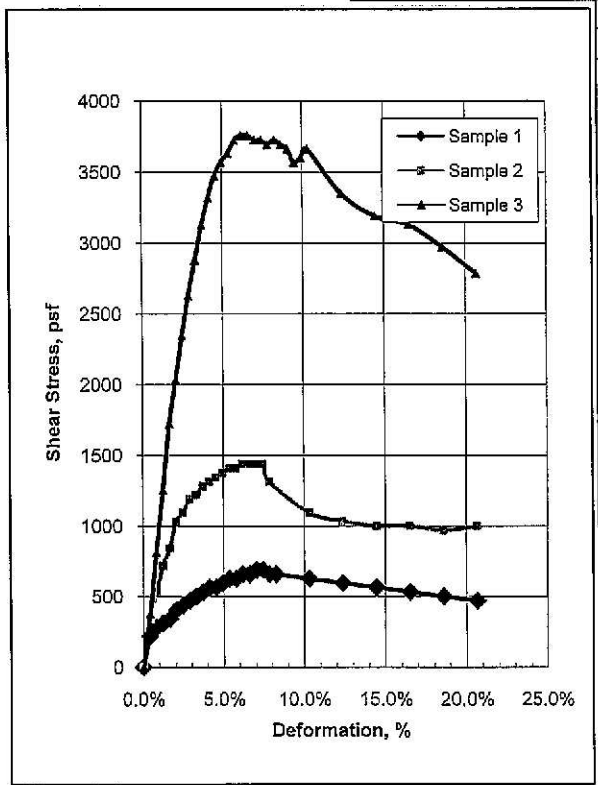
Remarks: *DS-CU* A fully undrained condition may not be attained in this test.

Figure No. 12
Project No. 0760
Date: 10/09/07

Direct Shear



P. Phi (degrees)	36.0	Ult. Phi (degrees)	
P. Cohesion(psf)	405	Ult. Cohesion (psf)	



	Sample Data: Initial			
	1	2	3	4
Moisture %	8.1	9.4	7.2	
Dry Dens., pcf	89.3	92.2	95.6	
Void Ratio	0.888	0.828	0.764	
Saturation %	24.5	30.7	25.4	
Diameter	2.42	2.42	2.42	
Height	1.00	1.00	1.00	
	Sample Data: At Test			
Moisture %	24.7	21.7	19.2	
Dry Dens., pcf	94.7	100.0	102.4	
Void Ratio	0.779	0.686	0.646	
Saturation %	85.5	85.2	80.4	
Diameter	2.42	2.42	2.42	
Height	0.94	0.92	0.93	
Normal Stress, psf	1000	2000	4000	
Shear Stress, psf	689	1440	3757	
Strengths picked at	7.4%	7.4%	6.6%	
Ult. Stress, psf	470	1002	2786	
Strain Rate, in/min	0.020	0.020	0.020	

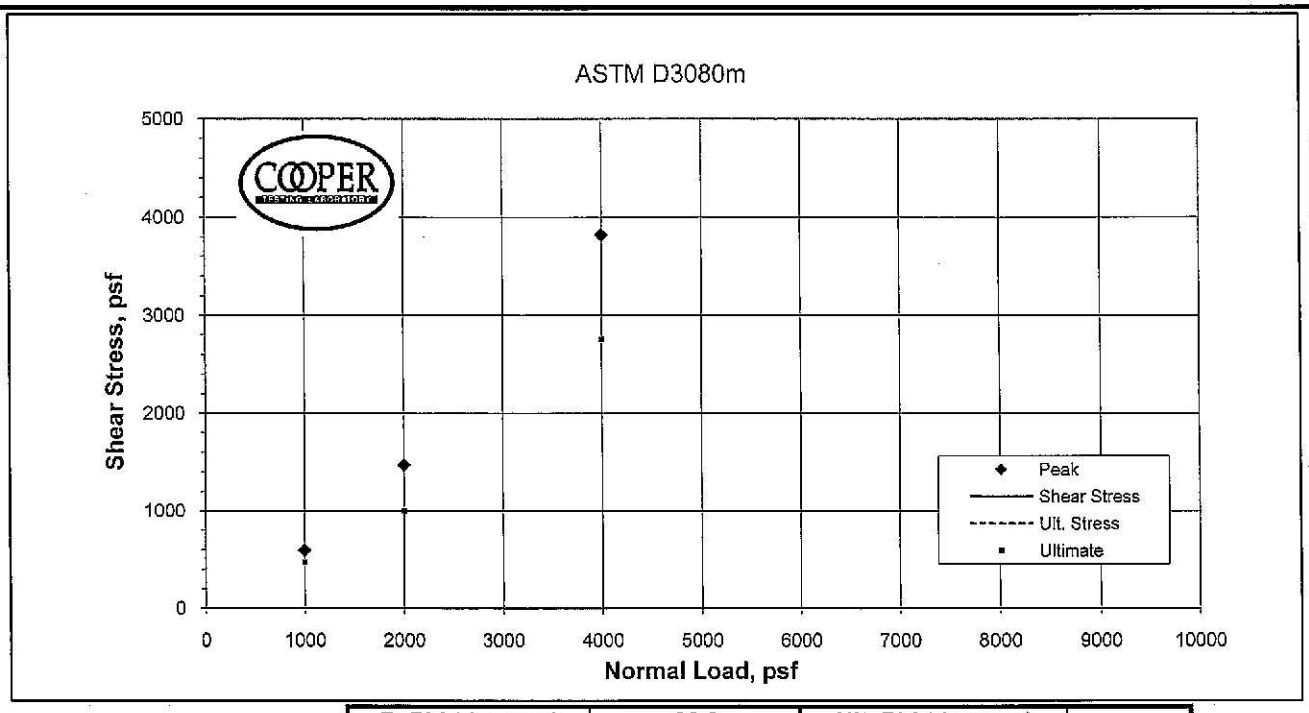
CTL #	416-312
Client:	Pacific Crest Engineering
Project	FORA Road Improvements - 0760
Tested By:	MD
Reduced By:	RU/MD
Date:	9/19/2007

Specimen #	Boring:	Sample:	Depth, ft:	Visual Soil Classification
1		6-1-1		Brown Silty SAND
2		6-1-1		Brown Silty SAND
3		6-1-1		Brown Silty SAND
4				

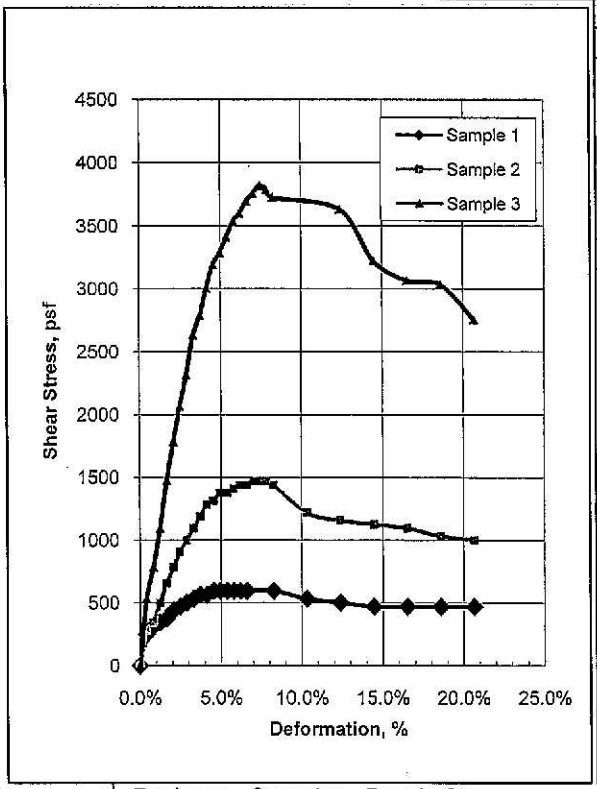
Remarks: *DS-CU* A fully undrained condition may not be attained in this test.

Figure No. 13
Project No. 0760
Date: 10/09/07

Direct Shear



P. Phi (degrees)	36.0	Ult. Phi (degrees)	
P. Cohesion(psf)	270	Ult. Cohesion (psf)	



	Sample Data: Initial			
	1	2	3	4
Moisture %	5.2	5.6	6.2	
Dry Dens., pcf	86.5	86.4	89.1	
Void Ratio	0.947	0.951	0.891	
Saturation %	14.7	15.8	18.9	
Diameter	2.42	2.42	2.42	
Height	1.00	1.00	1.00	
	Sample Data: At Test			
Moisture %	26.5	25.6	23.6	
Dry Dens., pcf	89.1	89.8	92.4	
Void Ratio	0.892	0.876	0.825	
Saturation %	80.3	78.9	77.3	
Diameter	2.42	2.42	2.42	
Height	0.97	0.96	0.96	
Normal Stress, psf	1000	2000	4000	
Shear Stress, psf	595	1471	3819	
Strengths picked at	8.3%	7.9%	7.4%	
Ult. Stress, psf	470	1002	2755	
Strain Rate, in/min	0.020	0.020	0.020	

CTL #	416-312
Client:	Pacific Crest Engineering
Project	FORA Road Improvements - 0760
Tested By:	MD
Reduced By:	RU/MD
Date:	9/19/2007

Specimen #	Boring:	Sample:	Depth, ft:	Visual Soil Classification
1		7-1-1		Yellowish Brown Silty SAND
2		7-1-1		Yellowish Brown Silty SAND
3		7-1-1		Yellowish Brown Silty SAND
4				

Remarks: *DS-CU* A fully undrained condition may not be attained in this test.

Figure No. 14
Project No. 0760
Date: 10/09/07

COOPER TESTING LABORATORY

R-value Test Report (Caltrans 301)

Job No.:	416-308	**Date:**	09/10/07	**Initial Moisture,**	5.1%
Client:	Pacific Crest Engineering	**Tested**	MD	**R-value by Stabilometer**	71
Project:	FORA Road Improvements - 0760	**Reduced**	RU		
Sample	R-1	**Checked**	DC	**Expansion Pressure**	0 psf
Soil Type:	Brown Silty SAND				

Specimen Number	A	B	C	D
Exudation Pressure, psi	800	442	180	
Prepared Weight, grams	1200	1200	1200	
Final Water Added, grams/cc	45	50	57	
Weight of Soil & Mold, grams	3169	3189	3207	
Weight of Mold, grams	2098	2097	2104	
Height After Compaction, in.	2.45	2.46	2.37	
Moisture Content, %	9.0	9.4	10.0	
Dry Density, pcf	121.4	122.8	128.1	
Expansion Pressure, psf	0.0	0.0	0.0	
Stabilometer @ 1000				
Stabilometer @ 2000	28	30	40	
Turns Displacement	3.45	3.5	3.55	
R-value	77	75	65	

Remarks:

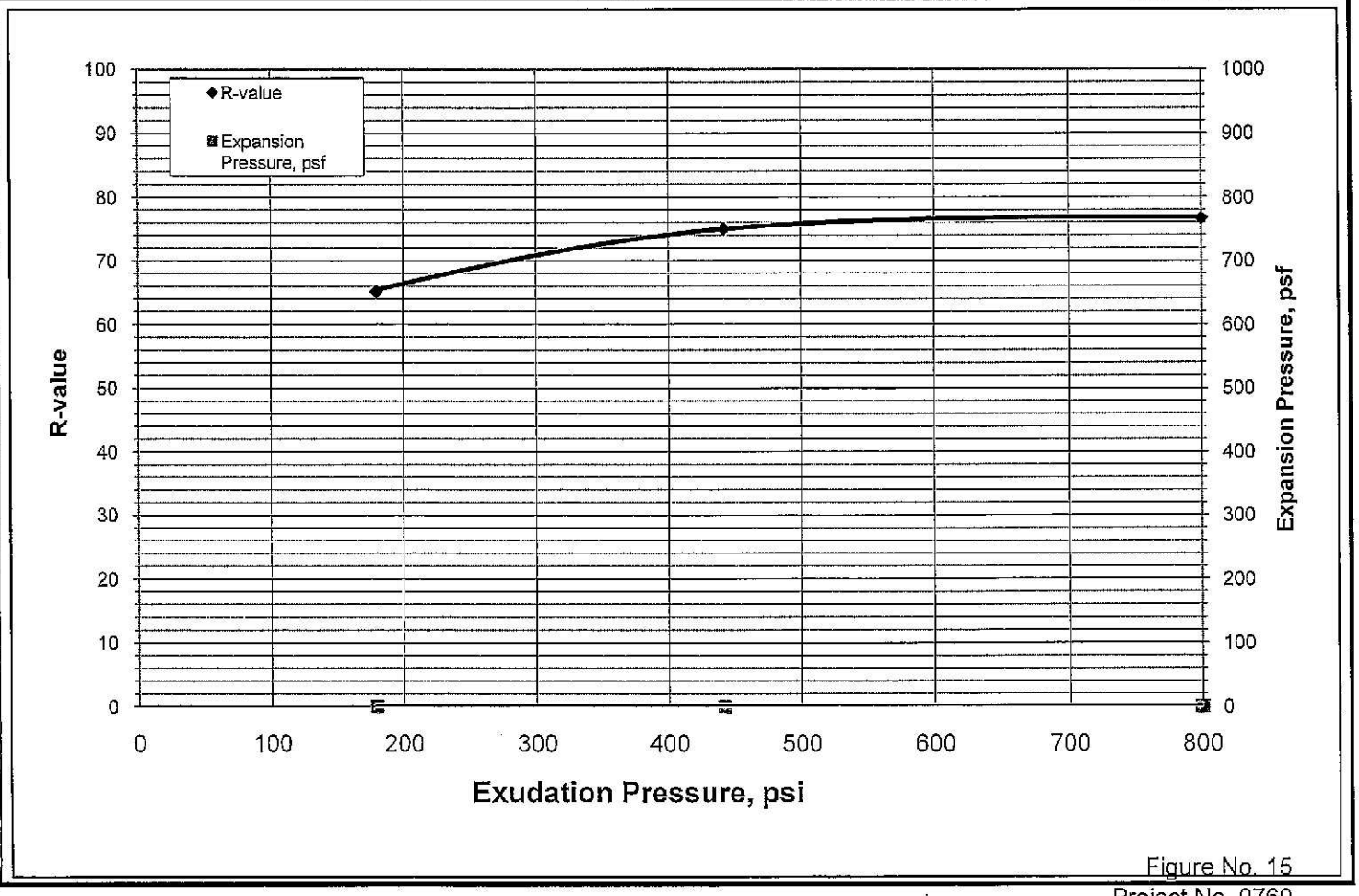


Figure No. 15
Project No. 0760
Date: 10/09/07

COOPER TESTING LABORATORY

R-value Test Report (Caltrans 301)

Job No.:	416-308	**Date:**	09/17/07	**Initial Moisture,**	4.7%
Client:	Pacific Crest Engineering	**Tested**	MD	**R-value by Stabilometer**	71
Project:	FORA Road Improvements - 0760	**Reduced**	RU		
Sample	R-3	**Checked**	DC	**Expansion Pressure**	0 psf
Soil Type:	Grayish Brown Silty SAND				

Specimen Number	A	B	C	D
Exudation Pressure, psi	800	413	130	
Prepared Weight, grams	1200	1200	1200	
Final Water Added, grams/cc	30	60	80	
Weight of Soil & Mold, grams	3085	3125	3138	
Weight of Mold, grams	2081	2098	2104	
Height After Compaction, in.	2.49	2.42	2.52	
Moisture Content, %	7.4	10.0	11.7	
Dry Density, pcf	113.7	116.9	111.2	
Expansion Pressure, psf	0.0	0.0	0.0	
Stabilometer @ 1000				
Stabilometer @ 2000	26	31	43	
Turns Displacement	3.2	3.41	3.58	
R-value	80	74	66	

Remarks:

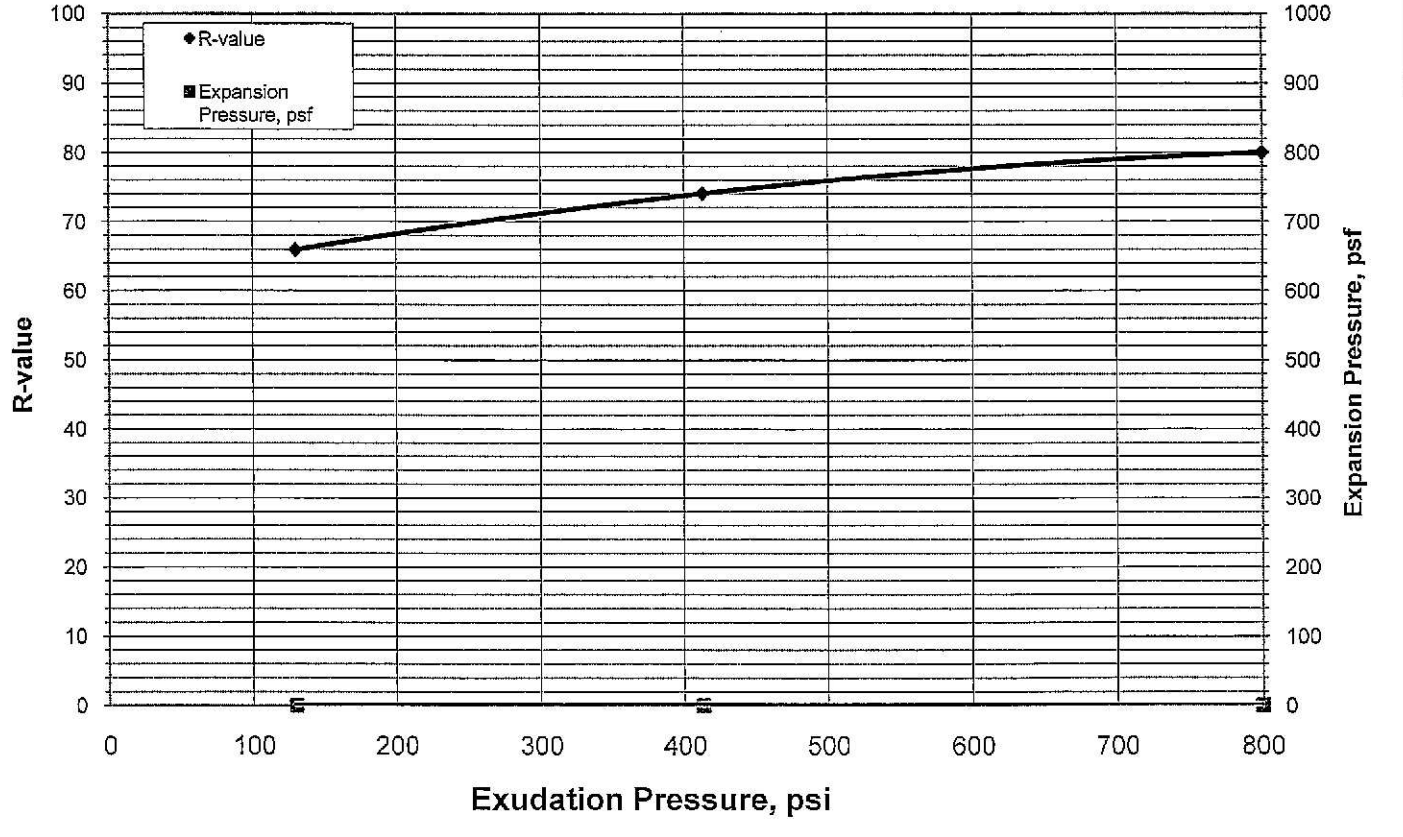


Figure No. 16
Project No. 0760
Date: 10/09/07

R-value Test Report (Caltrans 301)

Job No.:	416-308	**Date:**	09/17/07	**Initial Moisture,**	5.4%
Client:	Pacific Crest Engineering	**Tested**	MD	**R-value by Stabilometer**	72
Project:	FORA Road Improvements - 0760	**Reduced**	RU		
Sample	R-6	**Checked**	DC	**Expansion Pressure**	0 psf
Soil Type:	Light Grayish Brown Silty SAND				

Specimen Number	A	B	C	D
Exudation Pressure, psi	800	67	230	
Prepared Weight, grams	1200	1200	1200	
Final Water Added, grams/cc	40	90	72	
Weight of Soil & Mold, grams	3068	3107	3134	
Weight of Mold, grams	2123	2097	2104	
Height After Compaction, in.	2.41	2.57	2.59	
Moisture Content, %	8.9	13.3	11.7	
Dry Density, pcf	109.0	105.0	107.8	
Expansion Pressure, psf	0.0	0.0	0.0	
Stabilometer @ 1000				
Stabilometer @ 2000	24	46	39	
Turns Displacement	3.31	3.7	3.61	
R-value	80	64	70	

Remarks:

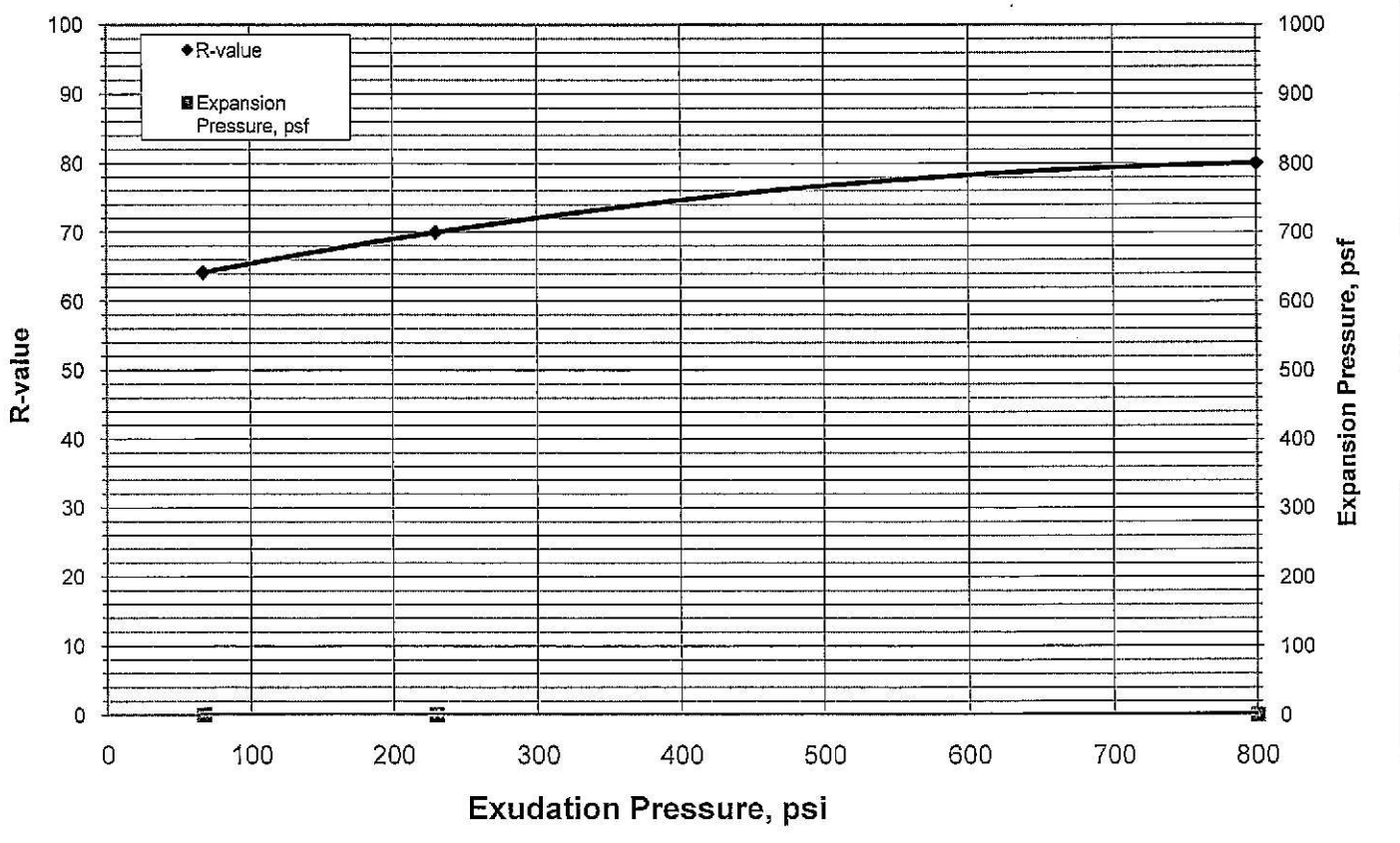


Figure No. 17
Project No. 0760
Date: 10/09/07

R-value Test Report (Caltrans 301)

Job No.:	416-308	**Date:**	09/12/07	**Initial Moisture,**	4.6%
Client:	Pacific Crest Engineering	**Tested**	MD	**R-value by Stabilometer**	64
Project:	FORA Road Improvements - 0760	**Reduced**	RU		
Sample	R-7	**Checked**	DC	**Expansion Pressure**	0 psf
Soil Type:	Grayish Brown Silty SAND				

Specimen Number	A	B	C	D
Exudation Pressure, psi	620	295	175	
Prepared Weight, grams	1200	1200	1200	
Final Water Added, grams/cc	60	90	120	
Weight of Soil & Mold, grams	2934	3030	3005	
Weight of Mold, grams	2123	2104	2098	
Height After Compaction, in.	2.37	2.58	2.37	
Moisture Content, %	9.8	12.5	15.1	
Dry Density, pcf	94.3	96.6	100.7	
Expansion Pressure, psf	0.0	0.0	0.0	
Stabilometer @ 1000				
Stabilometer @ 2000	41	46	52	
Turns Displacement	3.4	3.75	3.85	
R-value	65	64	54	

Remarks:

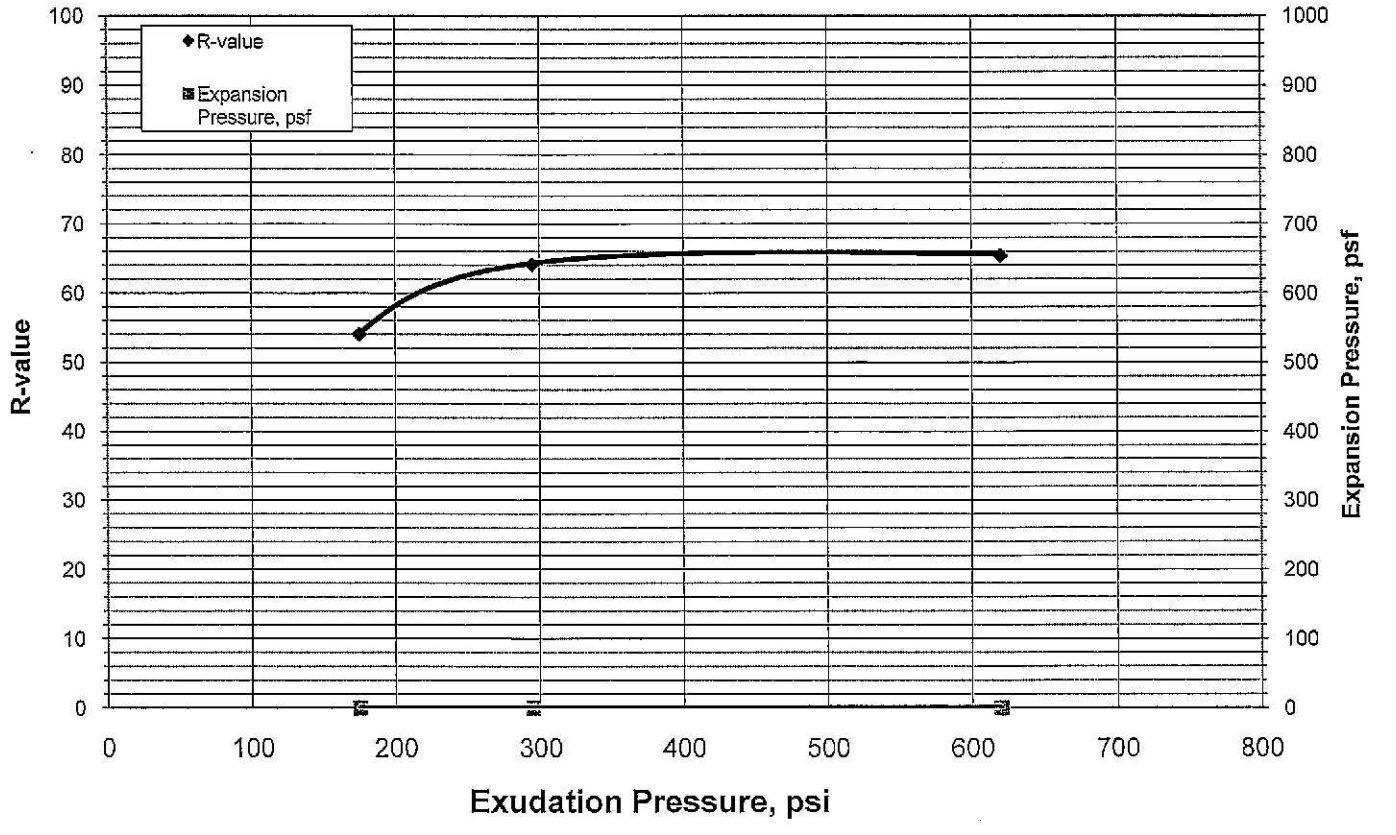


Figure No. 18
Project No. 0760
Date: 10/09/07

Corrosivity Test Summary

CTL # 416-312 | Date: 9/20/2007 | Tested By: PJ | Checked: PJ
Client: Pacific Crest Engineering | Project: FORA Rd. Improvements | Proj. No: 0760
Remarks:

Sample Location or ID			Resistivity @ 15.5 °C (Ohm-cm)			Chloride	Sulfate		pH	ORP	Moisture	Soil Visual Description
Boring	Sample, No.	Depth, ft.	As Rec.	Minimum	Saturated	mg/kg	mg/kg	%		(Redox)	As Received	
						Dry Wt.	Dry Wt.	Dry Wt.		mv	%	
			ASTM G57	Cal 643	ASTM G57	Cal 422-mod.	Cal 417-mod.	Cal 417-mod.	Cal 643	SM 2580B	ASTM D2216	
-	2-1-1	-	-	3284	-	5	8	0.0008	5.7	-	5.3	Brown SAND
-	4-1-1	-	-	6962	-	19	8	0.0008	6.5	-	8.8	Gray Silty SAND

Corrosivity Correlation Tables

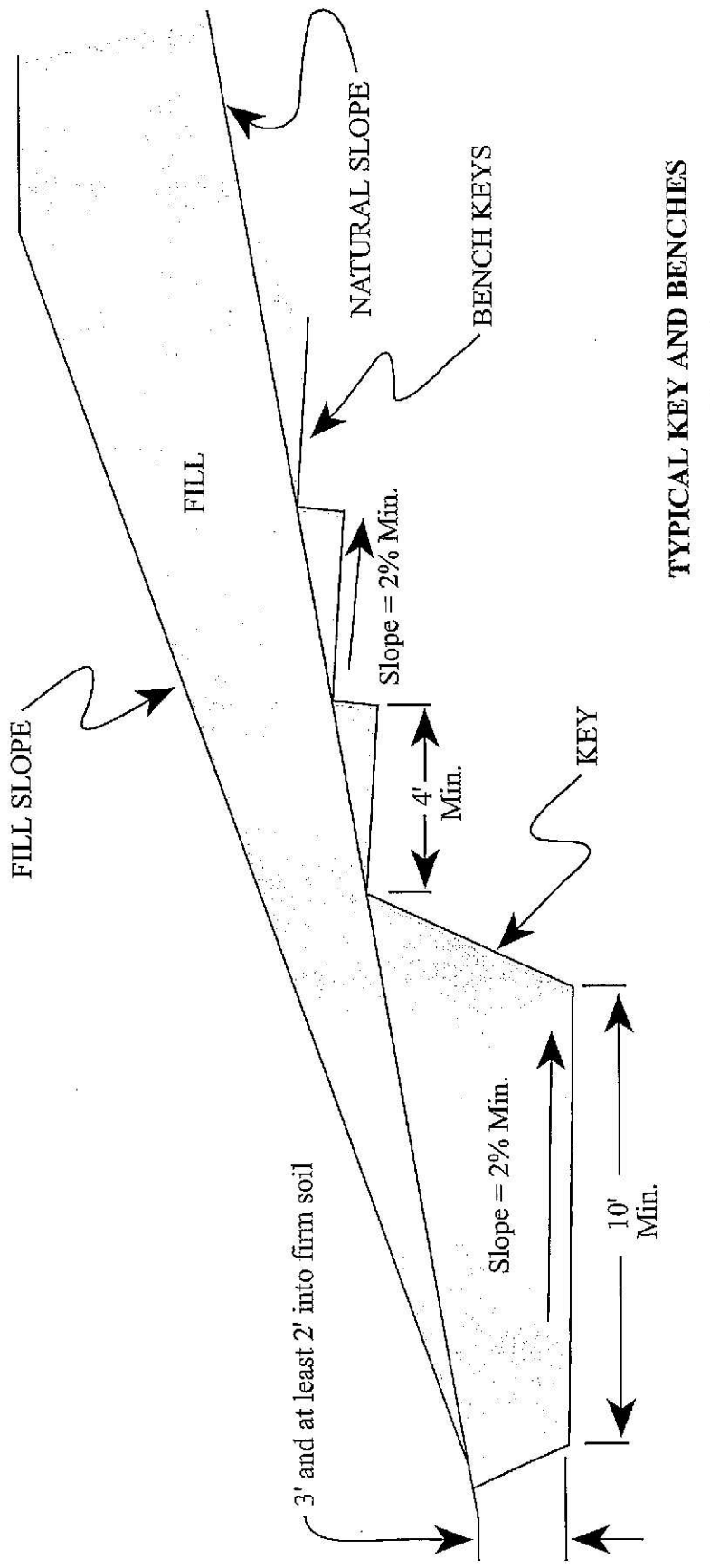
Resistivity (ohm-cm)	
Very Corrosive	0-1,000
Corrosive	1,000-2,000
Fairly Corrosive	2,000-5,000
Midly Corrosive	5,000-10,000
Negligible	>10,000

Chloride Conc. (mg/kg)	
Severe	>1,500
Positive	300-1,500
Negligible	0-300

Sulfate Conc. (mg/kg)	
Severe	>5,000
Considerable	2,000-5,000
Positive	1,000-2,000
Negligible	0-1,000

pH	
potential for acid attack on concrete and steel	<6

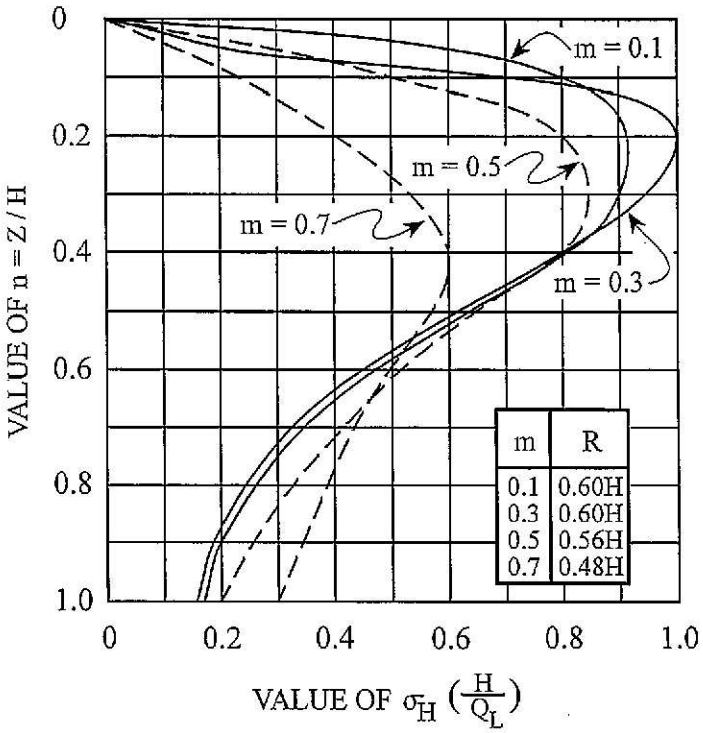
Figure No. 19
Project No. 0760
Date: 10/09/07



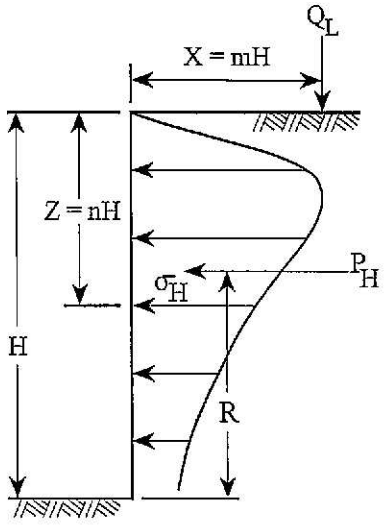
TYPICAL KEY AND BENCHES
not to scale

Pacific Crest Engineering Inc. 444 Airport Blvd., Suite 106 Watsonville, CA 95076	**Keyway Detail** Gigling and South Boundary Road Seaside, California	Figure No. 20 Project No. 0760 Date: 10/09/07

LINE LOAD



m	R
0.1	0.60H
0.3	0.60H
0.5	0.56H
0.7	0.48H



FOR $m \leqq 0.4$:

$$\sigma_H \left(\frac{H}{Q_L}\right) = \frac{0.20\,n}{(0.16+n^2)^2}$$

$$P_H = 0.55\,Q_L$$

FOR $m > 0.4$:

$$\sigma_H \left(\frac{H}{Q_L}\right) = \frac{1.28\,m^2 n}{(m^2+n^2)^2}$$

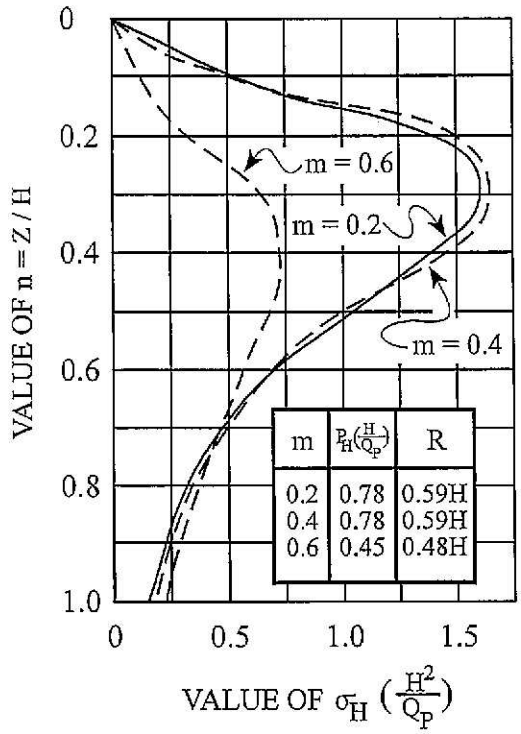
RESULTANT $P_H = \dfrac{0.64\,Q_L}{(m^2+1)}$

PRESSURES FROM LINE LOAD Q_L

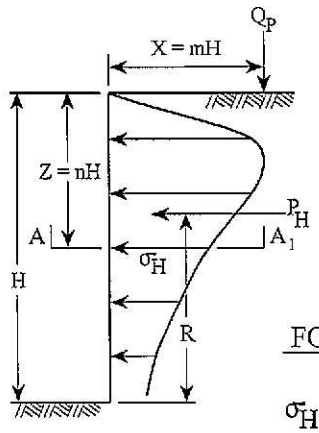
(BOISSINESQ EQUATION MODIFIED BY EXPERMENT)

REFERENCE: Design Manual
NAVFAC DM-7.02
Figure 11
Page 7.2-74

POINT LOAD



m	$P_H\left(\frac{H}{Q_P}\right)$	R
0.2	0.78	0.59H
0.4	0.78	0.59H
0.6	0.45	0.48H



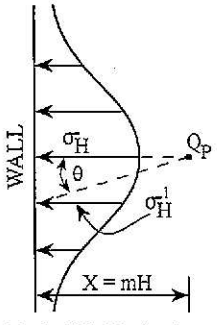
FOR $m \leqq 0.4$:

$$\sigma_H \left(\frac{H^2}{Q_P}\right) = \frac{0.28\,n^2}{(0.16+n^2)^3}$$

FOR $m > 0.4$:

$$\sigma_H \left(\frac{H^2}{Q_P}\right) = \frac{1.77\,m^2 n^2}{(m^2+n^2)^3}$$

$$\sigma_H^1 = \sigma_H \cos^2(1.1\,\theta)$$

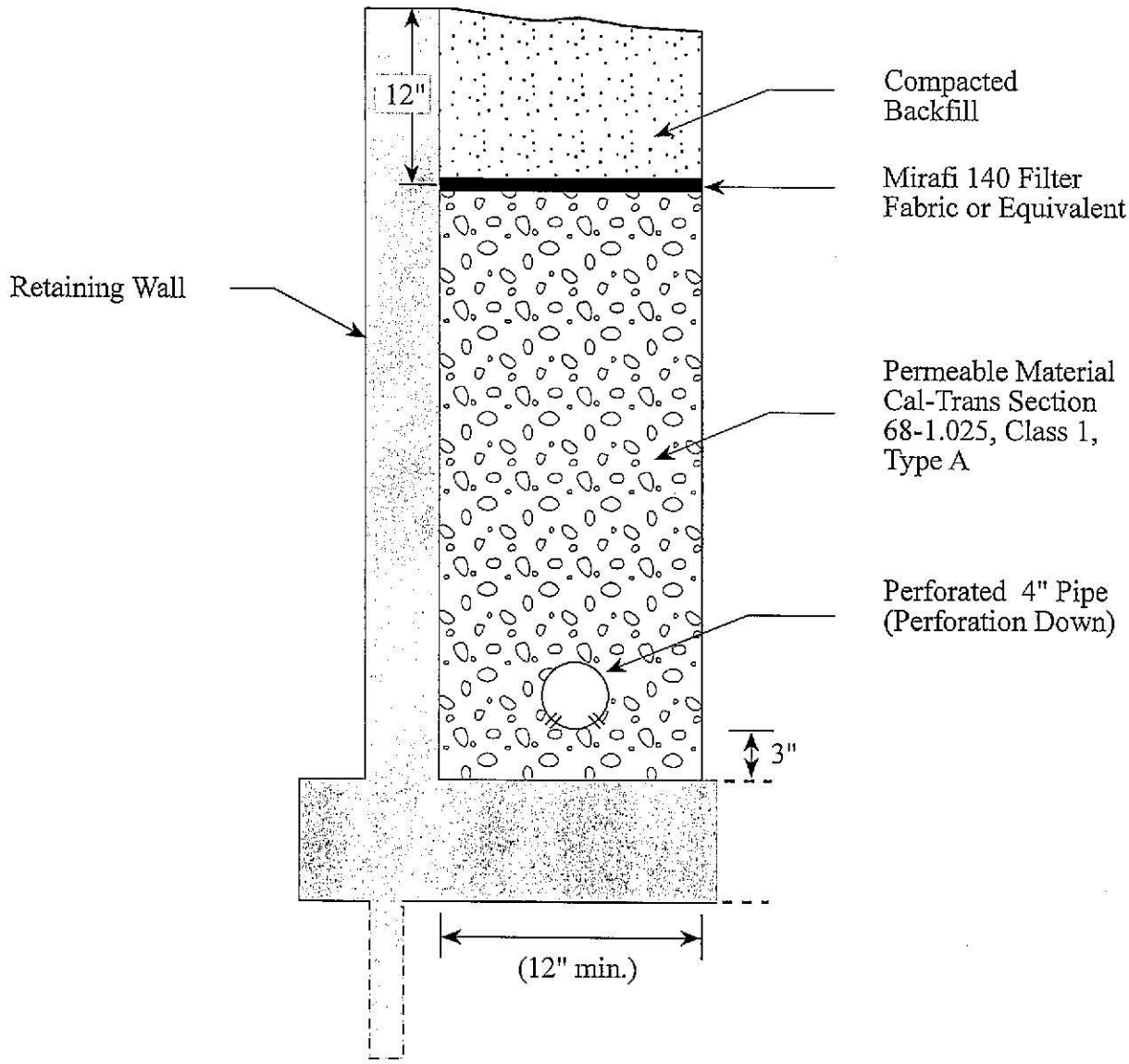


SECTION $A\text{-}A_1$

PRESSURES FROM POINT LOAD Q_P

(BOISSINESQ EQUATION MODIFIED BY EXPERMENT)

Pacific Crest Engineering Inc. 444 Airport Blvd., Suite 106 Watsonville, CA 95076	**Surcharge Pressure Diagram-1** Gigling and South Boundary Road Seaside, California	Figure No. 21 Project No. 0760 Date: 10/09/07



Not to Scale

Pacific Crest Engineering Inc. 444 Airport Blvd., Suite 106 Watsonville, CA 95076	**Typical Retaining Wall Drain Detail** Gigling and South Boundary Road Seaside, California	Figure No. 22 Project No. 0760 Date: 10/09/07

Appendix G

Noise Impact Analysis
(Ambient Air Quality and Noise Consultants)

NOISE IMPACT ASSESSMENT

FOR

GIGLING ROAD AND SOUTH BOUNDARY ROAD RECONSTRUCTION PROJECTS

AUGUST 2009

PREPARED FOR:

PMC
585 CANNERY ROW, STE. 304
MONTEREY, CA 93940

PREPARED BY:

AMBIENT
AIR QUALITY & NOISE CONSULTING

5314 SHELATO WAY
CARMICHAEL, CA 95608
TEL/FAX: 916.359.2700

INTRODUCTION

This section includes a summary of applicable regulations, a description of ambient noise conditions, and an analysis of potential noise impacts associated with the proposed project. Mitigation measures are recommended, as necessary, to reduce significant noise impacts.

ACOUSTIC FUNDAMENTALS

Noise is generally defined as sound that is loud, disagreeable, or unexpected. Sound is mechanical energy transmitted in the form of a wave because of a disturbance or vibration. Sound levels are described in terms of both amplitude and frequency.

AMPLITUDE

Amplitude is defined as the difference between ambient air pressure and the peak pressure of the sound wave. Amplitude is measured in decibels (dB) on a logarithmic scale. For example, a 65 dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). Amplitude is interpreted by the ear as corresponding to different degrees of loudness. Laboratory measurements correlate a 10 dB increase in amplitude with a perceived doubling of loudness and establish a 3 dB change in amplitude as the minimum audible difference perceptible to the average person.

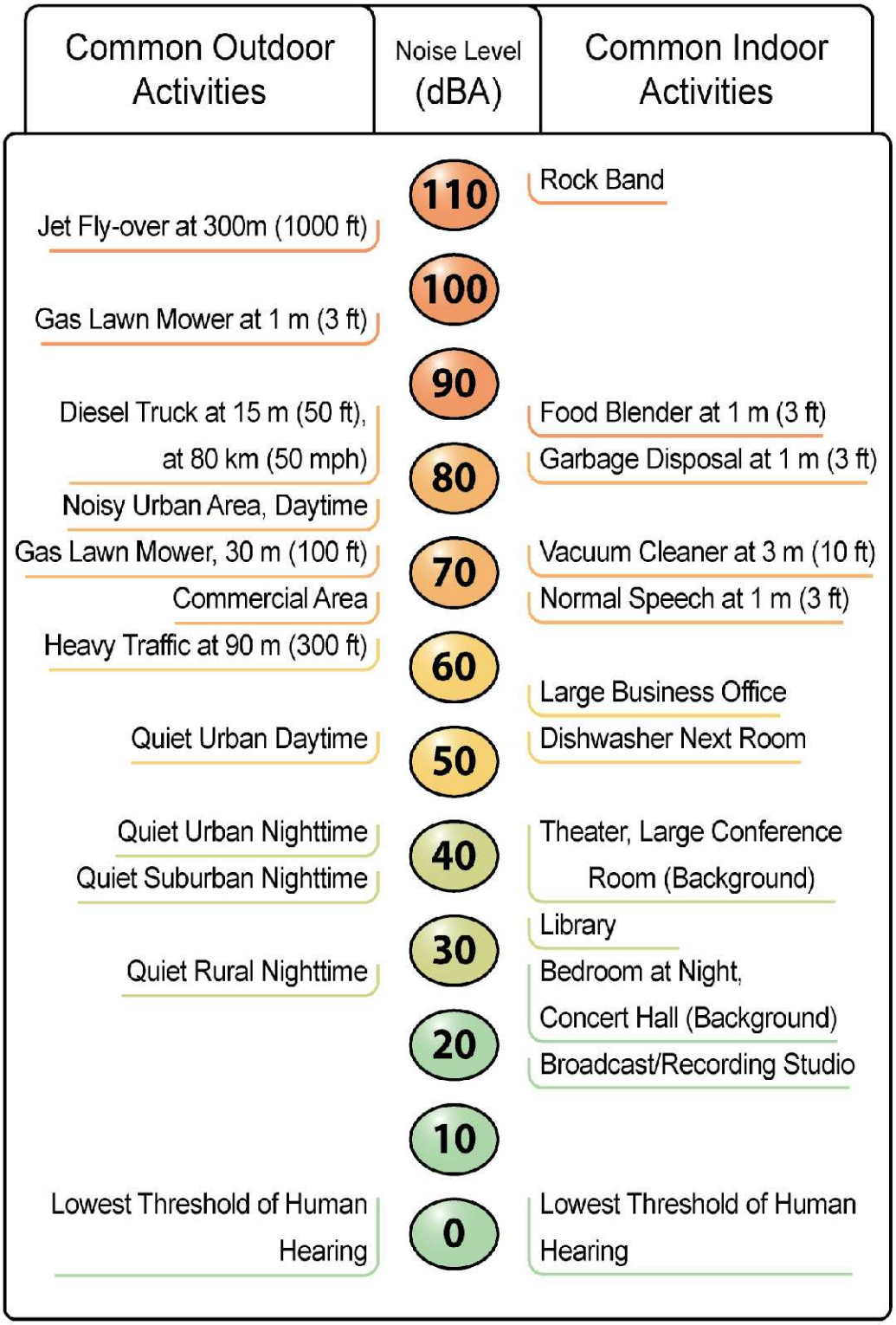
FREQUENCY

The frequency of a sound is defined as the number of fluctuations of the pressure wave per second. The unit of frequency is the Hertz (Hz). One Hz equals one cycle per second. The human ear is not equally sensitive to sound of different frequencies. For instance, the human ear is more sensitive to sound in the higher portion of this range than in the lower and sound waves below 16 Hz or above 20,000 Hz cannot be heard at all. To approximate the sensitivity of the human ear to changes in frequency, environmental sound is usually measured in what is referred to as "A-weighted decibels" (dBA). On this scale, the normal range of human hearing extends from about 10 dBA to about 140 dBA (U.S. EPA 1971). Common community noise sources and associated noise levels, in dBA, are depicted in **Figure 1**.

ADDITION OF DECIBELS

Because decibels are logarithmic units, sound levels cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one automobile produces a sound level of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB; rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together would produce an increase of 5 dB.

Figure 1
Common Noise Levels



Source: Caltrans 2008

SOUND PROPAGATION & ATTENUATION

Geometric Spreading

Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level decreases (attenuates) at a rate of approximately 6 decibels for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and, hence, can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately 3 decibels for each doubling of distance from a line source, depending on ground surface characteristics. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water,), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), an excess ground-attenuation value of 1.5 decibels per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation for soft surfaces results in an overall attenuation rate of 4.5 decibels per doubling of distance from the source.

Atmospheric Effects

Receptors located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) from the highway due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also affect traffic noise levels.

Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in minimum 5 dB of noise reduction. Taller barriers provide increased noise reduction.

NOISE DESCRIPTORS

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited in the range of audible frequencies as well as in the way it perceives the sound-pressure level in that range. In general, people are most sensitive to the frequency range of 1,000–8,000 Hz, and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies, which is referred to as the "A-weighted" sound level (expressed in units of dBA).

The A-weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Other weighting networks have been devised to address high noise levels or other special problems (e.g., B-, C-, and D-scales), but these scales are rarely used in conjunction with environmental noise.

The intensity of environmental noise fluctuates over time, and several descriptors of time-averaged noise levels are typically used. For the evaluation of environmental noise, the most commonly used descriptors are L_{eq}, L_{dn}, CNEL and SEL. The energy-equivalent noise level, L_{eq}, is a measure of the average energy content (intensity) of noise over any given period. Many communities use 24-hour descriptors of noise levels to regulate noise. The day-night average noise level, L_{dn}, is the 24-hour average of the noise intensity, with a 10-dBA "penalty" added for nighttime noise (10 p.m. to 7 a.m.) to account for the greater sensitivity to noise during this period. CNEL, the community equivalent noise level, is similar to L_{dn} but adds an additional 5-dBA penalty for evening noise (7 p.m. to 10 p.m.) Another descriptor that is commonly discussed is the single-event noise exposure level, also referred to as the sound-exposure level, expressed as SEL. The SEL describes a receiver's cumulative noise exposure from a single noise event, which is defined as an acoustical event of short duration (i.e.,0.5 second), such as a backup beeper, the sound of an airplane traveling overhead, or a train whistle. Common noise level descriptors are summarized in **Table 1**.

Table 1
Common Acoustical Descriptors

Descriptor	Definition
Energy Equivalent Noise Level (L_{eq})	The energy mean (average) noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value (in dBA) is calculated.
Minimum Noise Level (L_{min})	The minimum instantaneous noise level during a specific period of time.
Maximum Noise Level (L_{max})	The maximum instantaneous noise level during a specific period of time.
Day-Night Average Noise Level (DNL or L_{dn})	The DNL was first recommended by the U.S. EPA in 1974 as a "simple, uniform and appropriate way" of measuring long term environmental noise. DNL takes into account both the frequency of occurrence and duration of all noise events during a 24-hour period with a 10 dBA "penalty" for noise events that occur between the more noise-sensitive hours of 10:00 p.m. and 7:00 a.m. In other words, 10 dBA is "added" to noise events that occur in the nighttime hours to account for increases sensitivity to noise during these hours.
Community Noise Equivalent Level (CNEL)	The CNEL is similar to the Ldn described above, but with an additional 5 dBA "penalty" added to noise events that occur between the hours of 7:00 p.m. to 10:00 p.m. The calculated CNEL is typically approximately 0.5 dBA higher than the calculated Ldn.
Single Event Level (SEL)	The level of sound accumulated over a given time interval or event. Technically, the sound exposure level is the level of the time-integrated mean square A-weighted sound for a stated time interval or event, with a reference time of one second.

HUMAN RESPONSE TO NOISE

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases. The acceptability of noise and the threat to public well-being are the basis for land use planning policies preventing exposure to excessive community noise levels.

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise over differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted: the so-called "ambient" environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged. Regarding increases in A-weighted noise levels, knowledge of the following relationships will be helpful in understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of 1 dB cannot be perceived by humans;
- Outside of the laboratory, a 3-dB change is considered a just-perceivable difference;
- A change in level of at least 5 dB is required before any noticeable change in community response would be expected. An increase of 5 dB is typically considered substantial;
- A 10-dB change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

A limitation of using a single noise-level increase value to evaluate noise impacts, as discussed above, is that it fails to account for pre-project noise conditions. With this in mind, the Federal Interagency Committee on Noise (FICON) developed guidance to be used for the assessment of project-generated increases in noise levels that take into account the ambient noise level. The FICON recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (i.e., CNEL, L_{dn}). FICON-recommended noise evaluation criteria are summarized in **Table 2** (FICON 2000).

As depicted in **Table 2**, an increase in the traffic noise level of 5.0, or greater, would typically be considered to result in increased levels of annoyance where existing ambient noise levels are less than 60 dB. Within areas where the ambient noise level ranges from 60 to 65 dB, increased levels of annoyance would be anticipated at increases of 3 dB, or greater. Increases of 1.5 dB, or greater, could result in increased levels of annoyance in areas where the ambient noise level exceeds 65 dB. The rationale for the FICON-recommended criteria is that as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause significant increases in annoyance (FICON 2000).

Table 2 Federal Interagency Committee on Noise Recommended Criteria for Evaluation of Increases in Ambient Noise Levels	
Ambient Noise Level Without Project	**Increase Required for Significant Impact**
< 60 dB	5.0 dB, or greater
60-65 dB	3.0 dB, or greater
> 65 dB	1.5 dB, or greater
Source: FICON 2000	

EFFECTS OF NOISE ON HUMAN ACTIVITIES

The extent to which environmental noise is deemed to result in increased levels of annoyance, activity interference, and sleep disruption varies greatly from individual to individual depending on various factors, including the loudness or suddenness of the noise, the information value of the noise (e.g., aircraft overflights, child crying, fire alarm), and an individual's sleep state and sleep habits. Over time, adaptation to noise events and increased levels of noise may also occur. In terms of land use compatibility, environmental noise is often evaluated in terms of the potential for noise events to result in increased levels of annoyance, sleep disruption, or interference with speech communication, activities, and learning.

SPEECH COMMUNICATION

For most noise-sensitive land uses, an interior noise level of 45 dBA L_{eq} is typically identified for the protection of speech communication in order to provide for 100-percent intelligibility of speech sounds. Assuming an average 20-dB reduction in sound level between outdoors and indoors (which is an average amount of sound attenuation that assumes windows are closed), this interior noise level would equates to an exterior noise level of 65 dBA L_{eq}. For outdoor voice communication, an exterior noise level of 60 dBA L_{eq} allows normal conversation at distances up to 2 meters with 95 percent sentence intelligibility (U.S. EPA 1974.) Based on this information, speech interference begins to become a problem when steady noise levels reach approximately 60 to 65 dBA (Caltrans 2002(a.)

LEARNING

Closely related to speech interference are the effects of noise on learning and, more broadly, on cognitive tasks. Recent studies have shown a strong relationship between noise and children's reading ability. Children's attention spans also appear to be adversely affected by noise. Adults are affected as well. Some studies indicate that, in a noisy environment, adults have increased difficulty accomplishing complex tasks. One of the issues associated with assessment of these effects is which noise metric correlates most closely with the impacts. For example, DNL, with its nighttime weighting, may not be the best measure of noise impacts on schools given that operational activities are often limited to the daytime hours (Caltrans 2002(a.)

As discussed above, an interior noise level of 45 dBA L_{eq} would typically provide for 100-percent speech intelligibility. The acceptability of interior noise levels are also source dependent, depending on the perceived intrusiveness of the source. For instance, traffic noise is generally considered to be less intrusive than noise generated by construction activities. With regard to transportation sources, the California Department of Transportation has adopted abatement

criteria that limit the maximum interior average-hourly noise level within classrooms, as well as other noise-sensitive interior uses, to 52 dBA L_{eq} (Caltrans 2006.)

ANNOYANCE & SLEEP DISRUPTION

With regard to potential increases in annoyance, activity interference, and sleep disruption, land use compatibility determinations are typically based on the use of the cumulative noise exposure metrics (i.e., CNEL or L_{dn}). Perhaps the most comprehensive and widely accepted evaluation of the relationship between noise exposure and the extent of annoyance was one originally developed by Theodore J. Schultz in 1978. In 1978 the research findings of Theodore J. Schultz provided support for Ldn as the descriptor for environmental noise. Research conducted by Schultz identified a correlation between the cumulative noise exposure metric and individuals who were highly annoyed by transportation noise. The Schultz curve, expressing this correlation, became a basis for noise standards. When expressed graphically, this relationship is typically referred to as the Schultz curve. The Schultz curve indicates that approximately 13 percent of the population is highly annoyed at a noise level of 65 dBA L_{dn}. It also indicates that the percent of people describing themselves as being highly annoyed accelerates smoothly between 55 and 70 dBA L_{dn}. A noise level of 65 dBA L_{dn} is a commonly referenced dividing point between lower and higher rates of people describing themselves as being highly annoyed.

The Schultz curve and associated research became the basis for many of the noise criteria subsequently established for federal, state, and local entities. Most federal and state of California regulations and policies related to transportation noise sources establish a noise level of 65 dBA CNEL/L_{dn} as the basic limit of acceptable noise exposure for residential and other noise-sensitive land uses. For instance, with respect to aircraft noise, both the Federal Aviation Administration (FAA) and the State of California have identified a noise level of 65 dBA L_{dn} as the dividing point between normally compatible and normally incompatible residential land use generally applied for determination of land use compatibility. For noise-sensitive land uses exposed to aircraft noise, noise levels in excess of 65 dBA CNEL/L_{dn} are typically considered to result in a potentially significant increase in levels of annoyance (Caltrans 2002(a.)

Allowing for an average exterior-to-interior noise reduction of 20 dB, an exterior noise level of 65 dBA CNEL/Ldn would equate to an interior noise level of 45 dBA CNEL/L_{dn}. An interior noise level of 45 dB CNEL/L_{dn} is generally considered sufficient to protect against activity interference at most noise-sensitive land uses, including residential dwellings, and would also be sufficient to protect against sleep interference (U.S. EPA, 1971.) Within California, the California Building Code establishes a noise level of 45 dBA CNEL as the maximum acceptable interior noise level for residential uses (other than detached single-family dwellings). Use of the 45 dBA CNEL/L_{dn} threshold is further supported by recommendations provided in the State of California Office of Planning and Research's *General Plan Guidelines* (2002), which recommend an interior noise level of 45 dB CNEL/L_{dn} as the maximum allowable interior noise level sufficient to permit "normal residential activity" (OPR 2003.)

The cumulative noise exposure metric is currently the only noise metric for which there is a substantial body of research data and regulatory guidance defining the relationship between noise exposure, people's reactions, and land use compatibility. However, when evaluating environmental noise impacts involving intermittent noise events, such as aircraft overflights and train passbys, the use of cumulative noise metrics may not provide a thorough understanding of the resultant impact. The general public often finds it difficult to understand the relationship between intermittent noise events and cumulative noise exposure metrics. In such instances, supplemental use of single-event noise metrics, such as the SEL descriptor, may be helpful as a

means of increasing public understanding regarding the relationship between these metrics and the extent of the resultant noise impact (Caltrans 2002(a.))

Although the use of supplemental noise descriptors can provide increased understanding of intermittent noise events and relationship to the cumulative noise metrics, current environmental regulations do not identify quantitative criteria, metrics, or computation methods pertaining to single-event noise exposure for determination of land use compatibility. However, with regard to aircraft noise exposure, FICAN has provided non-regulatory guidance for estimating the expected percent of awakenings that may result from single aircraft noise events. For example, at an indoor sound exposure of SEL 80 dBA, the FICAN data indicates that approximately 10 percent of exposed individuals would be awakened. Although some estimates of the percentage of people expected to be awakened when exposed to specific single-event noise levels inside a home have been provided, no quantitative determination as to what frequency of awakening would be acceptable has been made by Federal, State or local entities. Although no quantitative thresholds have yet been identified with regard to single-event noise exposure, the indication from several studies is that the noise threshold for significant occurrence of sleep disruption is higher than for speech interference (Caltrans 2002(a.))

EXISTING ENVIRONMENT

NOISE-SENSITIVE LAND USES

Noise-sensitive land uses generally include those uses where exposure to noise would result in adverse effects, as well as uses where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Other noise-sensitive land uses include hospitals, convalescent facilities, parks, hotels, churches, libraries, and other uses where low interior noise levels are essential. Noise-sensitive land uses located along Gigling Road and S. Boundary Road are discussed separately, as follows:

Gigling Road Reconstruction Project

The nearest noise-sensitive land uses located along Gigling Road consist of residential housing, the nearest of which is located approximately 100 feet south of the centerline of Gigling Road. Various public and office-related uses are also located within approximately 100 feet of the centerline of Gigling Road.

S. Boundary Road Reconstruction Project

The nearest noise-sensitive land uses located along S. Boundary Road consist of multi-family residential dwellings located approximately 750 feet southwest of S. Boundary Road, along Justin Court. The nearest commercial office uses consist of medical office buildings located approximately 300 feet to the south, along Upper Ragsdale Drive. The Community Hospital building is also located along Upper Ragsdale Drive, approximately 800 feet south of S. Boundary Road.

AMBIENT NOISE LEVELS

The dominant noise source in the project areas is vehicle traffic on area roadways. Existing traffic noise levels (in dBA CNEL) along Gigling Road and S. Boundary Road and distance to existing roadway noise contours are summarized in **Table 3.** As depicted, existing traffic noise

levels at approximately 100 feet from the roadway centerline of Gigling Road and S. Boundary Road range from approximately 57 to 58 dBA CNEL, respectively.

Table 3
Existing Traffic Noise Levels

Roadway Segment	Predicted Noise Level (dBA L_{dn}/CNEL)			
	100 Feet From Roadway Centerline	Distance to Contours (feet)		
		55	60	65
Gigling Road, East of General Jim Moore Blvd.	56.86	132.7	61.8	WR
S. Boundary Road, East of General Jim Moore Blvd.	58.65	174.6	81.3	WR

Traffic noise levels were predicted using the FHWA traffic noise prediction model. Modeled traffic noise levels and contour distances do not take into account intervening terrain or natural/man-made features.
WR = Within Roadway Right-of-way

GROUND-BORNE VIBRATION

No major existing sources of ground-borne vibration were identified in the project area. Vehicle traffic on area roadways, particularly heavy-duty trucks, can result in increased groundborne vibration. However, groundborne vibration levels associated with vehicle traffic is typically considered minor and would not exceed applicable criteria at the project site boundaries.

REGULATORY SETTING

NOISE

The proposed Gigling Road project area is located within the City of Seaside. Portions of the proposed S. Boundary Road project area are located within the cities of Del Rey Oaks and Monterey. To ensure that noise sources do not adversely affect sensitive receptors, the applicable General Plans include various policies and land use compatibility noise standards that are relied upon when making planning and development decisions. Applicable noise standards and policies are identified, as follows:

Gigling Road Reconstruction Project

City of Seaside General Plan

To ensure that noise producers do not adversely affect sensitive receptors, the City uses land use compatibility standards when planning and making development decisions. **Table 4** summarizes City noise standards for various types of land uses. The standards represent the maximum acceptable noise level and are used to determine noise impacts. These noise standards are the basis for the development of the land use compatibility guidelines presented in **Table 5**. If the noise level of a project falls within Zone A or Zone B, the project is considered compatible with the noise environment. Zone A implies that no mitigation will be needed. Zone B implies that minor mitigation measures may be required to meet the City's noise standards. All development project proponents are required to demonstrate that the noise standards will be met prior to approval of projects. If the noise level of a project falls within Zone C, substantial noise mitigation will be necessary to meet the noise standards. Mitigation may involve construction of noise barriers and substantial building sound insulation. Projects in Zone C can be successfully mitigated; however, project proponents must demonstrate that the noise standards will be met

prior to issuance of building permits. If noise levels fall outside of Zones A, B, and C, projects are considered clearly incompatible with the noise environment and should not be approved.

Table 4
City of Seaside General Plan
Interior and Exterior Noise Standards

Land Use	Noise Standards (dBA CNEL)	
	Exterior	Interior
Residential	65	45
Mixed Use Residential	70	45
Commercial	70	--
Office	70	50
Industrial	75	55
Public Facilities	70	50
Schools	50	50

Source: City of Seaside 2004

Table 5
City of Seaside General Plan
Noise/Land Use Compatibility Matrix

Land Use Category	Community Noise Equivalent Level (CNEL, dB)						
	55		60	65	70	75	80
Residential - Single Family, Multifamily, Duplex	A	A	B	B	C	--	--
Residential - Mobile Homes	A	A	B	C	C	--	--
Transient Lodging - Motels, Hotels	A	A	B	B	C	C	--
Schools, Libraries, Churches, Hospitals, Nursing Homes	A	A	B	C	C	--	--
Auditoriums, Concert Halls, Amphitheaters, Meeting Halls	B	B	C	C	--	--	--
Sports Arenas, Outdoor Spectator Sports, Amusement Parks	A	A	A	B	B	--	--
Playgrounds, Neighborhood Parks	A	A	A	B	C	--	--
Golf Courses, Riding Stables, Cemeteries	A	A	A	A	B	C	C
Office and Professional Buildings	A	A	A	B	B	C	--
Commercial Retail, Banks, Restaurants, Theaters	A	A	A	A	B	B	C
Industrial, Manufacturing, Utilities, Wholesale, Service Stations	A	A	A	A	B	B	B
Agriculture	A	A	A	A	A	A	A

A = Normally Acceptable - Specified land use is satisfactory based on the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
B = Conditionally Acceptable - New construction or development should be undertaken only after a detailed analysis of the noise requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
C = Normally Unacceptable - New construction or development should generally be discouraged. If it does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
-- = Clearly Unacceptable - New construction or development should generally not be undertaken.
Source: City of Seaside 2004

S. Boundary Road Reconstruction Project

City of Monterey General Plan

The City of Monterey General Plan includes various policies to protect citizens from excessive noise levels. Noise policies applicable to the proposed project include the following:

Noise-Motor Vehicle Noise

- Policy a.5: Protect areas adjacent to roadways and freeways with landscaped noise buffers or other means; sound walls should not be allowed.
- Policy a.6: Develop and encourage the use of non-automobile travel modes such as bicycle, pedestrian and transit alternatives.

Noise-New Development

- Policy d.1: The City can require noise mitigations to reduce interior noise levels to an acceptable level. Table 8 (Table 6 of this report) establishes the land use compatibility standards for new development.
- Policy d.2: Limit hours of noise generating construction activities. Include this requirement as a condition of project approval.

Table 6
City of Monterey General Plan
Land Use Compatibility Noise Criteria

Land Use Category	Noise Exposure Zones (L_{dn} or CNEL) dBA			
	I	II	III	IV
Residential – low density, Single family, duplex, mobile homes	<60	55-70	70-75	>75
Residential – multi-family	<65	60-70	70-75	>75
Transient lodging - motels, hotels	<65	60-70	70-80	>80
Schools, libraries, churches, hospitals, nursing homes	<70	60-70	70-80	>80
Auditoriums, concert halls, amphitheaters	--	--	<70	>65
Sports arena, outdoor spectator sports	--	--	<75	>70
Playgrounds, neighborhood Parks	<70	67-75	>77	--
Golf courses, riding stables, water recreation, cemeteries	<70	--	70-80	>80
Office buildings, business commercial and professional	<70	67-75	>75	--
Industrial, manufacturing, utilities, agriculture	<75	70-80	>75	--

Noise Zone I	*Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.*
Noise Zone II	*Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction but with closed windows and fresh air supply systems or air conditioning will normally suffice.*
Noise Zone III	*Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation feature included in the design.*
Noise Zone IV	*Clearly Unacceptable: New construction or development should generally not be undertaken.*

Source: City of Monterey 2005

City of Del Rey Oaks General Plan

The City of Del Rey Oaks General Plan includes various policies to reduce noise-related nuisances and land use incompatibilities and to protect citizens from excessive noise levels. In

accordance with General Plan Policy N-4, "land use compatibility shall be considered impacted if exposed to noise levels on the exterior of a building that exceeds 65dB, and on the interior of a building exceeds 45dB" (Del Rey Oaks 1997). However, General Plan Policy N-4 does not identify specific land uses to which the standards would apply.

GROUNDBORNE VIBRATION

There are no federal, state, or local regulatory standards for ground-borne vibration. However, various criteria have been established to assist in the evaluation of vibration impacts. For instance, the California Department of Transportation (Caltrans) has developed vibration criteria based on potential structural damage risks and human annoyance. Caltrans-recommended criteria for the evaluation of groundborne vibration levels, with regard to structural damage and human annoyance, are summarized in **Table 7** and **Table 8**, respectively. The criteria differentiate between transient and continuous/frequent sources. Transient sources of ground-borne vibration include intermittent events, such as blasting; whereas, continuous and frequent events would include vehicle traffic on roadways (Caltrans 2002(b), 2004).

The ground-borne vibration criteria recommended by Caltrans for evaluation of potential structural damage is based on building classifications, which take into account the age and condition of the building. For residential structures and newer buildings, Caltrans considers a minimum peak-particle velocity (ppv) threshold of 0.25 inches per second (in/sec) for transient sources and 0.04 in/sec for continuous/frequent sources to be sufficient to protect against building damage. Continuous ground-borne vibration levels below approximately 0.02 in/sec ppv are unlikely to cause damage to any structure. In terms of human annoyance, continuous vibrations in excess of 0.04 in/sec ppv and transient sources in excess of 0.25 in/sec ppv are identified by Caltrans as the minimum perceptible level for ground vibration. Short periods of ground vibration in excess of 2.0 in/sec ppv can be expected to result in severe annoyance to people. Short periods of ground vibration in excess of 0.1 in/sec ppv (0.2 in/sec ppv within buildings) can be expected to result in increased levels of annoyance (Caltrans 2002(b), 2004).

Table 7
Damage Potential to Buildings at Various Groundborne Vibration Levels

Structure and Condition	Vibration Level (in/sec ppv)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely Fragile Historic Buildings, Ruins, Ancient Monuments	0.12	0.08
Fragile Buildings	0.2	0.1
Historic and Some Old Buildings	0.5	0.25
Older Residential Structures	0.5	0.3
New Residential Structures	1.0	0.5
Modern Industrial/Commercial Buildings	2.0	0.5

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
Source: Caltrans 2004

Table 8
Annoyance Potential to People at Various Groundborne Vibration Levels

Human Response	Vibration Level (in/sec ppv)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely Perceptible	0.04	0.01
Distinctly Perceptible	0.25	0.04
Strongly Perceptible	0.9	0.10
Severe	2.0	0.4

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
Source: Caltrans 2004

PROJECT IMPACTS

THRESHOLDS OF SIGNIFICANCE

Criteria for determining the significance of noise impacts were developed based on information contained in the California Environmental Quality Act Guidelines (CEQA Guidelines, Appendix G). According to those guidelines, a project may have a significant effect on the environment if it would result in the following conditions:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance or of applicable standards of other agencies.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

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

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

Temporary noise impacts would be associated with short-term construction-related activities. Long-term permanent increases in noise levels would be associated with potential increases in traffic noise levels. Potential increases in groundborne vibration levels would be primarily associated with short-term construction-related activities. For purposes of this analysis and where applicable, the noise standards of local jurisdictions were used for evaluation of noise impacts associated with the proposed project.

The following significance thresholds used for the assessment of noise-related impacts are based on the California Environmental Quality Act (CEQA) Guidelines, applicable noise standards, and commonly applied environmental noise criteria, as discussed earlier in this report.

- **Short-term Noise Impacts**. Short-term construction noise impacts would be considered significant if construction activities would result in a substantial increase in ambient noise

levels during the more noise-sensitive evening and nighttime hours (i.e., 7:00 p.m. to 7:00 a.m.).

- **Long-term Noise Impacts**. Long-term increases in traffic noise would be considered significant if the proposed project would result in a substantial increase in ambient noise levels at nearby noise-sensitive land uses or if the proposed project would result in traffic noise levels that would exceed applicable land use compatibility noise standards.

- **Exposure to Groundborne Vibration**. Groundborne vibration levels would be considered significant if predicted short-term construction or long-term operational groundborne vibration levels attributable to the proposed project would exceed recommended criteria (**Tables 7** and **8**) at nearby existing or proposed onsite structures.

For purposes of this analysis, significant increases in ambient noise levels were based on FICON-recommended criterion (**Table 2**). Accordingly, significant increases in ambient noise levels would be defined as an increase of 5 dBA, or greater, where the ambient noise environment is less than 60 dBA; 3.0 dBA, or greater, where the ambient noise environment is between 60 and 65 dBA; and an increase of 1.5 dBA, or greater, where the ambient noise environment exceeds 65 dBA. The rationale for these criteria is that, as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause significant annoyance (FICON 2000).

IMPACT SUMMARY

Table 9
Summary of Project Impacts

Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
A. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	■	☐	☐
B. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	■	☐
C. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	■	☐
D. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	■	☐	☐
E. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in	☐	☐	☐	■

Table 9 Summary of Project Impacts				
Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
the project area to excessive noise levels?				
F. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	■

IMPACT DISCUSSION

IMPACT A: ***Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?***

SHORT-TERM NOISE EXPOSURE

Gigling Road & S. Boundary Road Reconstruction Projects

Less Than Significant with Mitigation Incorporated. Construction noise in any one particular area would be temporary and would include noise from activities such as excavation, grading, and paving, and pouring of concrete. Construction noise typically occurs intermittently and varies depending on the nature of the construction activities being performed. Noise generated by construction equipment can reach high levels for brief periods. The United States Environmental Protection Agency (US EPA) has found that intermittent individual equipment noise levels range from approximately 74 dBA to more than 89 dBA for brief periods (US EPA 1971). **Table 10** lists typical uncontrolled noise levels generated by individual pieces of construction equipment at a distance of 50 feet (FTA 2006). The highest noise levels would occur during activities involving the use of heavy-duty off-road equipment, including grading and excavation activities.

Predicted construction-generated noise levels at nearby land uses could result in intermittent and short-term increases in ambient noise levels. Because exterior ambient noise levels typically decrease during the nighttime hours as community activities (e.g., commercial activities, vehicle traffic) decrease, construction activities performed during the more noise-sensitive nighttime hours (i.e., 10 p.m. to 7 a.m.) are of particular concern given the increased potential for annoyance and potential sleep disruption for occupants of nearby residential dwellings and medical care facilities. The proposed project does not include restrictions on the hours during which construction activities would occur. As a result, construction activities occurring during the more noise-sensitive nighttime hours could result in increased levels of annoyance and potential sleep disruption for occupants of nearby noise-sensitive land uses. Noise-generating construction activities associated with the proposed roadway reconstruction projects would be considered to have a potentially significant short-term impact.

Table 10
Typical Construction Equipment Noise Levels

Equipment	Typical Noise Level (dBA Lmax) 50 feet from Source
Backhoe	80
Compactor	82
Dozer	85
Grader	85
Loader	85
Truck	88
Air Compressor	81
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Mobile	83
Generator	81
Impact Wrench	85
Jack Hammer	88
Paver	89
Pneumatic Tool	85
Pump	76
Roller	74
Saw	76
Sources: FTA 2006	

Mitigation Measure 1: Short-term Increases in Construction Noise

a) Noise-generating construction operations (excluding activities that would result in a safety concern to the public or construction workers) shall be limited to the hours between 7 a.m. to 7 p.m. Monday through Friday.

b) Construction equipment and equipment staging areas shall be located at the furthest distance possible from nearby noise-sensitive land uses.

c) Construction equipment shall be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations. Equipment engine shrouds shall be closed during equipment operation.

d) When not in use, motorized construction equipment shall not be left idling.

Significance After Mitigation

The use of exhaust mufflers and engine shrouds would reduce individual equipment noise levels by approximately 10 dBA. Limitations on the hours of construction, idling of construction

equipment, and the location of equipment staging areas away from nearby land uses would reduce the potential for increased levels of annoyance and sleep disruption. With implementation of the proposed mitigation measures and given that construction activities would be intermittent and short-term, construction-generated noise levels associated with the proposed roadway reconstruction projects would be considered **less-than-significant**.

LONG-TERM NOISE EXPOSURE

Implementation of the proposed roadway reconstruction projects would not result in an increase in traffic volumes along Gigling Road or S. Boundary Road. Typically, a doubling of vehicle traffic would be required before a noticeable increase (i.e., 3 dBA or greater) in roadway traffic noise levels would occur. Although the proposed projects would not result in an increase in traffic volumes, the proposed improvements would include widening of the existing roadways, which would result in the relocation of some vehicle traffic closer to existing nearby land uses. In some locations, the addition of an additional travel lane would relocate vehicle traffic approximately 12 feet closer to adjacent land uses. To determine the increase in traffic noise levels associated with the proposed roadway improvements, The FHWA traffic noise prediction model was used to predict traffic noise levels for existing and proposed roadway configurations. Modeling was conducted for both existing and future cumulative traffic conditions. Increases in traffic noise levels at nearby land uses were determined by comparing predicted traffic noise levels with and without implementation of the proposed improvements. Predicted increases in traffic noise levels; as well as, predicted traffic noise levels at the nearest land uses associated with the proposed Gigling Road and S. Boundary Road reconstruction projects are summarized in **Table 11** and **Table 12**, respectively, and discussed separately, as follows:

Gigling Road Reconstruction Project

Less Than Significant. As noted earlier in this report, the nearest noise-sensitive land uses located along Gigling Road consist of residential housing, the nearest of which is located approximately 100 feet south of the centerline of Gigling Road. Various public and office-related uses are also located within approximately 100 feet of the centerline of Gigling Road.

As noted in **Table 11**, the proposed improvements to Gigling Road would result in estimated increases in traffic noise levels at the nearest land uses of approximately 0.5 dBA CNEL, or less. Predicted traffic noise levels at the nearest land uses would be approximately 58 dBA CNEL, or less, and would not exceed the minimum exterior noise standard of 65 dBA CNEL. Assuming an average exterior-to-interior noise reduction of 20 dBA, predicted interior noise levels of nearby noise-sensitive occupied structures would not exceed the normally applied interior noise standard of 45 dBA CNEL. Given that the proposed improvements to Gigling Road would not result in a significant increase in ambient noise levels that would exceed applicable noise standards, this impact would be considered ***less-than-significant***.

Table 11
Predicted Traffic Noise Levels
Proposed Gigling Road Reconstruction

Roadway Segment	Predicted Noise Level at 100 ft from Roadway Centerline (dBA L_{dn}/CNEL)[1]			Significant Increase?[2]	Predicted Noise Level at Nearest Land Uses With Project Implementation[3]	Exceeds Applicable Noise Standards at Nearest Land Uses?[4]
	Without Project	With Project	Increase			
Existing Conditions						
Gigling Road, East of General Jim Moore Blvd.	56.86	57.40	0.54	No	57.40	No
Future Conditions						
Gigling Road, East of General Jim Moore Blvd.	58.31	58.66	0.35	No	58.66	No

1. *Traffic noise levels were predicted using the FHWA roadway noise prediction model based on traffic information obtained from the City of Seaside General Plan, Final EIR (2004). Existing and future scenarios are based on year 2004 and 2020 traffic conditions. Modeled estimates assume no natural or man-made shielding (e.g., vegetation, berms, walls, buildings).*
2. *Significant increase is defined as an increase of 5 dBA in areas where ambient noise levels are less than 60 dBA CNEL/Ldn; an increase of 3 dBA where ambient noise levels range from 60 to 65 dBA L_{dn}/CNEL; and an increase of 1.5 dBA where ambient noise levels at noise-sensitive receptors exceed 65 dBA L_{dn}/CNEL*
3. *The nearest land uses consist of residential and commercial/office land uses located approximately 100 feet from the roadway centerline.*
4. *The City of Seaside's "normally acceptable" exterior land use compatibility noise standard for residential and commercial/office uses is 60 and 65 dBA CNEL, respectively. Based on predicted exterior noise levels and assuming an average exterior-to-interior noise reduction of 20 dBA, predicted interior noise levels would not exceed corresponding noise standards of 45 and 50 dBA CNEL for residential and commercial/office uses, respectively.*

Table 12
Predicted Traffic Noise Levels
Proposed South Boundary Road Reconstruction

Roadway Segment	Predicted Noise Level at 100 ft from Roadway Centerline (dBA L_{dn}/CNEL)			Significant Increase?[2]	Predicted Noise Level at Nearest Land Uses With Project Implementation[3]		Exceeds Applicable Noise Standards at Nearest Land Uses?[4]
	Without Project	With Project	Increase		MFR	Office	
Existing Conditions							
S. Boundary Road, East of General Jim Moore Blvd.	58.65	58.87	0.22	No	45.74	51.71	No
Future Conditions							
S. Boundary Road, East of General Jim Moore Blvd.	64.36	64.39	0.03	No	51.26	57.23	No

1. *Traffic noise levels were predicted using the FHWA roadway noise prediction model based on traffic information obtained from the traffic analysis prepared for this project (Higgins Associates 2008). Modeled estimates assume no natural or man-made shielding (e.g., vegetation, berms, walls, buildings).*
2. *Significant increase is defined as an increase of 5 dBA in areas where ambient noise levels are less than 60 dBA CNEL/Ldn; an increase of 3 dBA where ambient noise levels range from 60 to 65 dBA L_{dn}/CNEL; and an increase of 1.5 dBA where ambient noise levels at noise-sensitive receptors exceed 65 dBA L_{dn}/CNEL*
3. *The nearest land uses consist of Multi-family residential (MFR) and office uses. The nearest MFR dwelling unit is located approximately 750 feet south of the roadway centerline. The nearest office use is located approximately 300 feet south of the roadway centerline.*
4. *The City of Monterey General Plan identifies "normally acceptable" exterior land use compatibility noise standards of 65 and 70 dBA CNEL for MFR and office uses, respectively. The City of Del Rey Oaks General Plan, Noise Policy N-4, identifies an exterior noise standard of 65 dBA CNEL and an interior noise standard of 45 dBA CNEL. Based on predicted exterior noise levels and assuming an average exterior-to-interior noise reduction of 20 dBA, predicted interior noise levels would not exceed corresponding noise standard of 45 dBA CNEL.*

S. Boundary Road Reconstruction Project

Less Than Significant. The nearest noise-sensitive land uses located along S. Boundary Road consist of multi-family residential dwellings located approximately 750 feet southwest of S. Boundary Road, along Justin Court. The nearest commercial office uses consist of medical office buildings located approximately 300 feet to the south, along Upper Ragsdale Drive. The Community Hospital building is also located along Upper Ragsdale Drive, approximately 800 feet south of S. Boundary Road.

As noted in **Table 12**, the proposed improvements to S. Boundary Road would result in estimated increases in traffic noise levels at the nearest land uses of approximately 0.2 dBA CNEL, or less. Based on the modeling conducted, predicted future noise levels at the nearest residential and commercial land uses would reach levels of approximately 51 and 57 dBA CNEL, respectively.

Predicted traffic noise levels at nearby land uses would not exceed applicable minimum exterior noise standards identified by either the City of Monterey or the City of Del Rey Oaks. Based on predicted exterior noise levels and assuming an average exterior-to-interior noise reduction of 20 dBA, predicted interior noise levels of nearby noise-sensitive occupied structures would not exceed 45 dBA CNEL. Given that the proposed improvements to S. Boundary Road would not result in a significant increase in ambient noise levels that would exceed applicable noise standards, this impact would be considered ***less-than-significant***.

IMPACT B: Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Gigling Road & S. Boundary Road Reconstruction Projects

Less Than Significant. Ground vibration spreads through the ground and diminishes in strength with distance. The effects of ground vibration can vary from no perceptible effects at the lowest levels, low rumbling sounds and detectable vibrations at moderate levels, and slight damage to nearby structures at the highest levels. At the highest levels of vibration, damage to structures is primarily architectural (e.g., loosening and cracking of plaster or stucco coatings) and rarely result in structural damage.

Long-term operational activities associated with the proposed project would not involve the use of any equipment or processes that would result in potentially significant levels of ground vibration. Increases in groundborne vibration levels attributable to the proposed project would be primarily associated with short-term construction-related activities. Construction activities associated with the proposed development would likely require the use of various tractors, trucks, and jackhammers. Groundborne vibration levels associated with construction equipment are summarized in **Table 13**. Based on the vibration levels presented in **Table 13**, ground vibration generated by construction equipment would be less than 0.09 inches per second ppv at 25 feet. The nearest existing structures are located in excess of 25 feet from the proposed roadway reconstruction areas. Therefore, because ground vibration levels diminish in strength with increased distance from the source, predicted vibration levels would not exceed recommended criteria for structural damage and human annoyance (0.2 and 0.1 in/sec ppv, respectively) at nearby land uses. Short-term groundborne vibration impacts associated with the proposed roadway reconstruction projects would be considered **less than significant**.

Table 13 Representative Vibration Source Levels for Construction Equipment	
Equipment	**Peak Particle Velocity at 25 Feet (in/sec ppv)**
Large Tractors	0.089
Caisson Drilling	0.089
Loaded Trucks	0.076
Jackhammer	0.035
Small Tractors	0.003
Source: Caltrans 2002(b), FTA 2006	

IMPACT C: ***A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?***

Gigling Road & S. Boundary Road Reconstruction Projects

Less than Significant. Implementation of the proposed roadway reconstruction projects would not result in an increase in traffic volumes along Gigling Road or S. Boundary Road. Typically, a doubling of vehicle traffic would be required before a noticeable increase (i.e., 3 dBA or greater) in roadway traffic noise levels would occur. Although the proposed projects would not result in an increase in traffic volumes, the proposed improvements would include widening of the existing roadways, which would result in the relocation of some vehicle traffic closer to existing nearby land uses. In some locations, the addition of an additional travel lane would relocate vehicle traffic approximately 12 feet closer to adjacent land uses. However, as noted in **Impact B**, the proposed improvements would not result in a significant increase in ambient noise levels that would exceed applicable noise standards at nearby land uses. As a result, long-term noise impacts associated with the proposed roadway reconstruction projects would be considered **less than significant**. Refer to Impact B for additional discussion of long-term noise impacts.

IMPACT D: ***A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?***

Gigling Road & S. Boundary Road Reconstruction Projects

Less Than Significant with Mitigation Incorporated. Construction activities occurring during the quieter nighttime hours could result in increased levels of annoyance and potential sleep disruption to occupants of nearby land uses. Construction-generated noise levels associated with the proposed project would, therefore, be considered ***potentially significant***. Refer to **Impact A** for additional discussion of short-term noise impacts and mitigation measures.

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

IMPACT F: ***For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?***

Gigling Road & S. Boundary Road Reconstruction Projects

No Impact. Implementation of the proposed project would not result in increased exposure of sensitive receptors to aircraft noise levels at nearby airports, nor would the proposed project interfere with nearby airport operations.

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APPENDIX A

TRAFFIC NOISE PREDICTION MODELING

GIGLING ROAD, EAST OF GEN JIM MOORE BLVD

TRAFFIC VOLUMES DERIVED FROM CITY OF SEASIDE GENERAL PLAN, FINAL EIR, JANUARY 2004. EXISTING AND FUTURE SCENARIOS ARE BASED ON YEAR 2004 AND 2020 TRAFFIC CONDITIONS, RESPECTIVELY. TRAFFIC NOISE MODELING CONDUCTED USING THE FHWA NOISE MODEL, BASED ON THE MODELING PARAMETERS/ASSUMPTIONS IDENTIFIED BELOW.

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	78.00	10.00	6.50
M-TRUCKS	1.00	0.50	0.30
H-TRUCKS	0.40	0.20	0.10

EXISTING
ADT: 3063 SPEED: 40 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 60.65
CNEL AT 100 FT FROM ROADWAY CENTERLINE = 56.86
** DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL **

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	61.8	132.7

EXISTING PLUS PROJECT
ADT: 3063 SPEED: 40 ACTIVE HALF WIDTH (FT): 27
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 58.96
CNEL AT 100 FT FROM ROADWAY CENTERLINE = 57.40
** DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL **

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	67.1	135.0

FUTURE
ADT: 4280 SPEED: 40 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 62.11
CNEL AT 100 FT FROM ROADWAY CENTERLINE = 58.31
** DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL **

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	77.2	165.8

FUTURE PLUS PROJECT
ADT: 4280 SPEED: 40 ACTIVE HALF WIDTH (FT): 27
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 60.41
CNEL AT 100 FT FROM ROADWAY CENTERLINE = 58.66
** DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL **

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	81.4	167.5

SOUTH BOUNDARY ROAD, EAST OF GEN JIM MOORE BLVD

TRAFFIC VOLUMES DERIVED FROM THE TRAFFIC ANALYSIS PREPARED FOR THE SOUTH BOUNDARY ROAD RECONSTRUCTION PROJECT (HIGGINS ASSOCIATES 2008), BASED ON DATA OBTAINED FROM THE RESORT AT DEL REY OAKS DEIR. EXISTING AND FUTURE SCENARIOS ARE BASED ON YEAR 2006 AND 2030 TRAFFIC CONDITIONS, RESPECTIVELY. TRAFFIC NOISE MODELING CONDUCTED USING THE FHWA NOISE MODEL, BASED ON THE MODELING PARAMETERS/ASSUMPTIONS IDENTIFIED BELOW.

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	78.20	10.00	6.50
M-TRUCKS	1.00	0.50	0.30
H-TRUCKS	0.20	0.20	0.10

EXISTING
ADT: 3580 SPEED: 45 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 62.45
CNEL AT 100 FT FROM ROADWAY CENTERLINE = 58.65
** DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL **

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	81.3	174.6

EXISTING PLUS PROJECT
ADT: 3580 SPEED: 45 ACTIVE HALF WIDTH (FT): 23
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 61.01
CNEL AT 100 FT FROM ROADWAY CENTERLINE = 58.87
** DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL **

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	84.1	175.7

FUTURE
ADT: 13400 SPEED: 45 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 68.18
CNEL AT 100 FT FROM ROADWAY CENTERLINE = 64.36
** DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL **

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	90.9	195.4	420.7

FUTURE PLUS PROJECT
ADT: 13400 SPEED: 45 ACTIVE HALF WIDTH (FT): 23
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 66.74
CNEL AT 100 FT FROM ROADWAY CENTERLINE = 64.39
** DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL **

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	93.4	196.3	420.6

Appendix H

Finding of No Significant Impact (FONSI) and Proposed Mitigated Negative Declaration

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

Based upon the analysis provided in the attached Environmental Assessment (EA)/Initial Study (IS) for the South Boundary/Gigling Road Improvement Project, the proposed action/project would have no significant impact on human health and the physical environment. All potential significant environmental impacts would be reduced to less than significant levels by incorporating required mitigation measures as part of the proposed action.

Description of the Proposed Action

The proposed action/project includes approximately 12,476 linear feet (2.36 miles) roadway improvements along South Boundary Road and Gigling Road on the former Fort Ord. The roadway improvements consist of improved roadways, intersections, sidewalks, bicycle paths/lanes, water and recycled water transmission lines, wastewater gravity and force main pipelines, gas lines, electric lines, cable television and communication facilities, and street lighting. For the purpose of environmental review, proposed intersections and roadway connections were included in this analysis of the proposed action/project, although these improvements may be constructed later.

The roadway and associated improvements have been proposed by the Fort Ord Reuse Authority (FORA) for South Boundary and Gigling Roads. The purpose of the proposed action/project is to: 1) provide adequate roadway capacity to mitigate future traffic impacts resulting from the buildout of the Fort Ord Reuse Plan; and 2) upgrade the roadways to current safety standards and improve the present level of service (LOS).

South Boundary Road

The proposed action/project involves improving and realigning the South Boundary Road/General Jim Moore Boulevard Intersection approximately 300 feet north of the existing intersection and realigning the roadway approximately 600 feet eastward until it joins the existing roadway and continues for an additional 7,050 linear feet. The South Boundary improvement area would be a total length of approximately 7,593 linear feet (1.44 miles). The realigned portion of the roadway would begin from the realigned South Boundary Road/General Jim Moore Boulevard intersection and extend 600 feet eastward, for a total realignment length of 600 linear feet. The existing South Boundary Road would be improved from this point to approximately 200 linear feet east of Rancho Saucito. The roadway would be improved as a two-lane arterial roadway with median, left-turn pockets at proposed intersections, 8-foot wide shoulders, 5-foot wide sidewalks along the southern side of the roadway, and six bus stops (3 on each side of the roadway). The proposed action/project will include the construction of a new unsignalized intersection at proposed South Boundary Road/General Jim Moore Boulevard intersection.

Gigling Road

The proposed action/project involves improving Gigling Road along its current alignment beginning at the General Jim Moore Boulevard/Gigling Road intersection and continuing east for approximately 4,883 linear feet (0.82 miles). The roadway would be improved as a four-lane collector roadway with 18-foot wide median, an 8-foot wide bike path on the southern side of the roadway, 5-foot wide sidewalks on each side of the roadway, new curbs and gutters.

Project Alternatives Considered

Alternatives to the proposed action/project are limited as the proposed action/project is the result of necessary roadway improvements identified in the Fort Ord Reuse Plan.

Alternative 1 - No Action
Under the No-Action Alternative, General Jim Moore Boulevard and Gigling Road would remain in their current condition and alignment. Under this alternative, the project roadways would be subject to increasing congestion as development occurs in accordance with the *Fort Ord Reuse Plan*. The No Action Alternative also would not meet the project objective of improving the roadways consistent with the circulation plans of the *Fort Ord Reuse Plan*. Under the No Action Alternative, the project roadways would not meet current safety standards, including adequate intersections, turning lanes, shoulder width, and bicycle lanes.

Alternative 2 – Revised Project Design

Under **Alternative 2-Revised Project Design**, South Boundary Road would be upgraded to a 2-lane arterial along the existing alignment to York Road, which would increase the total improvement area by approximately 1,650 feet (0.30 miles); the existing South Boundary Road/General Jim Moore intersection would remain in place; and a new South Boundary Road/York Road intersection would be required. Gigling Road would be upgraded as new 4-lane arterial between General Jim Moore Boulevard and the proposed Eastside Road, which would increase the total improvement area by approximately 875 feet longer (0.17 miles). The affects to biological resources, soil, water quality, noise and air quality would be slightly increased within the Gigling Road improvement area due to more area of disturbance. South Boundary Road may be subject to increasing congestion as development occurs within the City of Del Rey Oaks since the roadway would no longer provide direct access to the City of Del Rey Oaks property, which is anticipated to generate substantial trips. In addition, additional trips to and from State Route 68 would likely be redistributed to York Road and South Boundary Road. This may cause additional congestion on these roadways which could result in additional noise impacts. The **Alternative 2-Revised Project Design** would result in greater impacts to biological resources, soil, water quality air quality and noise.

Finding

The analysis provided in the attached EA/IS determines the proposed action is not a major federal/state action that would significantly affect the environment, and does not require the preparation and distribution of an Environmental Impact Statement. All potentially significant environmental impacts would be reduced to less than significant levels with appropriate mitigation measures as identified in the EA/IS document.

Public Availability and Comment Period

The EA/IS document is available for public review at the following locations:

- City of Seaside Public Library
- Presidio of Monterey directorate of Environmental and Natural Resources, Gigling Road, Building #4463, Presidio of Monterey Annex

The public review/comment period will extend 30 days from the date of notification in the local newspaper. Please submit comments by Monday, June 27, 2010 by the close of business to the following address:

Commander, DLIFLC & POM
Mail Stop ATZP-EP
Presidio of Monterey
Monterey, CA 93944-5006

_____ Date: _____
Darcy A. Brewer, Garrison Commander, Presidio of Monterey

_____ Date: _____
Michael A. Houlemard, Jr., Executive Officer, FORA

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PROPOSED MITIGATED NEGATIVE DECLARATION

Lead Agency: Fort Ord Reuse Authority (FORA)
Contact: James Arnold, Senior Project Manager

Project Sponsors: Fort Ord Reuse Authority
100 12th Street, Building 2880
Marina, CA 93933
Tel: (831) 883-3672

Project Name: The South Boundary/Gigling Road Improvement Project

Project Location: Fort Ord is a former U.S. Army infantry base located in Monterey County, about five miles northeast of the City of Monterey. The former base encompasses nearly 28,000 acres that are surrounded by the cities of Marina, Monterey, Del Rey Oaks, Seaside, and Sand City, and unincorporated lands in Monterey County.

The proposed action/project would be located within the cities of Seaside, Del Rey Oaks, and Monterey. The Gigling Road improvement area is located along Gigling Road between the Gigling Road/General Jim Moore Boulevard intersection to the Gigling Road/7th Avenue intersection. The South Boundary Road improvement area is located at a realigned South Boundary Road/General Jim Moore Boulevard intersection, which is approximately 300 feet north of its existing location, and continues as a realigned roadway approximately 600 feet eastward where it joins the existing South Boundary Roadway and continues to a point approximately 200 feet east of the South Boundary Road/Rancho Saucito Lane intersection.

Project Description: The proposed action/project involves improving portions of South Boundary Road and Gigling Road as follows:

South Boundary Road

The proposed action/project involves improving and realigning the South Boundary Road/General Jim Moore Boulevard Intersection to approximately 300 feet north of the existing intersection and continuing for approximately 600 feet eastward, where the realignment meets up with the existing alignment to continue on for an additional 7,050 linear feet, for a total of approximately 7,593 linear feet (1.44 miles). Realignment would be from a point approximately 300 feet north of the existing South Boundary Road/General Jim Moore Boulevard intersection extending 600 feet

eastward, for a total realignment length of 600 linear feet. The existing roadway would be improved from this point to approximately 200 linear feet east of Rancho Saucito. South Boundary Road will be improved as a two-lane arterial roadway with median and left turn pockets at proposed intersections, and 8-foot wide shoulders. The proposed roadway will include the construction of a new intersection at proposed South Boundary Road/General Jim Moore Boulevard intersection.

Gigling Road

The proposed action/project involves improving Gigling Road along its current alignment starting at the intersection with General Jim Moore Boulevard and continuing east for approximately 4,883 linear feet (0.92 miles). The roadway would be improved as a four-lane collector roadway with 18-foot wide median, an 8-foot wide bike path on the southern side of the roadway, 5-foot wide sidewalks on each side of the roadway, new curbs and gutters.

Public Review Period: Begins – Friday May 28, 2010
Ends – Monday June 28, 2010

Address Where Copy of Initial Study is Available for Public Review:

- Monterey County Free Library, Seaside Branch, 550 Harcourt Ave., Seaside, CA 93955
- Fort Ord Reuse Authority, 100 12th Street, Building 2880, Marina, CA 93933
- Presidio of Monterey, Directorate of Environmental and Natural Resources, Gigling Road, Building #4463, Presidio of Monterey Annex

Address Where Written Comments Should be Sent:

James M. Arnold
Senior Project Manager
Fort Ord Reuse Authority
100 12th Street, Building 2880
Marina, CA 93933

The proposed action/project would not have a significant effect on the environment as it has been found:

(A) That said project would not have the potential to significantly degrade the quality of the environment.

(B) That said project will have no significant impact on long-term environmental goals.

(C) That said project will have no significant cumulative effect upon the environment.

(D) That said project will not cause substantial adverse effects on human beings, either directly or indirectly.

MITIGATION MEASURES

Aesthetics

MM-1 Prior to final plan approval, FORA shall prepare detailed lighting plans indicating the locations and type of fixtures to be used and demonstrating that exterior lighting maintains acceptable non-intrusive levels. Lighting plans shall also incorporate baffles and lens cut-offs to direct lighting downward and to minimize the unwanted spillover of light. All external lighting shall be noted on final improvement plans prior to implementation of the proposed action/project.

Timing/Implementation: Prior to the final plan approval.

Enforcement/Monitoring: FORA

Air Quality

MM-2 FORA shall include a dust control plan in all construction documents for the proposed action/project. If any debris or soil is to be removed from the project area, the debris and soil shall be covered while in transit to avoid safety hazards. In addition, grading shall be limited to 2.2 acres per day during grading/excavation efforts.

a) Limit the hours of operation consistent with related noise restrictions;

b) Utilize gasoline-powered equipment whenever an equipment choice is available;

c) Use PuriNOx emulsified diesel fuel in existing engines;

d) Repower and utilize heavy equipment with current standard diesel technology or CNG/LNG technology; and

e) Demonstrate on construction documents how construction phasing and equipment programming will comply with County policies and BACMs identified by the Air District.

Timing/Implementation: Prior to final plan approval.

Enforcement/Monitoring: FORA

Biological Resources

MM-3a Construction activities within the South Boundary Road improvement area shall be restricted or phased as necessary to avoid disturbance of the listed plant populations. Avoidance measures include fencing of the population(s) prior to construction to ensure no ingress of personnel or equipment at a minimum radius of 20 feet around a rare plant population and construction monitoring by a qualified biologist. Avoidance areas shall be identified on project plans. Silt fencing and other Best Management Practices (BMPs) shall be used to ensure that the hydrology surrounding the population is not affected by construction activities. In order to ensure viability, trees or shrubbery surrounding the rare plant populations must not be removed.

There are three mitigation strategies available to FORA at the given time: 1) Delay construction until the HCP is adopted; 2) Phase construction to avoid the take of species until the HCP is adopted; or 3) obtain a 2081 permit for the take of species. Upon adoption of the Fort Ord HCP and/or issuance of a take permit (2081) for listed plant species by the USFWS/CDFG, the project proponent may take the species given the stipulations of the take permit or adopted HCP. If listed plants cannot be avoided, the following mitigation measures shall apply:

All efforts must be made to salvage portions of the habitat or plant populations that will be lost as a result of implementation of the proposed action/project by transplanting the plants that would be adversely affected by the proposed action/project for either re-establishment after construction is complete or for planting in a new area in appropriate habitat. A propagation program must be developed for the salvage and transfer of rare, threatened, or endangered plant populations from the project area before the initiation of construction activities. Permits may be required from the CDFG or USFWS, which will ensure that certified biologists are involved in the propagation and transport of rare, threatened, or endangered plant species. (Note: Propagation methods for the salvaged plant population must be developed on a case-by-case basis and must include the involvement of local conservation easements/

preserves/ open space, where applicable). The propagation and transfer of individual plant species must be performed at the correct time of year and successfully completed before the commencement of the project's construction activities eliminate or disturb the plants and habitats of concern.

This mitigation measure may be superseded by the terms of the adopted HCP or take permit.

Timing/Implementation: Prior to the initiation of construction activities for South Boundary Road improvements.

Enforcement/Monitoring: FORA.

MM-3b FORA shall retain a qualified biologist to perform focused surveys to determine the presence/absence of Hickman's onion and Santa Cruz microseris within and adjacent to (within 20 feet, where appropriate) the South Boundary improvement area (project footprint). These surveys must be conducted in accordance with CDFG approved guidelines for conducting field surveys. Field surveys must be scheduled to coincide with known flowering periods, and/or during periods of phonological development that are necessary to identify the plant species of concern. If no special-status plant species are found, then no further mitigation is necessary.

If these special-status plant species are found within or adjacent to (within 20 feet) the South Boundary improvement area during the surveys, these plant species must be avoided to the extent possible. Avoidance measures include fencing of the population(s) before construction to ensure no ingress of personnel or equipment at a minimum radius of 20 feet around a rare plant population and construction monitoring by a qualified biologist. Avoidance areas must be identified on project plans. Implementation of silt fencing and other BMPs must ensure that the hydrology surrounding the population is not affected by project construction. In addition, trees or shrubbery surrounding the rare plant populations must not be removed to ensure that sunlight/shade that may affect the viability is not changed. If these special-status plants cannot be avoided, the following shall apply:

Before the approval of grading plans or any ground breaking activity within the project area, FORA must submit a mitigation plan concurrently to CDFG and USFWS (if appropriate) for review and comment, and FORA may consult with these entities before approval of the mitigation plan. Mitigation measures for directly affected population(s) must be included in the mitigation plan. Possible mitigation for directly impacted population(s) includes implementation of a program to transplant, salvage, cultivate, or re-establish the species at suitable sites (if feasible). The mitigation ratio

for directly impacted plant species must be at a minimum ratio of 2:1 (two plants for every one impacted). However, the actual level of mitigation may vary depending on the sensitivity of the species (its rarity or endangerment status), its prevalence in the area, and the current state of knowledge about overall population trends and threats to its survival. Alternatively, replacement credits may be purchased by FORA at an approved mitigation bank should such credits be available.

Any special-status plant species that are identified adjacent to the project area, but not proposed to be disturbed by the proposed action/project, must be protected by barrier fencing to ensure that construction activities and material stockpiles do not impact any special-status plant species. These avoidance areas must be identified on project plans.

This mitigation measure may be superseded by the terms of the adopted HCP or take permit.

Timing/Implementation: Prior to the initiation of construction activities for South Boundary Road.

Enforcement/Monitoring: FORA.

MM-4 The proposed action/project shall comply with the conditions in the 2005 USFWS Biological Opinion, *Cleanup and Reuse of Former Fort Ord, Monterey County, California, as it affects California Tiger Salamander and Critical Habitat for Contra Costa Goldfields*, issued to the U.S. Army by the USFWS and the *Memorandum of Agreement Regarding Endangered Species Act Enforcement of Development Restrictions on the Del Rey Oaks Portions of the Former Fort Ord, California*. Only those conditions relevant to the project area would apply.

Timing/Implementation: Prior to the initiation of construction for the proposed action/project.

Enforcement/Monitoring: FORA

MM-5 No more than 30 days prior to ground disturbance or tree removal during the nesting season for local avian species (typically February 22 through August 1), FORA shall retain shall retain a qualified biologist to conduct a focused survey for active nests of special-status birds within and in the vicinity of the project area (up to 200 feet and no less than 100-feet outside project boundaries, where possible). If active nests are found, trees/shrubs with nesting birds shall not be disturbed until abandoned by the birds or a qualified biologist deems disturbance potential to be minimal (in

consultation with USFWS and/or CDFG, where appropriate). If applicable, tree removal shall be restricted to a period following fledging of chicks, which typically occurs between late July and early August. If active nests are located within the 100 feet (200 feet for raptors) of proposed construction activities, other restrictions may include establishment of exclusion zones (no ingress of personnel or equipment at a minimum radius of 100 feet or 200 feet, as appropriate, around the nest as confirmed by the appropriate resource agency) or alteration of the construction schedule. Reference to this requirement and the MBTA shall be included in the construction specifications.

If construction activities or tree removal are proposed to occur during the non-breeding season (August 2 – February 21), a survey is not required, no further studies are necessary, and no mitigation is required.

This mitigation measure may be superseded by the terms of the adopted HCP or take permit.

Timing/Implementation: Prior to the initiation of construction for the proposed action/project.

Enforcement/Monitoring: FORA.

MM-6a FORA shall contract with a Registered Professional Forester or Certified Arborist to assist in field adjustments of tree removal and to prepare a tree removal plan, to support a tree removal permit or application, for the proposed action/project after the proposed improvements have been staked in the field. The tree removal plan shall accompany the arborist survey as described under mitigation measures **MM-6c** and **MM-6d** below. The tree removal plan shall indicate:

- the location of each protected tree to be removed for grading and/or construction;
- the location of trees that are proposed for relocation; the location of protected trees that are located adjacent to grading and/or construction limits (i.e. within 20 feet); and
- will indicate that all oak trees which require pruning, are pruned by a Certified Arborist prior to initiation of construction activities.

Timing/Implementation: Prior to commencement of construction activities.

Enforcement/Monitoring: FORA and the Cities of Seaside, Del Rey Oaks and Monterey and Monterey County, as applicable.

MM-6b Any tree or groups of trees to be retained shall be fenced with a four-foot high brightly colored synthetic fence at the outermost edge of the critical root zone. The critical root zone will be measured from the dripline radius taken from the tree trunk to the tip of the farthest reaching branch as determined by a Certified Arborist or Registered Professional Forrester. The fencing shall remain in place until all construction activities are complete. Trenching, grading, soil compaction, parking of vehicles or heavy equipment, stockpiling of construction materials, and/or dumping of materials will not be allowed within the critical root zone.

Timing/Implementation: Prior to commencement of construction activities.

Enforcement/Monitoring: FORA and the Cities of Seaside, Del Rey Oaks and Monterey and Monterey County, as applicable.

MM-6c Within the Gigling Road improvement area, FORA shall contract with a Registered Professional Forester or Certified Arborist to perform an arborist survey. The arborist survey shall include all trees with a height of 10 feet or more, or has a circumference of at least 20 inches measured at 24 inches above the ground pursuant to Section 8.54.020 of the *City of Seaside Municipal Code*. The survey shall also include landmark oak trees, which are defined as trees 24 inches or more in diameter when measured two feet above the ground, or trees which are visually significant, historically significant, or exemplary of their species.

FORA shall obtain a tree removal permit from the City of Seaside for all trees to be removed within the Gigling Road improvement area. Trees identified to be removed must be replaced at a 1:1 ratio with a minimum 5-gallon approved specimen tree of a species and in an approved location as stated under *City of Seaside Municipal Code Section 8.54.070*.

Timing/Implementation: Prior to commencement of construction activities within the Gigling Road improvement area.

Enforcement/Monitoring: City of Seaside; FORA.

MM-6d Within the South Boundary Road improvement area, FORA shall contract with a Registered Professional Forester or Certified Arborist to perform an arborist survey, which shall include:

- single trunk oaks greater six inches diameter (at two feet above the ground surface) or multi-trunk oaks with a circumference of any two trunks of at least 40 inches (at measured two feet above the root

crown) pursuant to Section 12.16.020 of the *City of Del Rey Oaks Municipal Code;*

- any woody perennial plant that has a height of 30 feet or more, or has a circumference of 36 inches or more (at 24 inches above ground) pursuant to Section 12.16.020 of the *City of Del Rey Oaks Municipal Code*; and

- any tree greater than two inches in diameter (at four feet six inches above the natural grade) pursuant to Section 12.16.020 of the *City of Del Rey Oaks Municipal Code*.

- trees located on a vacant private parcel measuring more than two inches in diameter (at four feet six inches above the tree's natural grade) pursuant to Chapter 37 of the *City of Monterey Municipal Code*, and

- trees located on a private, developed parcel measuring more than six inches (at four feet six inches above the tree's natural grade) pursuant to Chapter 37 of the *City of Monterey Municipal Code*.

FORA shall obtain tree removal permits from the cities of Del Rey Oaks and Monterey for trees to be removed within the South Boundary Road improvement area. All protected trees impacted within the City of Del Rey Oaks will be mitigated in accordance with Section 12.16.050.D of the *City of Del Rey Oaks Municipal Code*. All protected trees impacted within the City of Monterey will be mitigated in accordance with Section 37-11 of the *City of Monterey Municipal Code*.

Timing/Implementation: Prior to the commencement of construction activities within the South Boundary improvement area.

Enforcement/Monitoring: Cities of Del Rey Oaks and Monterey; FORA.

Cultural Resources

MM-7 In the event that archaeological resources or human remains are discovered during construction, FORA will ensure that all work is stopped within 150 feet of the find until the find can be evaluated by a qualified, professional archaeologist in accordance with 36 CFR Part 800.13(b). In addition, the cultural resources coordinator at the Army Directorate of Environmental and Natural Resource Management (DENR) will be contacted. If the find is determined to be significant, appropriate mitigation measures will be implemented as recommended by the professional archaeologist and the U.S. Army.

Timing/Implementation: Prior to the commencement of construction activities within the project area.

Enforcement/Monitoring: Cities of Seaside, Del Rey Oaks, and Monterey; FORA.

Geology and Soils

MM-8 FORA shall ensure that the recommendations provided within the *Geotechnical Investigation for Gigling and South Boundary Road Improvement Seaside, California* prepared by Pacific Crest Engineering, Incorporated in October 2007 are incorporated into the final improvement plans. These recommendations include, but are limited to site preparation and grading; cut and fill slopes; new pavement section and overlay designs; utility trenches; lateral pressures; and surface drainage.

Timing/Implementation: Prior to final plan approval.

Monitoring/Reporting: FORA.

MM-9 A Storm Water pollution Prevention Plan (SWPPP) shall be prepared and reviewed for approval by FORA, the cities of Seaside, Del Rey Oaks, and Monterey, and/or the United States Army, as applicable. The erosion control plan shall be included in construction documents for the proposed action/project and shall be implemented during and periodically following construction. Erosion control measures shall include, but shall not be limited to the following:

- Limit disturbance of soils and vegetation to the minimum necessary for access and construction;
- Confine all vehicular traffic associated with construction to the right-of-way of designated access roads;
- Adhere to construction schedules designed to avoid periods of heavy precipitation or high winds;
- Ensure that all exposed soil is provided with temporary drainage and soil protection when construction activity is shut down during the winter periods;
- Inform construction personnel prior to construction and periodically during construction activities of environmental concerns, pertinent laws and regulations, and elements of the proposed erosion control measures; and
- Plant the finished ground surface with ground cover and continually maintain.

Timing/Implementation: Prior to commencement of grading activity.

Monitoring/Reporting: Cities of Seaside, Del Rey Oaks and Monterey; FORA.

Hazardous Materials

MM-10a FORA shall obtain formal approval from the U.S. Army, U.S. EPA, and the California Department of Toxic Substances and Control (DTSC) that the proposed construction areas including storage, grading, and transport areas are free of Munitions and Explosives of Concern (MEC) within a safe distance of said activities as approved by the U.S. Army, U.S. EPA and the DTSC.

Timing/Implementation: Prior to any grading or construction activity within the project area.

Monitoring/Reporting: FORA, U.S. Army, U.S. EPA and DTSC.

MM-10b Bid documents and construction plans and documents are to include a requirement that before construction activities commence on the project, construction supervisors and crews will attend a U.S. Army sponsored munitions and explosives of concern (MEC) safety briefing. This briefing will identify the variety of MEC that may exist within the project area and describe the actions to be taken if a suspicious item is discovered during construction activities. In the event that MEC or other suspicious materials are found within the project area, the contractor will stop work immediately and contact the U.S. Army Environmental office. Under no circumstance will anyone be allowed to handle MEC or other suspicious material.

Timing/Implementation: Prior to issuance of bid and/or construction documents.

Monitoring/Reporting: FORA and the U.S. Army.

Hydrology

MM-11 FORA shall obtain a National Pollution Discharge Elimination Systems Program General Construction Permit from the State Water Resources Control Board (SWRCB) as required by the Federal Clean Water Act. FORA shall comply with all the provisions of the permit including the use of best management practices and preparation of and compliance with a storm water pollution prevention program (SWPPP).

Timing/Implementation: Prior to construction activities.

Monitoring/Reporting: FORA and RWQCB.

Noise

MM-12a FORA shall limit noise generated by construction operations by putting the following language on final improvement plans for the proposed action/project: "Noise generating activities (excluding activities that would result in a safety concern to the public or construction workers) are limited to Monday through Friday between 7:00 A.M. and 7:00 P.M."

Timing/Implementation: During the course of construction.

Monitoring/Reporting: FORA; Cities of Seaside, Del Rey Oaks, and Monterey.

MM-12b FORA shall limit noise generated by construction operations by implementing the following:

- Construction equipment and equipment staging areas shall be located at the furthest distance possible from nearby noise-sensitive land uses.
- Construction equipment shall be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations. Equipment engine shrouds shall be closed during equipment operation.
- When not in use, motorized construction equipment shall not be left idling.

Timing/Implementation: During the course of construction.

Monitoring/Reporting: FORA; Cities of Seaside, Del Rey Oaks, and Monterey.

Transportation

MM-13 Improvement plan shall be submitted to Monterey-Salinas Transit for review and approval of bus stop configurations to ensure that they are consistent with the *Designing for Transit* guidelines.

Timing/Implementation: Prior to final approval of improvement plans.

Monitoring/Reporting: FORA/MST.