San Mateo County Resource Conservation District

PHONE 650.712.7765
FAX 650.712.0494

625 Miramontes Street, Suite 103, Half Moon Bay, CA 94019
www.sanmateoRCD.org

Request for Proposals
to
Provide Construction Implementation
for
Moty Farm Agricultural Water Storage Pond and Irrigation Infrastructure
5/17/2017

Contracting Entity

The San Mateo Resource Conservation District (RCD) is the contracting entity and project manager. The RCD helps people protect, conserve, and restore natural resources through information, education, and technical assistance programs. The work of the RCD is accomplished through strong voluntary partnerships with land owners and managers, technical advisors, area jurisdictions, government agencies, advocates, and others.

RCDs were established by the state of California to be locally governed special districts that act as focal points for local conservation efforts, using very diverse means to conserve natural resources on public and private lands. Established in 1939, San Mateo County's RCD was the first such district in California. For more information about the RCD, visit www.sanmateorcd.org.

Project Summary

The RCD seeks qualified contractors to construct one agricultural water storage pond and associated irrigation infrastructure. The pond will be built at Moty Farm located in San Gregorio California. The intent of this project is to 1) enhance stream flows in San Gregorio Creek for the benefit of native steelhead and coho salmon and 2) increase water security and maintain viable agriculture on the property.

Land Owners

Karen Moty – Moty Farms

Bid Process

Bids for the Moty Pond and Irrigation Projects in the San Gregorio watershed will be received by the San Mateo Resource Conservation District (RCD) by **7:00 p.m. on June 5th, 2017** at the following email address: Jarrad@sanmateoRCD.org. **Interested contractors can submit a bid for pond construction and/or bid for irrigation design.**

A pre-bid site inspection will be held on **Thursday, May 25th, 2017 from 11:00 p.m. to 1:00pm.** Attendance at the pre-bid meeting is strongly suggested for all prospective bidders. If planning to attend, confirm with Jarrad Fisher by email to Jarrad@sanmateoRCD.org. Meeting location will be at the Moty Farms site (click for directions from Half Moon Bay).

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The following plans, specifications, proposal forms, and sample contracting documents can be downloaded here.

A1: Location Maps
A2: Site Photos
A3: Pond Designs
A4: Design Basis Report
i. Appendix A – NRCS Soil Survey Properties
ii. Appendix B – 1995 NRCS Site Evaluation
iii. Appendix C – Geotechnical Soil Borings & Laboratory Testing Results
A5: Project Specifications
A6: Sample Contract
A7: Submittals
a) Blank Bid Sheets:
b) Authorized Bidders Statement Regarding Insurance coverage
c) Authorized Non-Collusion Affidavit
d) List of proposed suppliers and subcontractors.
e) License and experience statement.

Selection Criteria
The RCD will consider the following when reviewing bids.
1. Cost effectiveness
2. Qualifications and relevant experience
3. References

Bidders are required to provide the following to meet qualifications for this bid notice:
1. A completed bid sheet. Use the blank bid sheet provided and fill out for project components which you are bidding on:
2. Authorized Bidders Statement Regarding Insurance coverage. Use attached version.
3. Authorized Non-Collusion Affidavit. Use attached version.
4. List of proposed suppliers and subcontractors. Provide all information requested in the blank sheet provided.
5. License and experience statement. Provide all information requested in the blank sheet provided.
6. Submission of all bid materials by the deadline listed above.

Additional Construction Requirements
Construction Timeline: Construction can take place between approximately July 15th and October 15th, 2017. The timing for some of the irrigation infrastructure work will need to be agreed upon by the RCD and the landowners to ensure critical farming practices can continue as needed. However, the pond locations will be free and clear for construction to take place.

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Project Permitting and Pre-Construction Submittals: A Stormwater Pollution Prevention Plan (SWPPP) will be required for the Moty Farm project. The SWPPP will be completed by the selected contractor before construction implementation begins. The Contractor will be responsible for providing Qualified SWPPP Practitioner (QSP) services during project construction. The chosen contractor will also be responsible for completing the following items before construction begins.

- Construction Schedule
- Work Zones
- AAP/SSHP
- QC Plan
- Traffic Control Plan
- Creek Pump Assembly
- Reservoir Pump Assembly

Biological Monitoring: Contractors will be required to participate in a training on sensitive species that may be encountered during the project, and to adhere to all permit requirements. Biological monitors provided by the RCD will be present at some points during construction and will have authority to stop work if sensitive species are found.

Notice of Grant Funding: Bidders are notified that this project is grant-funded. The Moty Farms Pond Project is funded by the Department of Water Resources (DWR, Grant Agreement # 4600011486) and Coastal Conservancy (Grant agreement number 16-032). The DWR funds for this project were appropriated through Proposition 84 round 4 of the Integrated Regional Water Management (IRWM) Implementation Grants. Coastal Conservancy funds for this project were appropriated through Proposition 1. Project design funds were also made available through the National Fish and Wildlife Foundation (Grant agreement number 0200.16.051794).

Prevailing Wage Requirement and Labor Compliance Program: This project is subject to prevailing wage requirements and a labor compliance program will be established by the RCD using a third-party consultant to oversee contractor compliance.

Eligibility requirements for bidding contractors for prevailing wage projects include:

- Be in good legal standing with no outstanding judgments or liens owed to workers or to the State of California.
- Not be debarred from doing public works by the United States Department of Labor or any state that has public works debarment laws.
- Have a California Contractors State License if one is required (non-construction contractors must provide their professional license number if one exists for their profession).

Visit http://www.dir.ca.gov/Public-Works/Contractors.html for more information.

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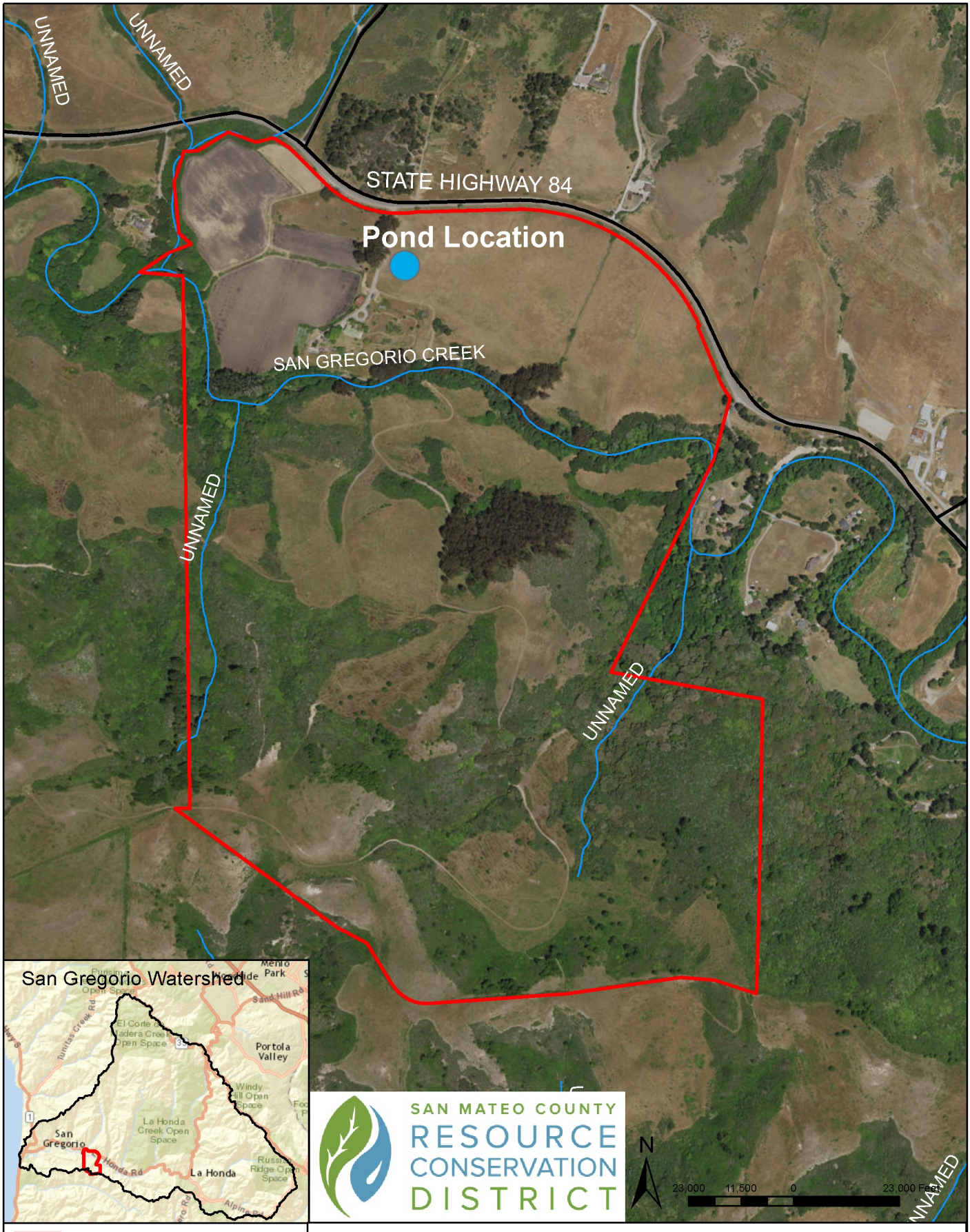
Moty Farm RFP Attachments
5/17/2017

- A.1 Location Maps
- A.2 Site Photos
- A.3 Pond Designs
- A.4 Design Basis Report
- A.5 Project Specification
- A.6 Sample Contract
- A.7 Required Bid Submittals
    - Blank Bid Sheet
    - Authorized Bidders Statement Regarding Insurance coverage. Use attached version.
    - Authorized Non-Collusion Affidavit. Use attached version.
    - List of proposed suppliers and subcontractors. Provide all information requested in the blank sheet provided.
    - License and experience statement. Provide all information requested in the blank sheet provided.

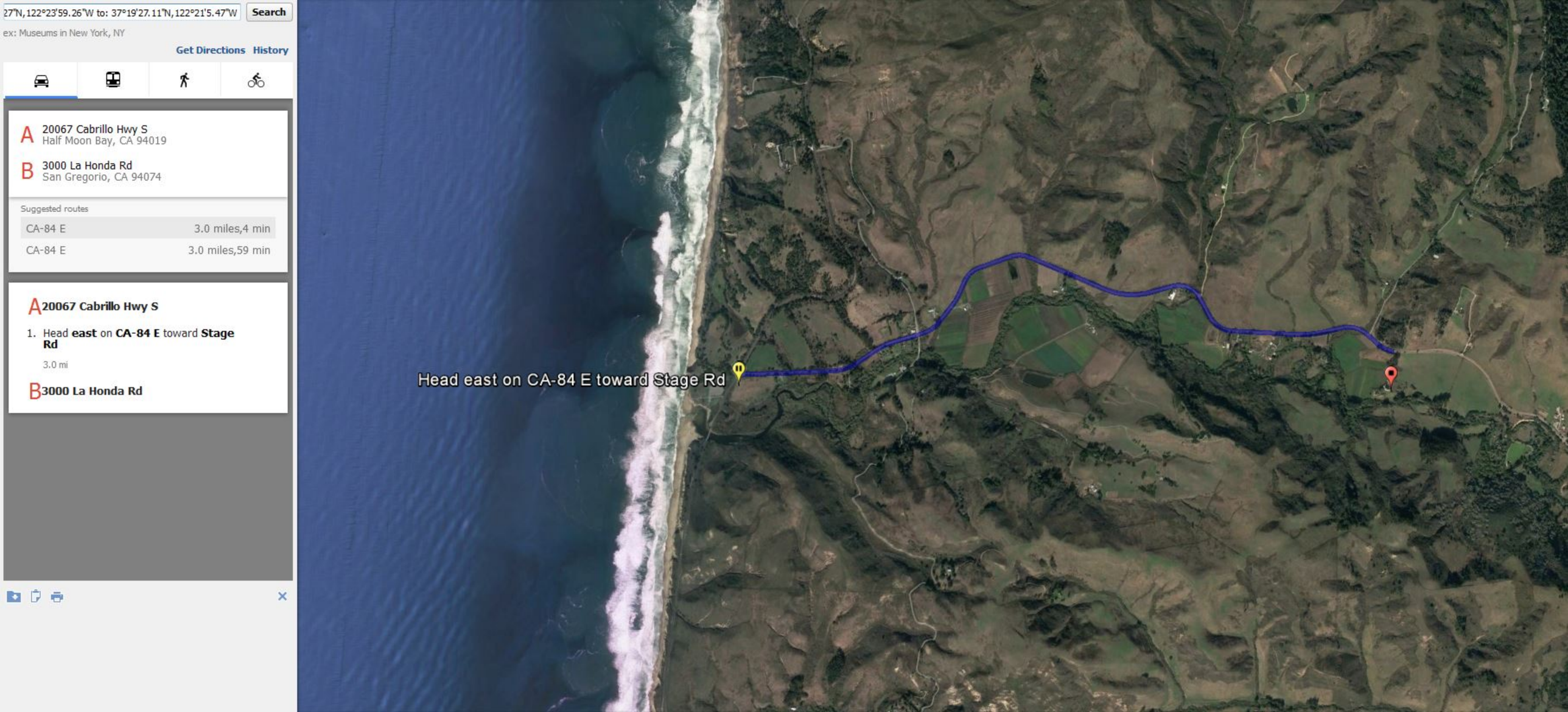
Submission of all bid materials is due by June 5th, 2017 by 7pm.

A.1 LOCATION MAPS



Moty Farms Project Site

Created By: Jarrad Fisher
Date: 5/511/2017


27°N, 122°23'59.26"W to: 37°19'27.11"N, 122°21'5.47"W
Search
ex: Museums in New York, NY
Get Directions
History
A 20067 Cabrillo Hwy S
Half Moon Bay, CA 94019
B 3000 La Honda Rd
San Gregorio, CA 94074
Suggested routes
CA-84 E 3.0 miles,4 min
CA-84 E 3.0 miles,59 min
A 20067 Cabrillo Hwy S
1. Head east on CA-84 E toward Stage Rd
3.0 mi
B 3000 La Honda Rd
Head east on CA-84 E toward Stage Rd

A.2 Moty Farm Site Photos

Moty Farm Photos

Picture 1. Moty Farm Field

Picture 2. Moty Farm Field

Picture 3. Pond Construction Site

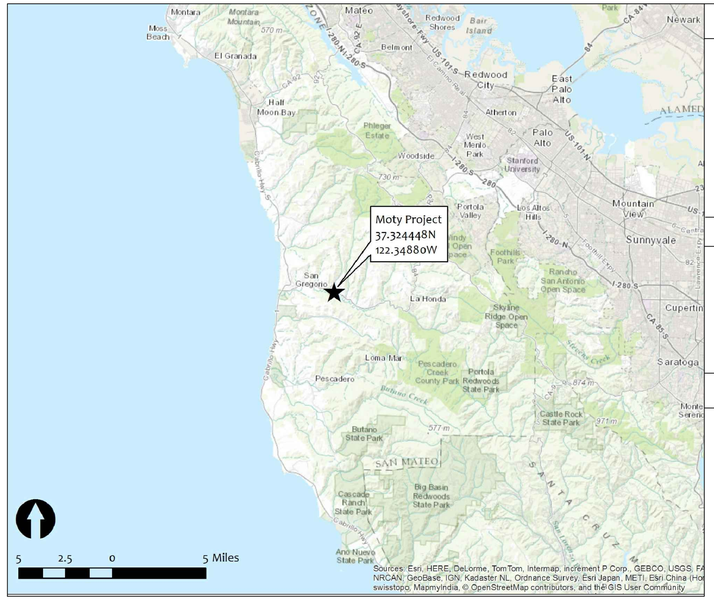
Picture 4. Creek Diversion and Pump

A.3 Pond Designs

MOTY-KLINGMAN PROPERTY
3030 LA HONDA ROAD
SAN GREGORIO, CA 94074

MOTY-KLINGMAN PROPERTY
AUXILIARY WATER STORAGE SYSTEM

CONSTRUCTION DRAWINGS
MAY 2017



VICINITY MAP

SHEET INDEX

OWNER

MOTY-KLINGMAN
3030 LA HONDA ROAD
SAN GREGORIO, CA 94074

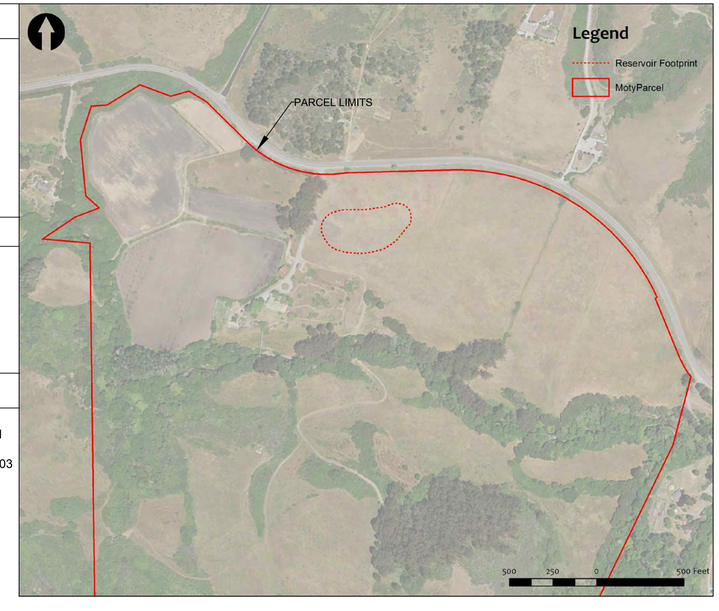
APN: 081300010

PROJECT COLLABORATORS

CALIFORNIA WATER PROJECT
TROUT UNLIMITED
2239 5TH STREET
BERKELEY, CA 94710
(510) 649-9987

CENTER FOR ECOSYSTEM MANAGEMENT AND RESTORATION (CEMAR)
4129 PIEDMONT AVE, SUITE 325
OAKLAND, CA 94611
(510) 420-4565

SAN MATEO COUNTY RESOURCE CONSERVATION DISTRICT
625 MIRAMONTES ST, SUITE 103
HALF MOON BAY, CA 94019
(650) 712-7765



SITE MAP

Project Overview: The purpose of this construct a new off-stream reservoir to maintain the property owner's agricultural water storage needs supplied by existing in-stream water diversions.

MARK	DESCRIPTION	DATE	APPR.
1	CONSTRUCTION PLAN SET	05/15/2017	RS

REGISTERED PROFESSIONAL ENGINEER — STORESUND — NO. C 64473 EXP 06/30/2017 — CIVIL — STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — STORESUND — NO. GE2855 EXP 06/30/2017 — GEOTECHNICAL — STATE OF CALIFORNIA

DESIGNED BY: | DRN BY: | CKD BY: | SUBMITTED BY: | DATE: | SOLICITATION NO.: | CONTRACT NO.: | PLOT SCALE | PLOT DATE: | FILE NUMBER: | SIZE: | FILE NAME:

Storesund Consulting
STORESUND CONSULTING
1964 LAWSON ROAD
KENSINGTON, CA 94707
(510) 526-5849

TITLE

MOTY-KLINGMAN PROPERTY
AUXILIARY WATER STORAGE SYSTEM
SAN GREGORIO, CA 94074

SHEET IDENTIFICATION
G-1
SHEET 1 OF 9

Moty Survey Control			
Northing (ft)	*Easting (ft)*	*Elevation (ft)*	*Description*
1946418.7	6024066.1	158.51	CTRL-01
1946392.5	6023508.1	148.7	CTRL-02
1945974.7	6023384.9	111.5	CTRL-03

Horizontal datum: CA State Plane Zone III (NAD83)

Vertical datum: NAVD88

ACCESS GATE

RESIDENCE DRIVEWAY

CTRL-01

CTRL-02

CTRL-03

(E) TELEPHONE CABLES

(E) 1" WATER SUPPLY

(E) CONCRETE CULVERT (2FT Ø)

(E) TEMPORARY CREEK DIVERSION

(E) UG ELECTRICAL SUPPLY

(E) ELECTRICAL CONDUIT (EMPTY)

(E) ELECTRICAL CONNECTION IN SHED

150 75 0 150 Feet

CONTOURS BASED ON "SAN MATEO COUNTY DEM" PROVIDED BY GARRETT DUNWOODY, MPA (COUNTY GIS LEAD) EMAIL: GDUNWOODY@CO.SANMATEO.CA.US (MARCH 2013). VERTICAL DATUM IS NAVD88.

MARK	DESCRIPTION	DATE	APPR
1	CONSTRUCTION PLAN SET	05/15/2017	RS

REGISTERED PROFESSIONAL ENGINEER
RONE STORESUND
NO. C 64473
EXP 06/30/2017
CIVIL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
RONE STORESUND
NO. GE2855
EXP 06/30/2017
GEOTECHNICAL
STATE OF CALIFORNIA

DESIGNED BY:		DATE:	
DWN BY:	CKD BY:	SOLICITATION NO.:	
SUBMITTED BY:		CONTRACT NO.:	
PLOT SCALE:	PLOT DATE:	FILE NUMBER:	
SIZE:	FILE NAME:		

Storesund Consulting
STORESUND CONSULTING
1541 JUNIPERO SERRA BLVD
KENSINGTON, CA 94707
(510) 526-5849

EXISTING CONDITIONS

MOTY-KLINGMAN PROPERTY
AUXILIARY WATER STORAGE SYSTEM
SAN GREGORIO, CA 94074

SHEET IDENTIFICATION
C-1
SHEET 2 OF 9

ESTIMATED PIPE INSTALLATION LENGTHS				
Pipe Segment	**Segment**	**Type**	**Diameter**	**Install Length (ft)***
Electrical Conduit	Shed to Creek Pump	Sch40 PVC	3"	1555
Electrical Conduit	Shed to Reservoir Pump	Sch40 PVC	2"	376
Raw Supply	Creek Pump to Reservoir	Sch40 PVC	4"	1687
Main Distribution	Reservoir to Terminus	Class 100 PVC	6"	1037
Lateral A	Valve A to Terminus	Class 100 PVC	6"	156
Lateral B	Valve B to Terminus	Class 100 PVC	6"	1040
Lateral C	Valve C to Terminus	Class 100 PVC	6"	911

Note: Install length estimated to be 115% of the 2D plan length. Field verify.

Point Table			
Point #	Raw Description	Northing	Easting
1	RESERVOIR PUMP PAD	1946096.1	6023462.9
2	(E) CULVERT	1946029.4	6023421.3
3	(E) CULVERT	1946040.5	6023376.5
4	VALVE A	1945979.2	6023253.1
5	VALVE B	1946158.7	6022716.9
6	VALVE C	1946167.8	6022679.7
7	CREEK PUMP PAD	1945954.9	6022239.9
8	LATERAL "A"	1946296.1	6022721.8
9	LATERAL "B"	1945938.9	6022388.8
10	LATERAL "C"	1946011.0	6022379.5
11	LATERAL "C"	1946503.7	6022841.0

NOTES

1) CONTRACTOR TO VERIFY WITH ELECTRICAL SUBCONTRACTOR ALL ONSITE WIRING.

2) THREE (3) #300MCM ALUMINUM WIRE OR EQUIVALENT TO TRANSFER POWER FROM ELECTRICAL SHED TO CREEK PUMP.

3) THREE (3) #3/0 ALUMINUM WIRE OR EQUIVALENT TO TRANSFER POWER FROM ELECTRICAL SHED TO RESERVOIR PUMP.

4) ELECTRICAL WORK INCLUDES INSTALLATION OF ALL NECESSARY PULL BOXES AND ANCILLARY DEVICES.

LATERAL "A"
(N) RESERVOIR PUMP PAD
6" BUTTERFLY VALVE (TYP)
B C-10
LATERAL "C"
MAIN DISTRIBUTION
A C-10
CREEK PUMP CONNECTION
CREEK PUMP ELECTRICAL
LATERAL "B"
A C-10 RAW SUPPLY
(E) ELECTRICAL CONNECTION
(E) ELECTRICAL CONDUIT UNDER ROAD
(N) ELECTRICAL CONDUIT TO PUMP PAD
CTRL-01
CTRL-02
CTRL-03
WATER LINES THROUGH EXISTING CONCRETE CULVERT
(N) PERIMETER RESERVOIR FOOTPRINT

150 75 0 150 Feet

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SIZE:		FILE NAME:	

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STORESUND CONSULTING
1544 LANSON LANE
KENSINGTON, CA 94707
(510) 526-5849

PIPING LAYOUT

MOTY-KLINGMAN PROPERTY
AUXILIARY WATER STORAGE SYSTEM
SAN GREGORIO, CA 94074

SHEET IDENTIFICATION
C-2
SHEET 3 OF 9

NOTE: GRADING OPERATIONS MAY ENCOUNTER BEDROCK. REFER TO SOILS BORINGS PRESENTED IN REPORT TITLED "DESIGN BASIS, COASTAL STREAM FLOW STEWARDSHIP PROJECT, MOTY-KLINGMAN PROPERTY, SAN GREGORIO, CA," PREPARED BY STORESUND CONSULTING, DATED APRIL 17, 2017.

Moty Survey Control			
Northing (ft)	*Easting (ft)*	*Elevation (ft)*	*Description*
1946418.7	6024066.1	158.51	CTRL-01
1946392.5	6023508.1	148.7	CTRL-02
1945974.7	6023384.9	111.5	CTRL-03

Horizontal datum: CA State Plane Zone III (NAD83)
Vertical datum: NAVD88

Point Table			
Point #	Raw Description	Northing	Easting
12	SEEPTRENCH	1946109.4	6023539.7
13	SEEPTRENCH-SUMP	1946138.4	6023551.6
14	SEEPTRENCH	1946126.8	6023581.0
15	SEEPTRENCH	1946100.4	6023707.3
16	SEEPTRENCH	1946121.6	6023930.1

CTRL-01
CTRL-02
CTRL-03
NO TREE REMOVAL
GRADE THIS AREA UNDER DIRECTION OF OWNER'S REP
LIMITS OF EXTENDED ROADWAY GRADING
REMOVE EUCALYPTUS HEIGHT ~ 120 FT DIAMETER ~3.2 FT
REMOVE EUCALYPTUS HEIGHT ~ 85 FT DIAMETER ~2.2 FT
(N) SEEPAGE TRENCH (OPTIONAL)
(N) PUMP RISER (OPTIONAL)
(N) KEYWAY
C C-10
D C-10
A C-3
5:1V

KEYWAY DETAILS
SCALE: AS SHOWN
13 A C-3

BENCH DETAILS
SCALE: AS SHOWN
B C-3

75' 0 150'

CONTOURS BASED ON "SAN MATEO COUNTY DEM" PROVIDED BY GARRETT DUNWOODY, MPA (COUNTY GIS LEAD) EMAIL: GDUNWOODY@CO.SANMATEO.CA.US (MARCH 2013). VERTICAL DATUM IS NAVD88.

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SUBMITTED BY: | CONTRACT NO.:
PLOT SCALE | PLOT DATE: | FILE NUMBER:
SIZE: | FILE NAME:

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KENSINGTON, CA 94707
(510) 526-5849

OVER-EXCAVATION

MOTY-KLINGMAN PROPERTY
AUXILIARY WATER STORAGE SYSTEM
SAN GREGORIO, CA 94074

SHEET IDENTIFICATION
C-3
SHEET 4 OF 9

Moty Survey Control			
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1946392.5	6023508.1	148.7	CTRL-02
1945974.7	6023384.9	111.5	CTRL-03

Horizontal datum: CA State Plane Zone III (NAD83)

Vertical datum: NAVD88

Grading Quantities		
Item	Quantity*	Unit
Reservoir Footprint	3.7	AC
Stripping (1")	500	CY
OverExcavation	43,000	CY
Reservoir Fill	28,100	CY
Roadway Extension Fill	2,350	CY
Excess Fill**	12,550	CY
Shrinkage Factor	1.09	N/A

**Estimated, Contractor responsible for actual quantities*

***All excess fill will be disposed onsite*

CTRL-01

CTRL-02

CTRL-03

GRADE THIS AREA UNDER DIRECTION OF OWNER TO FACILITATE VEHICULAR ACCESS

(N) DISCHARGE SPILLWAY

(N) SUCTION HOSE

(N) PUMP PAD

(N) SPILLWAY STRUCTURE

FINISH GRADING NOTES:
GRADING NOTES:

(1) CREST ELEVATION = +120.0 FT

(2) MAXIMUM WATER SURFACE ELEVATION = +118.0 FT

(3) RESERVOIR BOTTOM ELEVATION = +100.0 FT

(4) INTERIOR SLOPE = 3.0H TO 1V

(5) EXTERIOR SLOPE = 3H TO 1V (CUT) / 6H TO 1V (FILL)

(6) CREST WIDTH = 16 FT

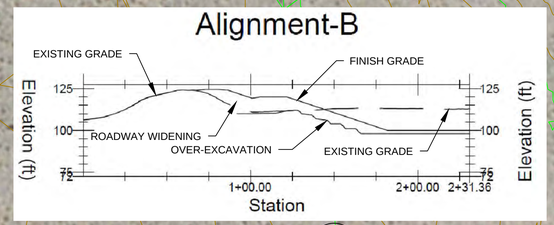
(7) RESERVOIR STORAGE (@ MAX WATER SURFACE EL) = 21.5 AF

(8) COMPACT EMBANKMENT TO A MIN OF 90% R.C. (ASTM D1557)

(9) RESERVOIR FOOTPRINT (2D) IS 3.7 ACRES

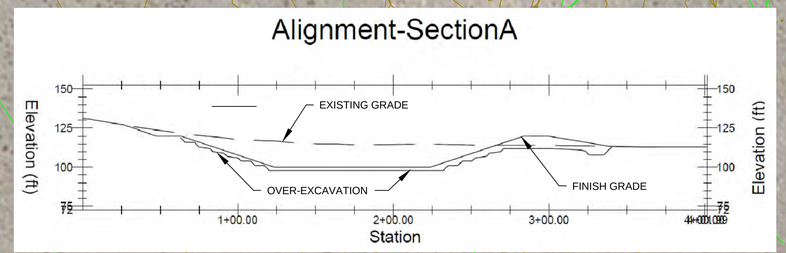
DISCHARGE SPILLWAY

(10) (N) DISCHARGE SPILLWAY TO CONSIST OF 6" HDPE PIPE WITH 48-IN REBAR ANCHORS (EITHER SIDE) CONNECTED WITH STAINLESS STEEL EYE BOLTS AT 5 FT SPACING AND 6-IN DIAM HOLE SAW CUT AT SPACING OF 10 FT (STARTING AT EL. +117 FT).



RESERVOIR CROSS SECTION B (B / C-4)

SCALE: AS SHOWN



RESERVOIR CROSS SECTION A (A / C-4)

SCALE: AS SHOWN

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SIZE: | FILE NAME:

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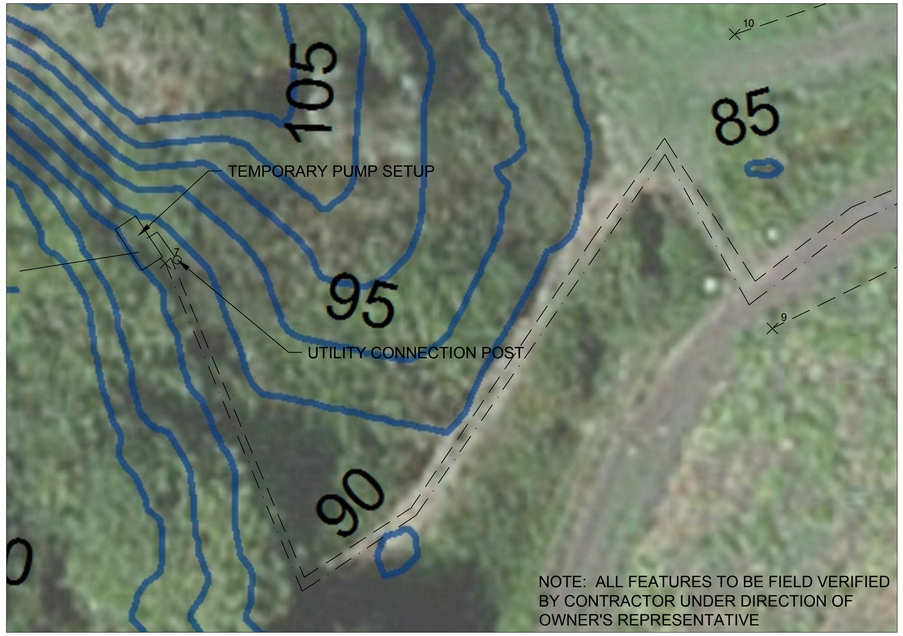
STORESUND CONSULTING
1 LANSDALE COURT
KENSINGTON, CA 94707
(510) 526-5849

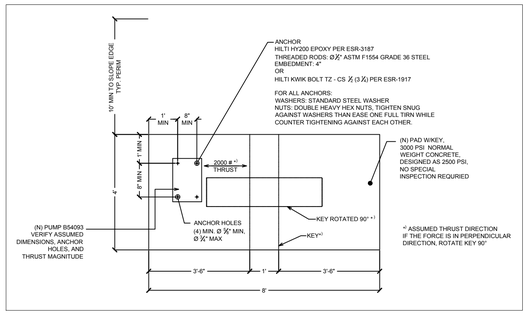
RESERVOIR GRADING

MOTY-KLINGMAN PROPERTY
AUXILIARY WATER STORAGE SYSTEM
SAN GREGORIO, CA 94074

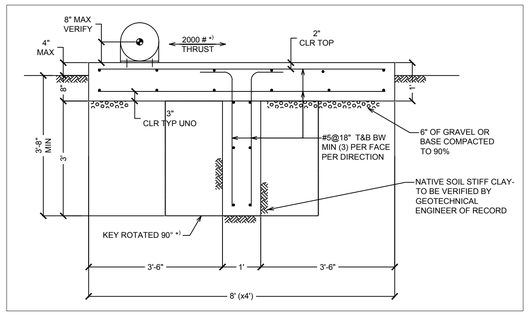
SHEET IDENTIFICATION
C-4
SHEET 5 OF 9



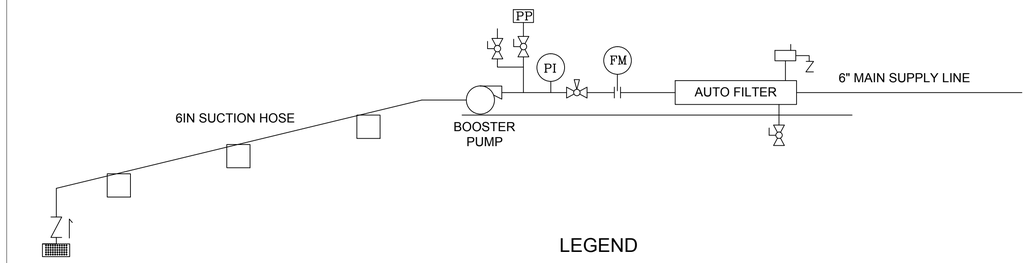
CREEK PUMP LAYOUT
SCALE: AS SHOWN
A
C-5



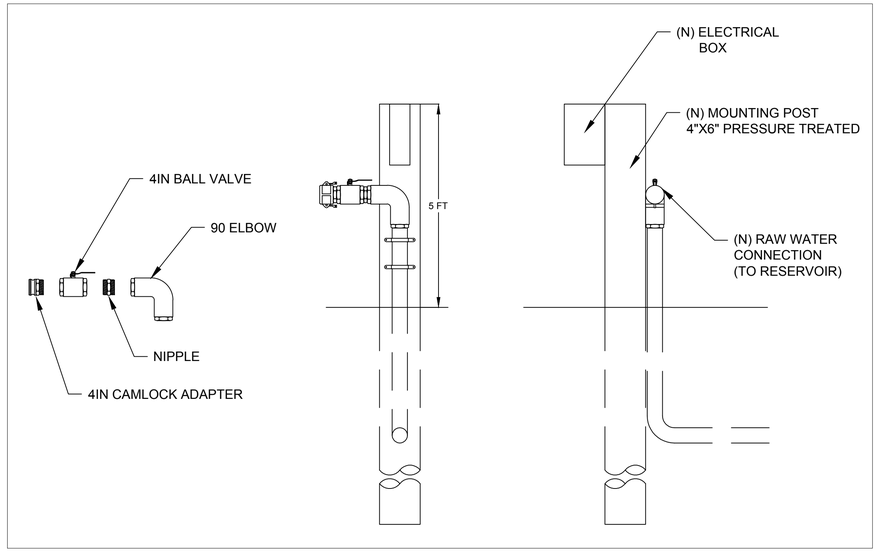
RESERVOIR PUMP PAD PLAN VIEW
SCALE: AS SHOWN
C
C-5



RESERVOIR PUMP PAD PROFILE VIEW
SCALE: AS SHOWN
D
C-5



RESERVOIR PUMP DETAILS
SCALE: AS SHOWN
B
C-5



UTILITY CONNECTION POST
SCALE: AS SHOWN
B
C-5

MARK	DESCRIPTION	DATE	APPR
1	CONSTRUCTION PLAN SET	05/15/2017	RS

REGISTERED PROFESSIONAL ENGINEER
RONE STORESUND
NO. C 64473
EXP 06/30/2017
CIVIL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
RONE STORESUND
NO. GE2855
EXP 06/30/2017
GEOTECHNICAL
STATE OF CALIFORNIA

DESIGNED BY:		DATE:	
DWN BY:	CKD BY:	SOLICITATION NO.:	
SUBMITTED BY:		CONTRACT NO.:	
PLOT SCALE	PLOT DATE:	FILE NUMBER:	
SIZE:	FILE NAME:		

STORESUND CONSULTING
15 LANSON COURT
KENSINGTON, CA 94707
(510) 526-5849

PUMP DETAILS

MOTY-KLINGMAN PROPERTY
AUXILIARY WATER STORAGE SYSTEM
SAN GREGORIO, CA 94074

SHEET IDENTIFICATION
C-5
SHEET 6 OF 9

MARK	DESCRIPTION	DATE	APPR.
1	CONSTRUCTION PLAN SET	05/15/2017	RS

REGISTERED PROFESSIONAL ENGINEER
JOHN STORESUND
NO. C 64473
EXP 06/30/2017
CIVIL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
JOHN STORESUND
NO. GE2855
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GEOTECHNICAL
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Storesund Consulting
STORESUND CONSULTING
41 LANSDALE AVENUE
KENSINGTON, CA 94707
(510) 526-5849

EROSION CONTROL

MOTY-KLINGMAN PROPERTY
AUXILIARY WATER STORAGE SYSTEM
SAN GREGORIO, CA 94074

SHEET IDENTIFICATION
C-7
SHEET 8 OF 9

EROSION PREVENTION AND SEDIMENT CONTROL NOTES:

1. PERFORM EROSION PREVENTION AND SEDIMENT CONTROL IN ACCORDANCE WITH THE LATEST EDITION OF THE CALIFORNIA BUILDING CODE, APPLICABLE COUNTY REGULATIONS, AND SECTION 20 OF THE CALTRANS STANDARD SPECIFICATIONS.

2. THE APPROVED PLANS SHALL CONFORM WITH THE EROSION PREVENTION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES CONTAINED IN THE LATEST EDITIONS OF THE FOLLOWING PUBLICATIONS OR AN EQUIVALENT BEST MANAGEMENT PRACTICE:

D

   2.1. EROSION AND SEDIMENT CONTROL FIELD MANUAL BY THE SAN FRANCISCO BAY REGIONAL WATER QUALITY CONTROL BOARD;
   2.2. MANUAL OF STANDARDS FOR EROSION & SEDIMENT CONTROL MEASURES BY THE ASSOCIATION OF BAY AREA GOVERNMENTS;
   2.3. CONSTRUCTION SITE BEST MANAGEMENT PRACTICE HANDBOOK BY CALTRANS;
   2.4. STORMWATER BEST MANAGEMENT PRACTICE HANDBOOK BY THE CALIFORNIA STORMWATER QUALITY ASSOCIATION.

3. IF DISCREPANCIES OCCUR BETWEEN THESE NOTES, MATERIALS REFERENCED HEREIN OR MANUFACTURER'S RECOMMENDATIONS, THEN THE MOST PROTECTIVE SHALL APPLY.

4. THE OWNER IS RESPONSIBLE FOR OBTAINING AND COMPLYING WITH THE NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT NO. CAS000002 WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES OF STORM WATER RUNOFF ASSOCIATED WITH CONSTRUCTION ACTIVITY DISTURBING LAND EQUAL TO OR GREATER THAN ONE ACRE. CONSTRUCTION ACTIVITIES INCLUDE BUT ARE NOT LIMITED TO CLEARING, GRADING, EXCAVATION, STOCKPILING, AND RECONSTRUCTION OF EXISTING FACILITIES INVOLVING REMOVAL AND REPLACEMENT.

5. PRESERVATION OF EXISTING VEGETATION SHALL OCCUR TO THE MAXIMUM EXTENT PRACTICABLE.

6. THE CONTRACTOR IS RESPONSIBLE FOR PREVENTING STORM WATER POLLUTION GENERATED FROM THE CONSTRUCTION SITE. THE CONTRACTOR MUST IMPLEMENT AN EFFECTIVE COMBINATION OF EROSION PREVENTION AND SEDIMENT CONTROL ON ALL DISTURBED AREAS DURING THE RAINY SEASON (OCTOBER 15 – APRIL 15).

7. EROSION PREVENTION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED BY THE CONTRACTOR BEFORE FORECASTED STORM EVENTS AND AFTER ACTUAL STORM EVENTS TO ENSURE MEASURES ARE FUNCTIONING PROPERLY. STORM EVENTS PRODUCE AT LEAST 1 INCH OF PRECIPITATION IN A 24 HOUR PERIOD. EROSION PREVENTION AND SEDIMENT CONTROL MEASURES THAT HAVE FAILED OR ARE NO LONGER EFFECTIVE SHALL BE PROMPTLY REPLACED. EROSION PREVENTION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED UNTIL DISTURBED AREAS ARE STABILIZED.

C

8. CONTRACTOR IS RESPONSIBLE FOR DEVELOPMENT AND IMPLEMENTATION OF AN APPROPRIATE STORM WATER POLLUTION PREVENTION PLAN. CHANGES TO THE EROSION PREVENTION AND SEDIMENT CONTROL PLAN MAY BE MADE TO RESPOND TO FIELD CONDITIONS. CHANGES SHALL BE NOTED ON THE PLAN WHEN MADE.

9. DISCHARGES OF POTENTIAL POLLUTANTS FROM CONSTRUCTION SITES SHALL BE PREVENTED USING SOURCE CONTROLS TO THE EXTENT PRACTICABLE. POTENTIAL POLLUTANTS INCLUDE BUT ARE NOT LIMITED TO: SEDIMENT, TRASH, NUTRIENTS, PATHOGENS, PETROLEUM HYDROCARBONS, METALS, CONCRETE, CEMENT, ASPHALT, LIME, PAINT, STAINS, GLUES, WOOD PRODUCTS, PESTICIDES, HERBICIDES, CHEMICALS, HAZARDOUS WASTE, SANITARY WASTE, VEHICLE OR EQUIPMENT WASH WATER AND CHLORINATED WATER.

10. ENTRANCE(S) TO THE CONSTRUCTION SITE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT OR FLOWING OF POTENTIAL POLLUTANTS OFFSITE. POTENTIAL POLLUTANTS DEPOSITED ON PAVED ARES WITHIN THE COUNTY RIGHT–OF–WAY, SUCH AS ROADWAYS AND SIDEWALKS, SHALL BE PROPERLY DISPOSED OF AT THE END OF EACH WORKING DAY OR MORE FREQUENTLY AS NECESSARY.

11. WHENEVER IT IS NOT POSSIBLE TO UTILIZE EROSION PREVENTION MEASURES, EXPOSED SLOPES SHALL EMPLOY SEDIMENT CONTROL DEVICES, SUCH AS FIBER ROLLS AND SILT FENCES. FIBER ROLLS AND SILT FENCES SHALL BE TRENCHED AND KEYED INTO THE SOIL AND INSTALLED ON CONTOUR.

12. HYDROSEEDING SHALL BE CONDUCTED IN A THREE STEP PROCESS. FIRST, EVENLY APPLY SEED MIX AND FERTILIZER TO THE EXPOSED SLOPE. SECOND, EVENLY APPLY MULCH OVER THE SEED AND FERTILIZER. THIRD, STABILIZE THE MULCH IN PLACE.

    APPLICATIONS SHALL BE BROADCASTED MECHANICALLY OR MANUALLY AT THE RATES SPECIFIED BELOW. SEED MIX AND FERTILIZER SHALL BE WORKED INTO THE SOIL BY ROLLING OR TAMPING. IF STRAW IS USED AS MULCH, STRAW SHALL BE DERIVED FROM WHEAT, RICE OR BARLEY AND BE APPROXIMATELY 6 TO 8 INCHES IN LENGTH. STABILIZATION OF MULCH SHALL BE DONE HYDRAULICALLY BY APPLYING AN EMULSION OR MECHANICALLY BY CRIMPING OR PUNCHING THE MULCH INTO THE SOIL.

B

MATERIALS	APPLICATION RATE (POUNDS/ACRE)
SEED MIX	
HILL VIEW MIX (LE BALLISTER'S)	40
Bromus carinatus (CALIFORNIA BROME)	
Elymus glaucus (BLUE WILD RYE)	
Horeum brachyantherum (MEADOW BARLEY)	
Trifolium wildenovii (TOM CAT CLOVER)	
Hordeum vulgare (COMMON BARLEY)	80
EQUIVALENT MATERIAL	PER MANUFACTURER

    THE SEEDING SHALL OCCUR BY MANUALLY APPLYING THE SEEDS IN THE RATES INDICATED. NO FERTILIZER SHALL BE USED. SEEDS SHALL BE WORKED INTO THE SOIL BY ROLLING OR TAMPING. STRAW USED SHOULD BE DERIVED FROM WHEAT, RICE OR BARLEY AND SHOULD BE 6–8" IN LENGTH. THE STRAW SHOULD BE APPLIED SO IT IS +/– .5 INCHES THICK SCATTERED OVER THE SEEDED AREA. COMMON BARELY (HORDEUM VULGARE) IS NON–NATIVE AND SHOULD ONLY BE APPLIED IN YEAR 1 AS A NURSE SPECIES UNLESS IN YEAR 2 THERE IS LESS THEN 90% COVERAGE. IRRIGATION WILL LIKELY NOT BE NECESSARY AS THE SEEDS WILL HAVE SUFFICIENT WATER TO GERMINATE DURING THE RAINY SEASON AND ARE ADAPTED TO DRY SUMMERS. TO ENSURE SUCCESS THERE WILL BE 95% COVER BY SPRING OF YEAR 1 AND 100% COVER BY YEAR 2 AND EXTENDING BEYOND THE LIFE OF THE PROJECT. IF THESE STANDARDS ARE NOT MET THEN INCREASED SEEDING WILL BE APPLIED APPROPRIATELY.

13. SOIL AND MATERIAL STOCKPILES SHALL BE PROPERLY PROTECTED TO MINIMIZE SEDIMENT AND POLLUTANT TRANSPORT FROM THE CONSTRUCTION SITE.

14. SOLID WASTE, SUCH AS TRASH, DISCARDED BUILDING MATERIALS AND DEBRIS, SHALL BE PLACED IN DESIGNATED COLLECTION AREAS OR CONTAINERS. THE CONSTRUCTION SITE SHALL BE CLEARED OF SOLID WASTE DAILY, OR AS NECESSARY, AND REGULAR REMOVAL AND PROPER DISPOSAL SHALL BE ARRANGED.

A

15. A CONCRETE WASHOUT AREAS, SUCH AS A TEMPORARY PIT, SHALL BE DESIGNATED TO CLEAN CONCRETE TRUCKS AND TOOLS (AS REQUIRED). AT NO TIME SHALL CONCRETE PRODUCTS AND WASTE BE ALLOWED TO ENTER COUNTY WATERWAYS SUCH AS CREEKS OR STORM DRAINS.

16. PROPER APPLICATION, CLEANING AND STORAGE OF POTENTIALLY HAZARDOUS MATERIALS, SUCH AS PAINTS AND CHEMICALS, SHALL BE CONDUCTED TO PREVENT THE DISCHARGE OF POLLUTANTS.

17. WHEN UTILIZED, TEMPORARY RESTROOMS AND SANITARY FACILITIES SHALL BE LOCATED AND MAINTAINED TO PREVENT THE DISCHARGE OF POLLUTANTS.

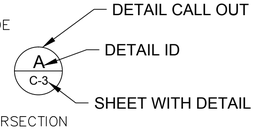
18. APPROPRIATE VEHICLE STORAGE, FUELING, MAINTENANCE AND CLEANING AREAS SHALL BE DESIGNATED AND MAINTAINED TO PREVENT DISCHARGE OF POLLUTANTS.

GENERAL NOTES:

1. CONTRACTOR SHALL SUPPLY ALL MATERIALS, LABOR AND EQUIPMENT TO CONSTRUCT THE FEATURES SHOWN ON THESE PLANS AND ASSOCIATED SPECIFICATIONS.
2. CONTRACTOR SHALL SATISFY HIMSELF AS TO THE NATURE OF THE GROUND AND OTHER EXISTING CONDITIONS PRIOR TO BIDDING THE WORK. NO ADJUSTMENTS WILL BE MADE.
3. CONTRACTOR AGREES THAT, IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL.
4. CONTRACTOR SHALL ARRANGE A PRE–CONSTRUCTION CONFERENCE WITH THE DESIGN ENGINEER AND OWNER'S REPRESENTATIVE PRIOR TO COMMENCING WORK. ALL PARTIES, THEIR REPRESENTATIVES, SHALL BE NOTIFIED 72 HOURS PRIOR TO COMMENCEMENT OF WORK AND SHALL BE KEPT INFORMED AS TO PROGRESS DURING THE COURSE OF THE WORK.
5. PERFORM GRADING IN ACCORDANCE WITH THE LATEST EDITION OF THE CALIFORNIA BUILDING CODE, APPLICABLE COUNTY REGULATIONS, AND THE PROJECT PLANS AND SPECIFICATIONS.
6. EXISTING DRAINAGE COURSES RECEIVING WATER FROM THIS SITE AND LOCATED THROUGHOUT THIS SITE SHALL REMAIN OPEN AND CLEAR OF DEBRIS TO PROPERLY CONVEY STORM WATER. IF EXISTING DRAINAGE COURSES RECEIVING WATERS FROM THE SITE ARE LOCATED IN THE COUNTY RIGHT–OF –WAY AND NEED MAINTENANCE, CONTACT THE DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS FOR FURTHER ASSISTANCE. IN ANY EVENT, THE OWNER AND/OR CONTRACTOR SHALL BE HELD LIABLE FOR ANY DAMAGE DUE TO OBSTRUCTING NATURAL DRAINAGE PATTERNS.
7. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE DESIGN ENGINEER UPON DISCOVERING DISCREPANCIES, ERRORS OR OMISSIONS IN THE PLANS. PRIOR TO PROCEEDING, THE OWNER SHALL HAVE THE PLANS REVISED TO CLARIFY IDENTIFIED DISCREPANCIES, ERRORS OR OMISSIONS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING UNDERGROUND SERVICE ALERT (U.S.A.), TOLL FREE AT 1–800–642–2444, AT LEAST TWO WORKING DAYS PRIOR TO EXCAVATION. THE CONTRACTOR SHALL UNCOVER RELEVANT UTILITIES TO VERIFY THEIR LOCATION AND ELEVATION. IF UNEXPECTED OR CONFLICTING UTILITIES ARE ENCOUNTERED DURING EXCAVATION, NOTIFY U.S.A., THE UTILITY OWNER AND/OR THE PROJECT ENGINEER IMMEDIATELY. UTILITIES INCLUDE BUT ARE NOT LIMITED TO WATER, ELECTRICAL, GAS, TELEPHONE AND CABLE/TV.
9. IN THE EVENT CULTURAL RESOURCES (I.E. HISTORICAL, ARCHAEOLOGICAL, AND PALEONTOLOGICAL RESOURCES, AND HUMAN REMAINS) ARE DISCOVERED DURING GRADING OR OTHER CONSTRUCTION ACTIVITIES, WORK SHALL BE HALTED WITHIN A 100 FOOT RADIUS OF THE FIND. THE NORTHWEST INFORMATION CENTER SHALL BE NOTIFIED AT (707) 664–0880. A QUALIFIED ARCHAEOLOGIST SHALL BE CONSULTED FOR AN ON–SITE EVALUATION. ADDITIONAL MITIGATION MAY BE REQUIRED BY THE COUNTY PER THE ARCHAEOLOGIST'S RECOMMENDATIONS. IF HUMAN BURIALS OR HUMAN REMAINS ARE ENCOUNTERED, THE CONTRACTOR SHALL ALSO NOTIFY THE COUNTY CORONER.
10. SHOULD GRADING OPERATIONS ENCOUNTER HAZARDOUS MATERIALS, OR WHAT APPEAR TO BE HAZARDOUS MATERIALS, STOP WORK IN THE AFFECTED AREA AND CONTACT 911 OR THE APPROPRIATE AGENCY FOR FURTHER INSTRUCTION.
11. THE GRADING PERMIT AND AN APPROVED COPY OF THE GRADING PLANS SHALL BE MAINTAINED ON THE PROJECT SITE THROUGHOUT THE DURATION OF CONSTRUCTION ACTIVITIES.
12. DRAINAGE FACILITIES AND GRADING SHALL BE INSPECTED BEFORE RECEIVING FINAL APPROVAL. THE CONTRACTOR SHALL CONSULT THE PROJECT JOB CARD FOR COORDINATION OF INSPECTION REQUESTS.

COMMON ABBREVIATIONS

AC	ACRES
CL	CENTER LINE
E	EXISTING
EG	EXISTING GRADE
EL/ELEV	ELEVATION
FG	FINISH GRADE
FT	FEET
H	HORIZONTAL
N	NEW
PI	POINT OF INTERSECTION
PIP	PROTECT IN PLACE
SE	SOUTHEAST
UG	UNDER GROUND
V	VERTICAL



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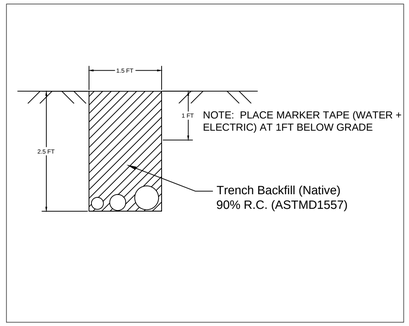
1561 LAWSON ROAD
KENSINGTON, CA 94707
(510) 526-5849

NOTES

MOTY-KLINGMAN PROPERTY
AUXILIARY WATER STORAGE SYSTEM
SAN GREGORIO, CA 94074

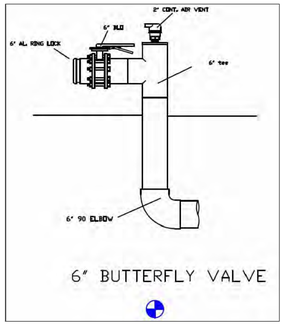
SHEET IDENTIFICATION
C-8
SHEET 9 OF 9



TYPICAL TRENCH DETAIL

SCALE: AS SHOWN

A C-10



BUTTERFLY VALVE & RISER

SCALE: AS SHOWN

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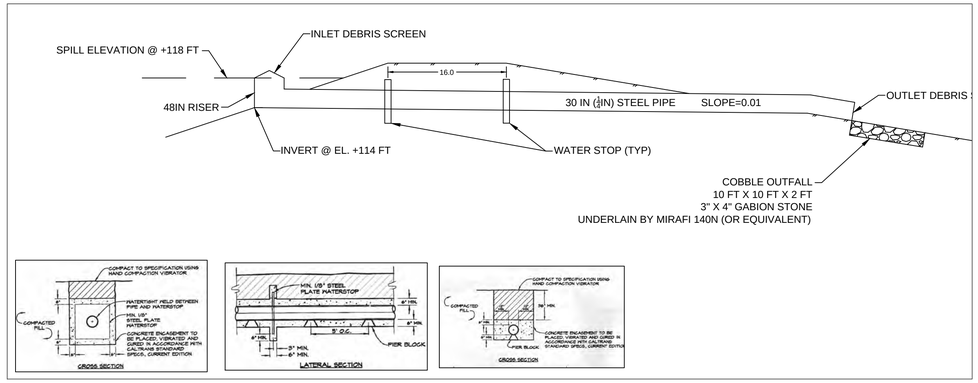

PRIMARY SPILLWAY

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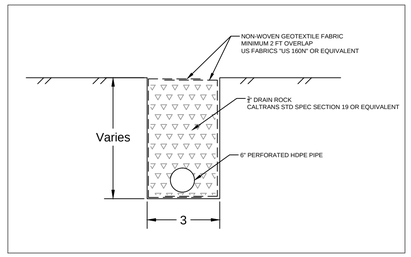

SEEPAGE TRENCH (OPTIONAL)

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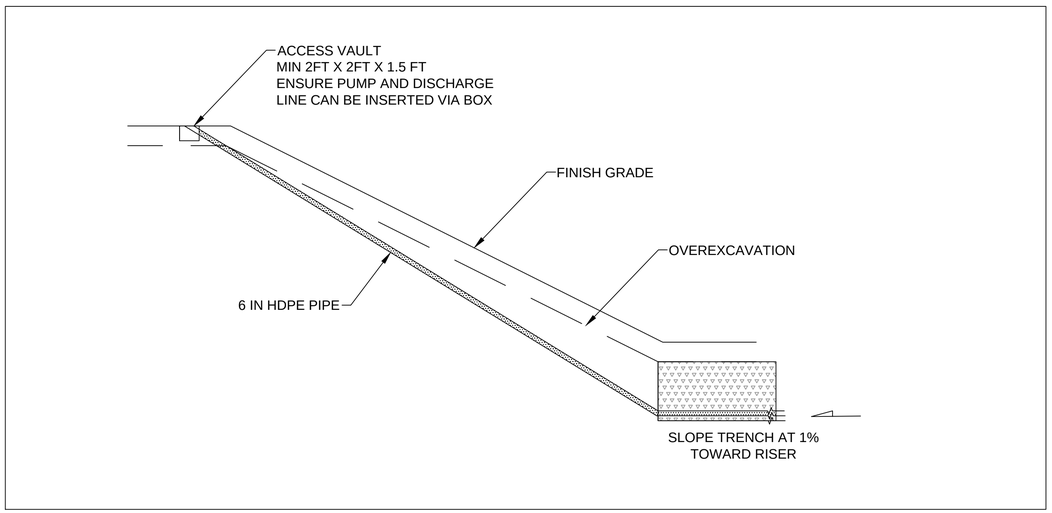
C C-10



SEEPAGE TRENCH RISER (OPTIONAL)

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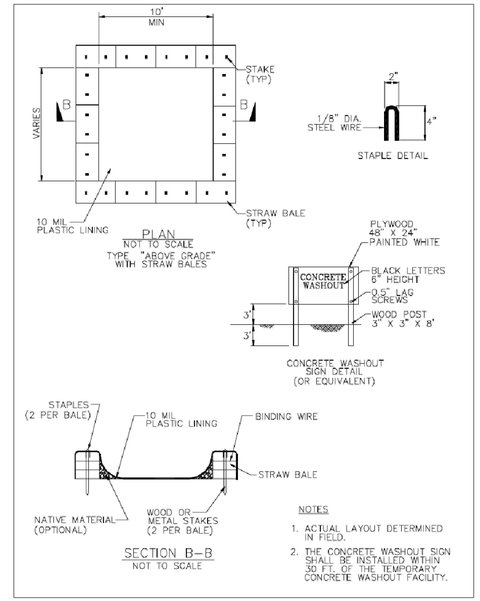

CONCRETE CLEAN OUT (TYP)

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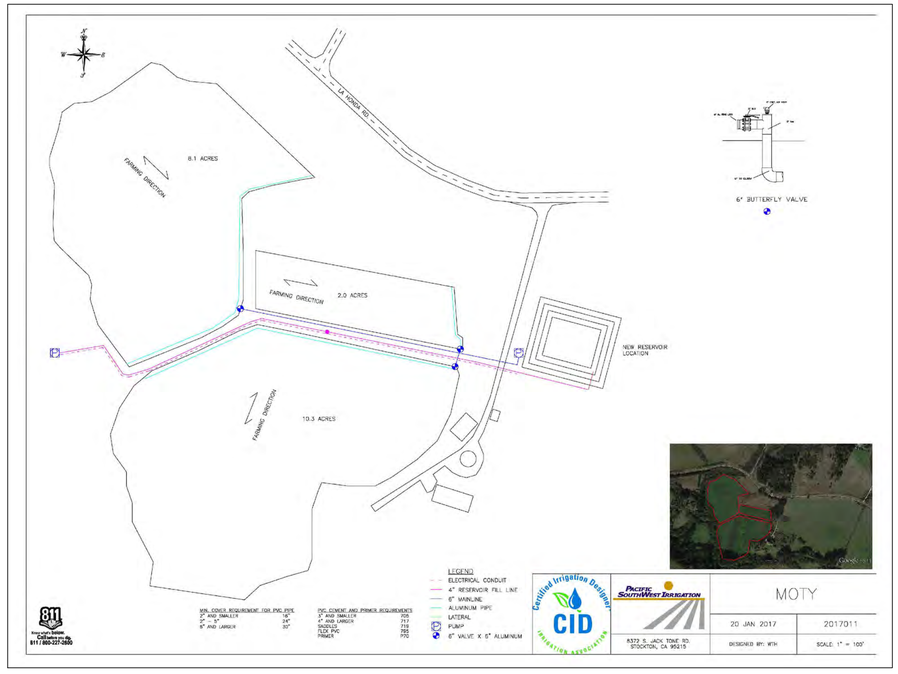

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A.4 Design Basis Report

Coastal Streamflow Stewardship Project – Moty-Klingman Property

Basis of Design Report

R. Storesund, D.Eng., P.E., G.E.

April 2017

Storesund Consulting

Center for Ecosystem Management and Restoration

TROUT UNLIMITED

Storesund Consulting
154 Lawson Road, Kensington, CA 94707
510-225-5389 (cell) email: rune@storesundconsulting.com

April 17, 2017

Matt Clifford
Trout Unlimited
4221 Hollis Street
Emeryville, CA 94608

Re: Design Report
Coastal Streamflow Stewardship Project – Moty-Klingman Property
San Gregorio, CA

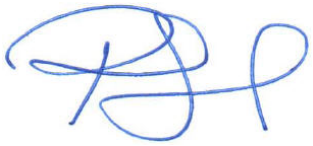
Dear Mr. Clifford:

We are pleased to submit this design report that details our desktop study, field exploration, laboratory testing, and layout/design for the water storage reservoir on the Moty-Klingman property, in San Gregorio, California.

Please feel free to contact me with any comments or questions via phone (510-225-5389) or via email at rune@storesundconsulting.com.

Sincerely,

STORESUND CONSULTING



Rune Storesund, D.Eng., P.E., G.E.
Consulting Engineer

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APPENDICES

Appendix A – NRCS Soil Survey Properties
Appendix B – 1995 NRCS Site Evaluation
Appendix C – Geotechnical Soil Borings & Laboratory Testing Results

Project Overview

Trout Unlimited (TU), the Center for Ecosystem Management and Restoration (CEMAR), and the National Marine Fisheries Service (NMFS) have identified water diversions and low stream flows as a critical factor holding back steelhead in the San Gregorio Watershed. The use of stored water during low flow periods aims to increase the available water flow through the creek during critical for steelhead juvenile rearing.

CEMAR and TU actively worked with Storesund Consulting during a previous alternatives analysis phase to identify a preferred alternative consisting of 18.5 AC-FT of water storage. The Moty & Klingman (Moty Project) property (Figure 1) is located in San Gregorio, California (37.324448N; 122.3488W).

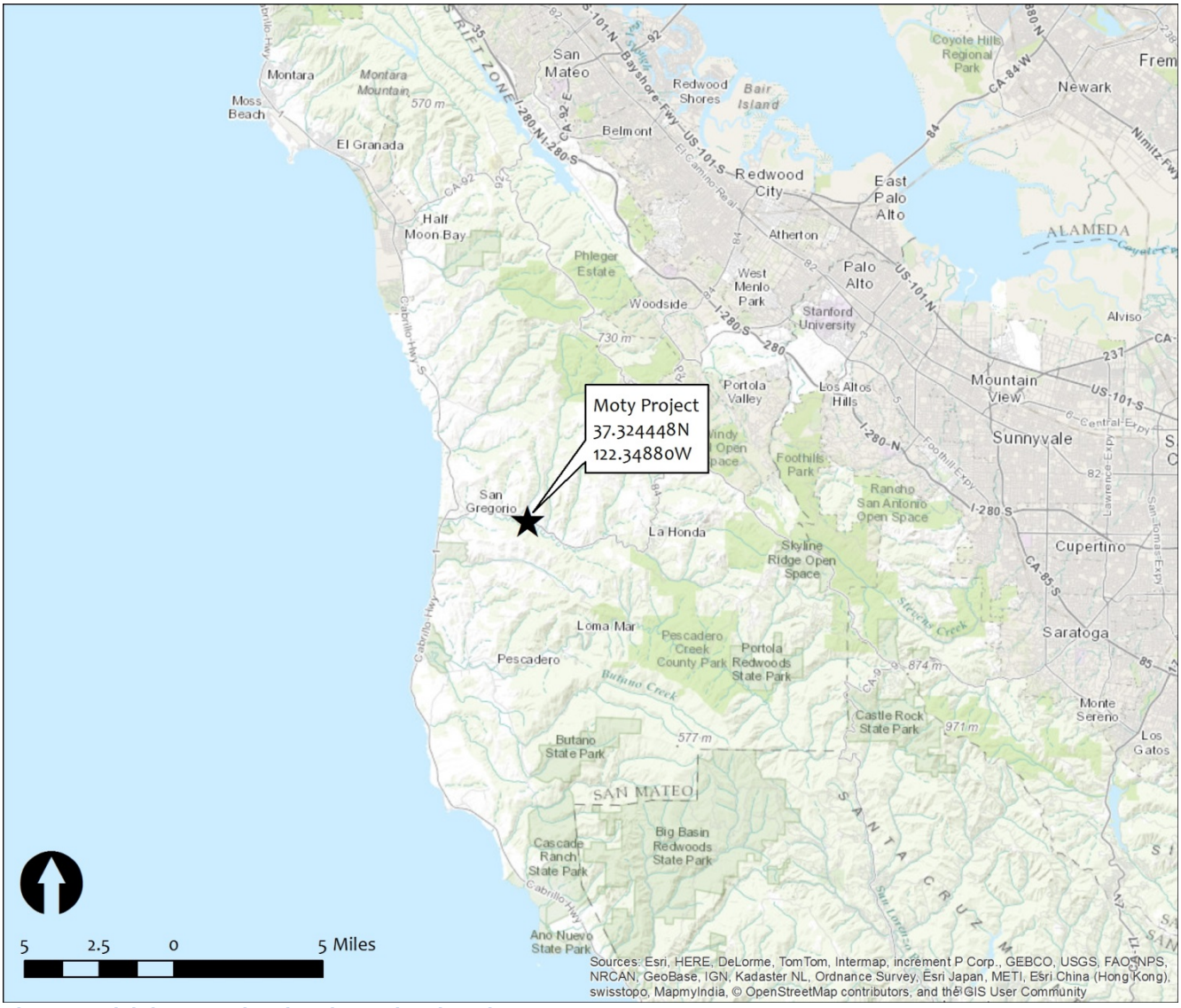


Figure 1: Vicinity map showing the project location.

Scope of Services

Storesund Consulting provided engineering support to TU and CEMAR during the feasibility development. For this phase, our tasks consisted of (1) a desktop study providing background geologic and soils information on the project site; (2) geotechnical soil borings to establish subsurface soil conditions; (3) preparing this preliminary design report; (4) development of a suite of alternatives with feasibility-level opinion of probable construction cost; and (5) selection, in conjunction with the project team of a preferred alternative for detailed design.

Existing Conditions

The current property does not have a formal reservoir for water storage. A depression in the ground, just east of the driveway to the property, has the ability to store a small amount of water. A 2-3 foot high earthen berm has been constructed to the south of the pond to aid in water retention. No berms are required to the north and east due to upslope in topography. A culvert (invert El. +108.8 ft) provides drainage to this area under the driveway.

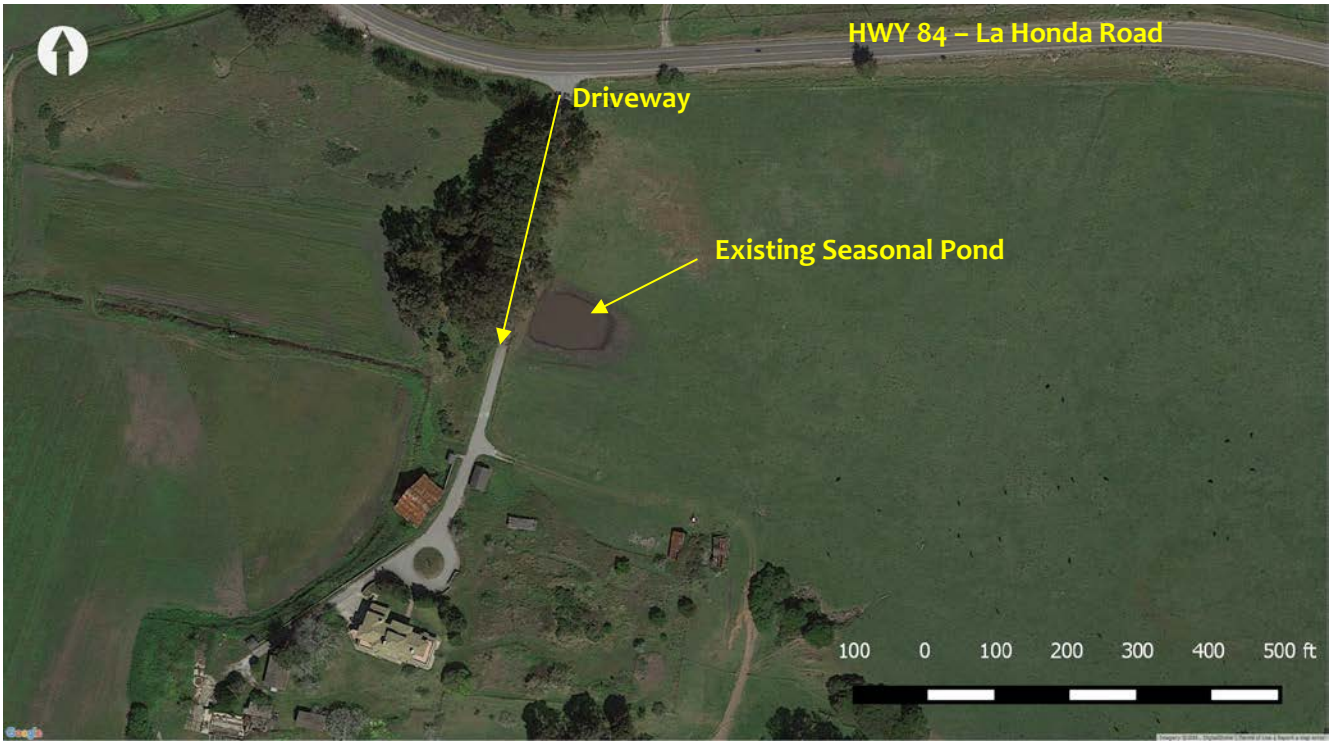


Figure 2: Overview of existing seasonal pond.

Desktop Study

The purpose of the desktop study was to evaluate site conditions based on available data to identify potential reservoir configurations and serve as a foundation for developing a field exploration program to verify actual onsite conditions. The desktop study evaluated geology, seismicity, and surficial soils. The desktop study focused on two potential reservoir locations at the property; Study Area A and Study Area B (Figure 3).

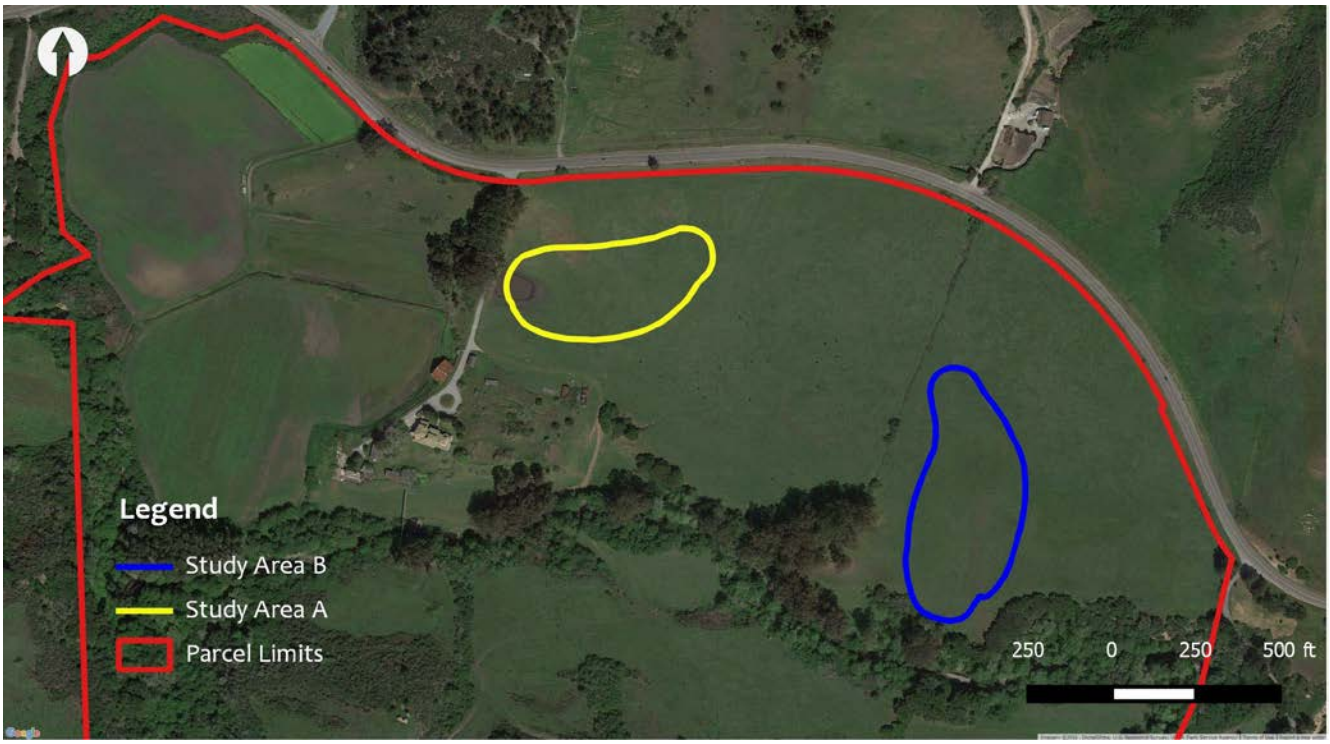


Figure 3: Overview of the primary evaluation sites.

Geology

The project site is located within the Montara Mountain Assemblage (1), which is comprised of the Purisima Formation (Pliocene and upper Miocene). This formation consists of predominantly gray and greenish–gray to buff fine–grained sandstone, siltstone, and mudstone, but also includes some porcelaneous shale and mudstone, chert, silty mudstone, and volcanic ash. West of Portola Valley, this unit consists of fine– to medium–grained silty sandstone (1). The primary geologic units include (1):

- ***Pomponio Mudstone Member (Tpp)*** *- Gray to white porcelaneous shale and mudstone, in places rhythmically bedded with alternating layers of nonsiliceous mudstone. This unit resembles Monterey Shale, Santa Cruz Mudstone, and Lambert Shale.*

- ***Holocene Alluvium (Qal)*** *- Unconsolidated gravel, sand, silt, and clay along streams. Less than a few meters thick in most places*

- ***Holocene Colluvium (Qcl)*** *– Loose to firm, friable, unsorted sand, silt, clay, gravel, rock debris, and organic material in varying proportions.*

- ***Coarse-Grained Older Alluvial Fan and Stream Terrace Deposits (Qof)*** *– Poorly consolidated gravel, sand, and silt, coarser grained at heads of old fans and in narrow canyons.*

- ***Younger (inner) Alluvial Fan Holocene Deposits (Qyf)*** *- Unconsolidated fine to coarse–grained sand, silt, and gravel, coarser grained at heads of fans and in narrow canyons.*

- ***Younger (i) Alluvial Fan Holocene Deposits (Qyf)*** *- Unconsolidated fine sand, silt, and clayey silt.*

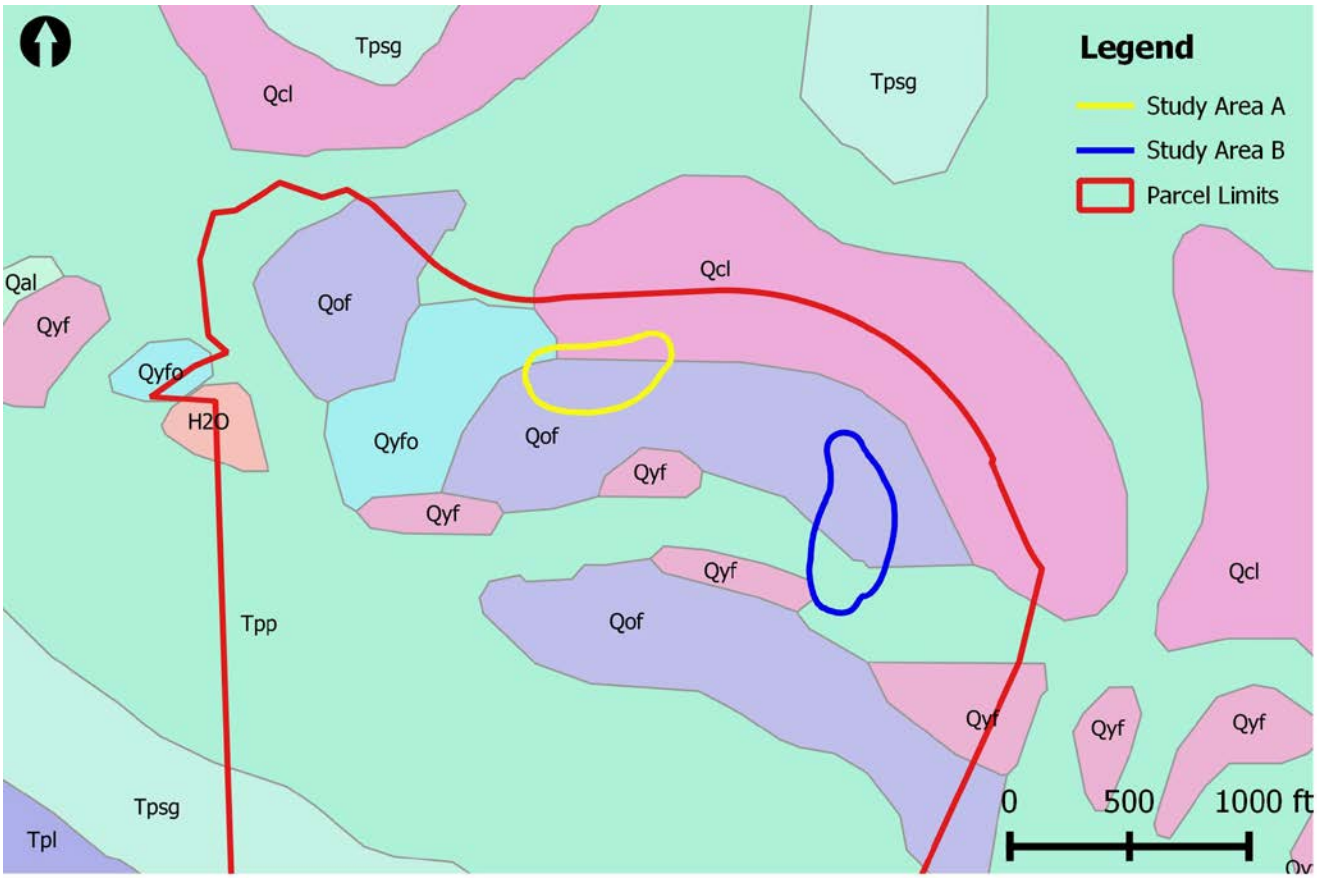


Figure 4: Geologic map (1) showing geologic structure at the project site.

The project area is not mapped as being located within an Alquist-Priolo (AP) zone or a seismic liquefaction or landslide region (2). Landslide mapping by Wentworth et al (3)show the project area to be in a "flatlands" region, not identified as being in an area with significant landslide activity.

Seismicity

Geologists and seismologists recognize the San Francisco Bay Area as one of the most active seismic regions in the United States. Seven active faults extend through the Bay Area in a northwesterly direction and have produced more than ten large (magnitude 6 or greater) earthquakes in the last two centuries that were strong enough to cause structural damage.

In 2008, the United States Geological Survey (USGS), in conjunction with Southern California Earthquake Center and the California Geological Survey, published the Uniform California Earthquake Rupture Forecast (UCERF). UCERF updated the forecast made in 2003 by the Working Group for California Earthquake Probabilities (WGCEP). The UCERF report evaluated the probabilities of significant earthquakes occurring in the Bay Area over the next three decades (2007-2036). UCERF found a 63 percent probability that at least one magnitude 6.7 or greater earthquake will occur in the San Francisco Bay region before 2036. This probability is an aggregate value that considers eight principal Bay Area fault systems and unknown faults (background values). The San Francisco Bay region continues to be seismically active. The principal active faults in the Bay Area include the San Andreas, Hayward, Calaveras, and the San Gregorio faults.

Earthquakes occurring along these faults are capable of generating strong ground shaking at the project site.

An overview of the site relative to nearby seismic faults is shown in Figure 5. The site is located between the San Gregorio and the San Andreas Fault system. Seismic hazards (4) at this site are moderate to high, with peak ground accelerations anticipated from 0.04g (10-year return period) to 0.20 g (100-year return period) to 0.70 g (1,000-year return period). Fault surface rupture is not anticipated within the project limits and active landslides have not been mapped within the project area.

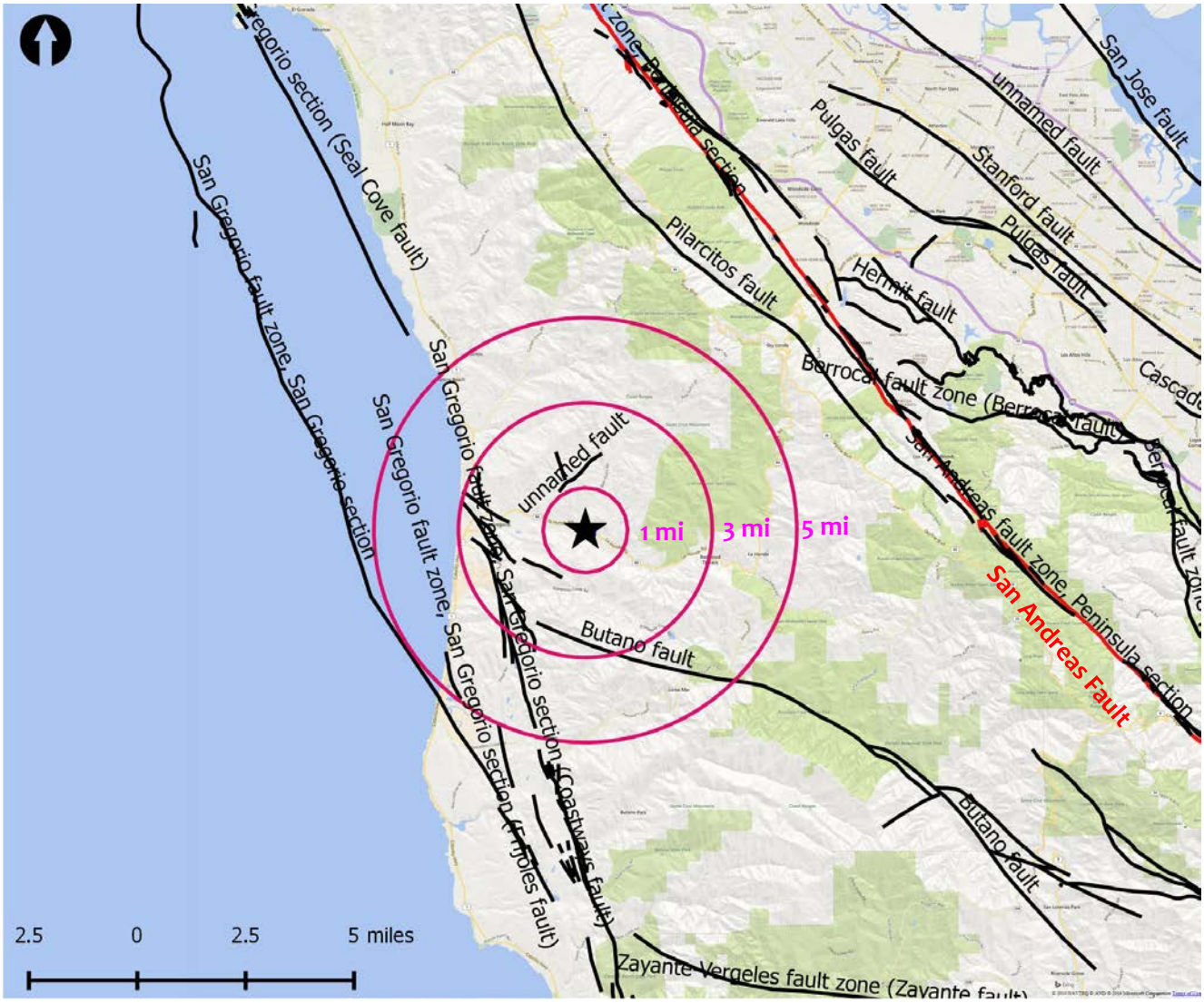


Figure 5: Location of site relative to mapped fault traces (5).

The San Gregorio fault system is a Class A fault with an estimated annual slip rate greater than 5 mm per year. It is rated as having a Moment Magnitude (Mw) of 7.2 (6). The most recent earthquake along the San Gregorio fault zone occurred after 1270 AD to 1400 AD, but prior to the arrival of Spanish missionaries in 1775 AD (7). It has an estimated recurrence interval of 400 to 1000 years (7).

The San Andreas is a Class A fault with an estimated annual slip rate greater than 5 mm per year. It is rated as having a Moment Magnitude (Mw) of 7.1 (6). The most recent earthquake along the San Andreas fault

zone occurred after 1270 AD to 1400 AD, but prior to the arrival of Spanish missionaries in 1775 AD (8). It has an estimated recurrence interval of 225 years (8).

The calculated Peak Ground Acceleration (pga) for the site is 0.20g for an approximately 100-year recurrence interval and 0.44g for an approximately 500-year recurrence interval (9).

Surficial Soils

The U.S. Department of Agriculture's National Resources Conservation Service (NRCS) publishes soil survey maps for most of the United States. These maps provide information on surficial soils, including general stratigraphy as well as engineering properties. The primary units within the project area (Figure 6), as mapped by NRCS (10), are Dublin series clay.

The Dublin series clays consist of "Dublin Clay, sloping, eroding" (DuC2), "Dublin Clay, moderately steep, eroded" (DuD2), "Dublin clay, nearly level, imperfectly drained" (DwA), and "Dublin clay, gently sloping, imperfectly drained" (DwB) and are described as clay with a USCS classification of CH and CL and a plasticity range of 25-40. These units have a typical depth of 0 to 5 ft. Reported physical soil property values from NRCS are presented in Appendix A.

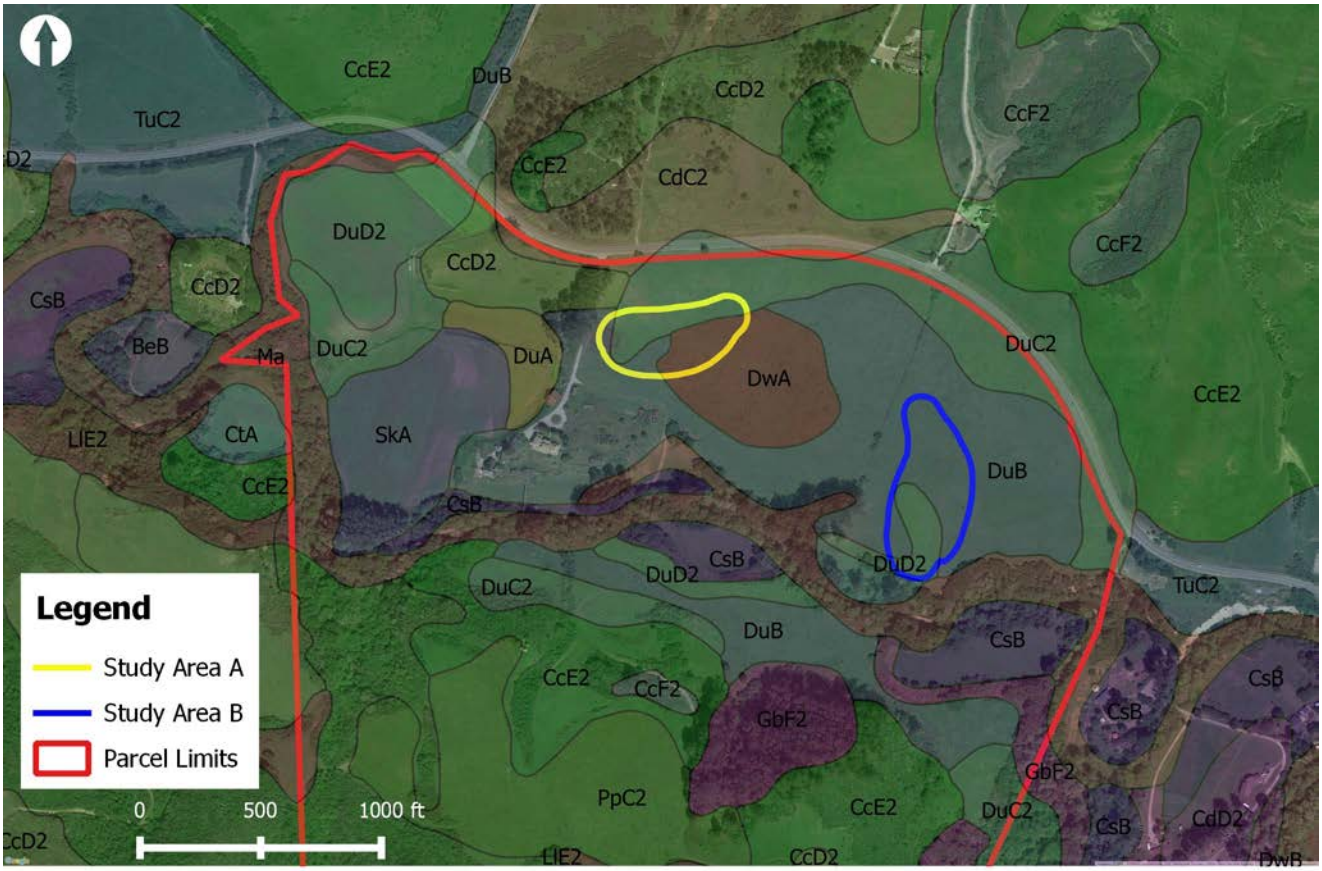


Figure 6: Surficial soils as mapped by NRCS (10).

Previous Site Evaluation

A pervious site evaluation was performed by the USDA Natural Resources Conservation District (NRCD) in the fall of 1995 (11). The NRCD team performed a brief field reconnaissance along with excavation of five backhoe pits ranging in depth from 12.4 ft to 15.2 ft.

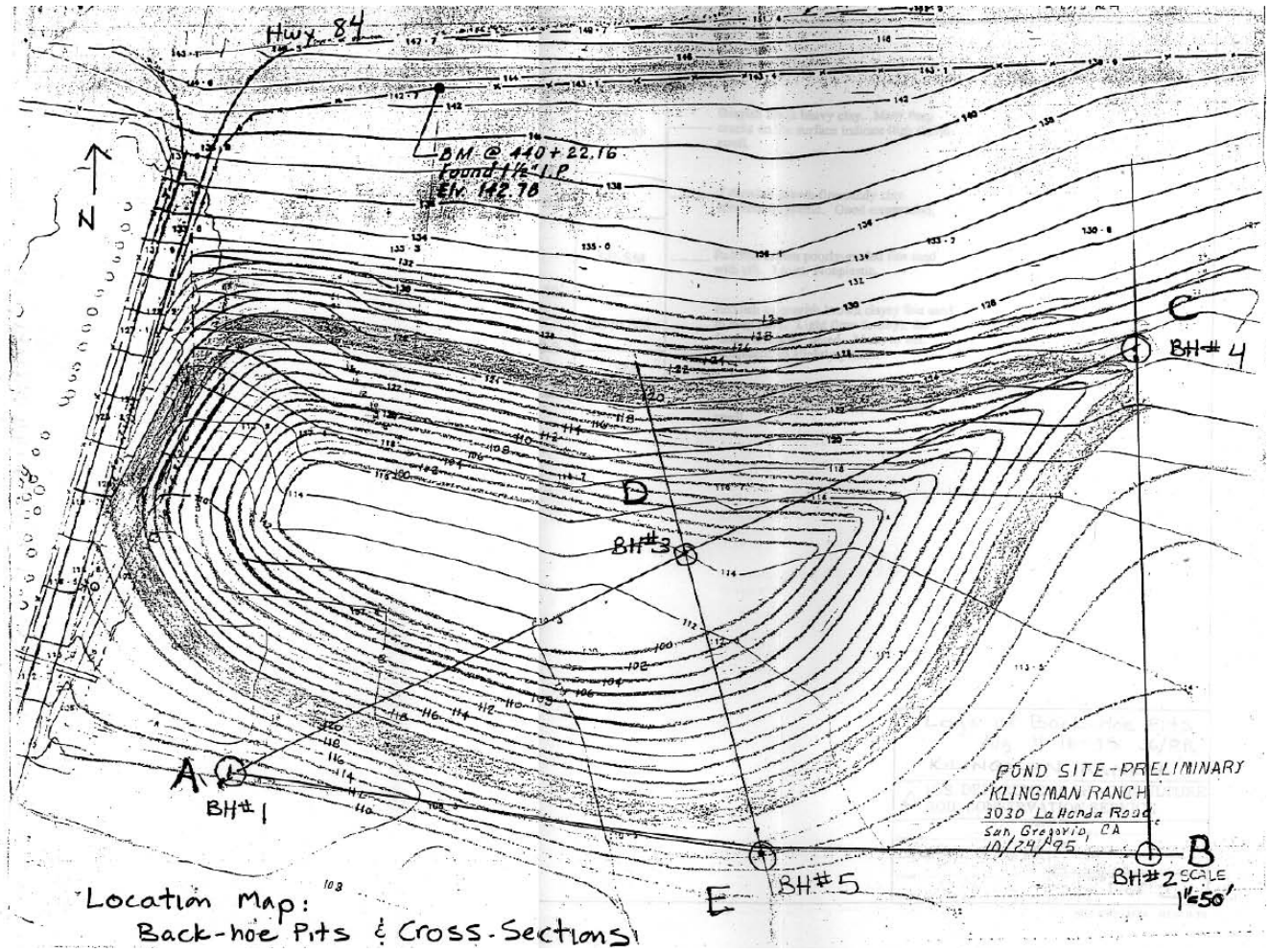


Figure 7: Map of NRCS backhoe pits and cross section locations.

The site reconnaissance program found fine sandy layers which might be prone to seismically-induced liquefaction as well as some deposits that would be 'unsuitable' for fill or as foundation materials. The report is included as Appendix B.

Five units were identified (11):

- *Unit1 – Three to seven feet of heavy black clay soil (field classified using the Unified Soil Classification System as CH). This soil material contains organic matter, roots, and seeds, and is prone to severe shrinking and swelling during alternating cycles of wetting and drying.*

- *Unit 2 – Up to five feet of tan or yellowish-brown sandy clays to clayey sands (field classified as CH/CL to SC) underlies the black soil layer. This unit thins toward the northeast, with only one foot of CH*

material exposed by back-hoe pit #4. This material is plastic to slightly plastic, contains poorly graded fine to very fine sand, and appeared to have good strength and compaction characteristics.

- *Unit 3 – Approximately six feet of nonplastic fine sands to silty fine sands were exposed by back-hoe pit #2, between 6-12 feet deep (SP-SM and SC/SM). The bottom two feet of this layer felt very silty and light (low density).*

- *Unit 4 – Three to more than seven feet of tan or yellowish-brown, nonplastic to slightly plastic, clayey to silty fine sand (SC and SM) underlies all but the eastern edge of the proposed pond site. Where exposed in back-hoe pit #3, this unit is thinly laminated and overlies sandstone. One possible interpretation is, therefore, that this unit represents weathered (or otherwise altered) sandstone – possibly the San Gregorio Member of the Purisma Formation. Deeper pits at back-hoe holes 1 and 5 would help confirm or refute this preliminary interpretation.*

- *Unit 5 – Bluish-gray, organic rich, silty sand to silty clayey sand was exposed at depth in back-hoe pits #2 and 4, near the eastern edge of the proposed pond site. Where observed, sediment in this unit was moist or wet, nonplastic, and weak. Finer-grained material in back-hoe pit #2 graded downward to a silty sand with gravel-sized fragments of both mudstone/shale and sandstone, which in turn was underlain by mudstone/shale (Pompinio Member of the Purisma Formation?). The preliminary interpretation presented in the cross-sections identifies this unit as a weathered shale and/or a thin alluvial deposit emplaced over a shaly bedrock-lined channel. More holes and deeper holes would be needed to delineate the geometry of this unit and the underlying bedrock to confirm or refute this interpretation.*

A discussion of the findings from the 1995 field campaign vs the geotechnical exploration performed as part of this study is presented later in this report. Figure 8 shows an approximate overlay of the 1995 site plan prepared by NRCS with the Study Area A footprint.

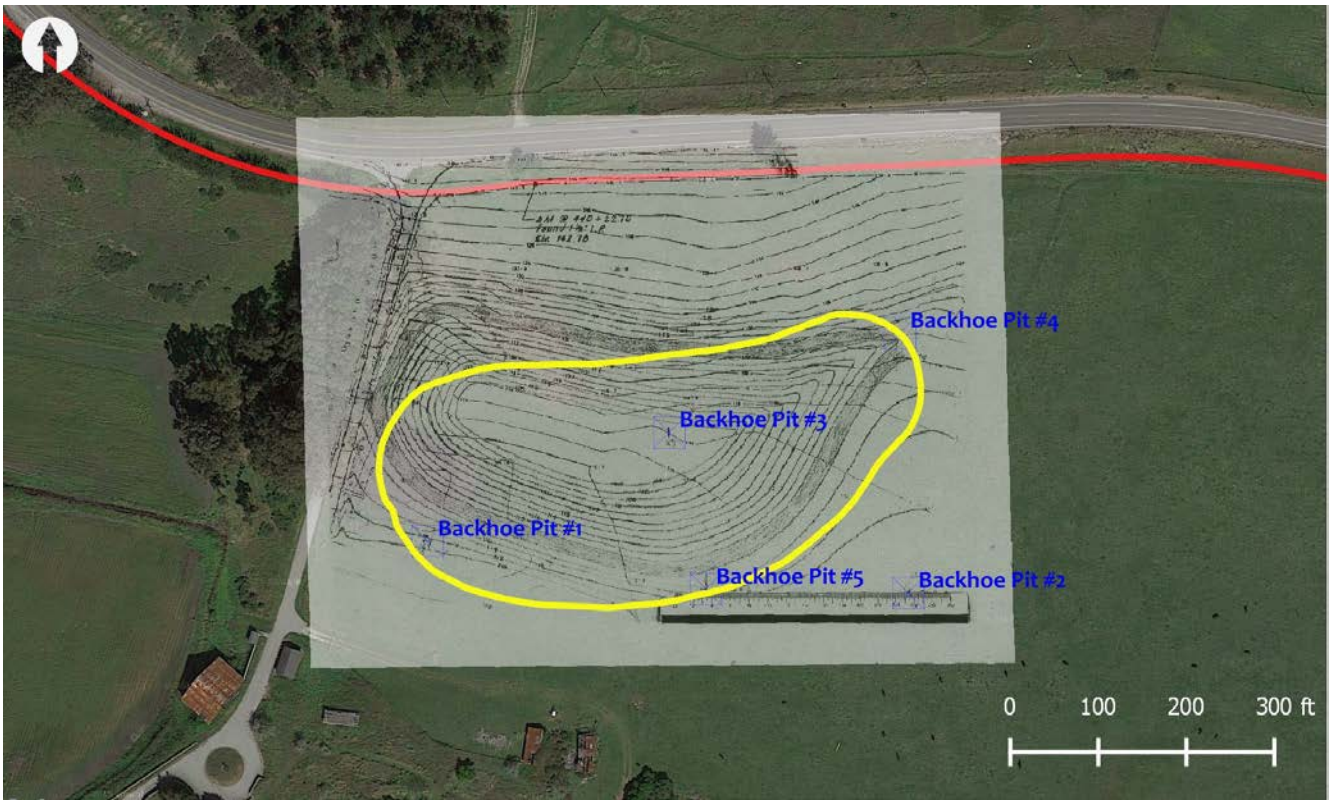
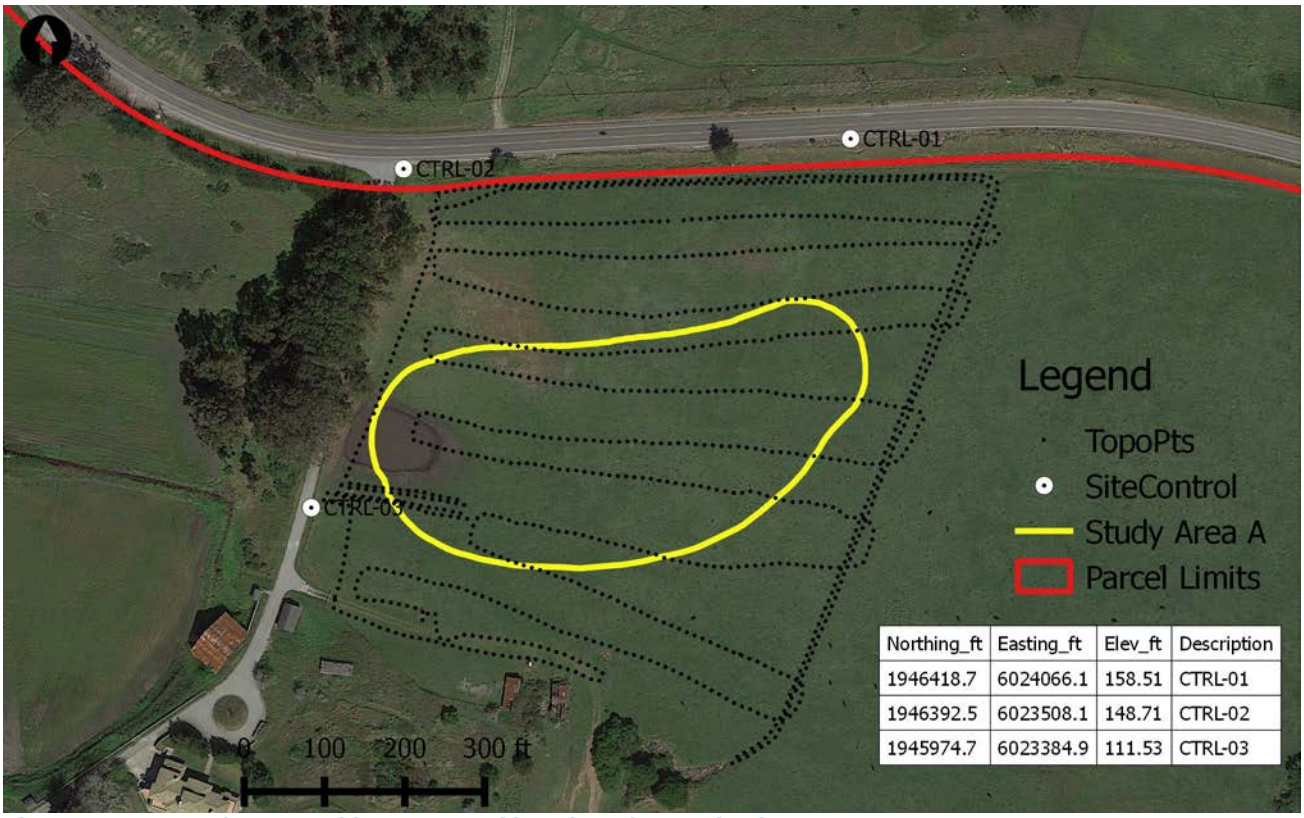


Figure 8: Overlay of 1995 NRCS site plan with backhoe locations.

Field Exploration & Laboratory Testing

Field Topographic Survey

We performed a site topographic survey on December 2, 2015. The purpose of this survey was to establish site control and to obtain site-specific topographic information. Contours generated from an aerial LiDAR survey campaign for San Mateo County were used for the alternatives analyses. However, site-specific topography was used for evaluation of the preferred alternative and will be used for grading analyses for the final design phase. The topographic survey was accomplished using an RTK Trimble R8 GNSS receiver.



Northing_ft	Easting_ft	Elev_ft	Description
1946418.7	6024066.1	158.51	CTRL-01
1946392.5	6023508.1	148.71	CTRL-02
1945974.7	6023384.9	111.53	CTRL-03

Figure 9: Extents of topographic survey and location of control points.

Subsurface Exploration

We conducted a total of five (5) test borings as a part of the geotechnical study for the project. The exploration was conducted on December 1, 2015. The test borings, designated B-01 through B-05, were drilled with a truck-mounted drill rig using solid flight drilling equipment (Figure 10). Where applicable, the shear strength of the soils was measured in the field using a pocket penetrometer or Torvane. The borings extended to a maximum depth of 41 feet. The approximate locations of the test borings are shown in Figure 10. Logs of the test borings and details regarding the field explorations are included in Appendix C.

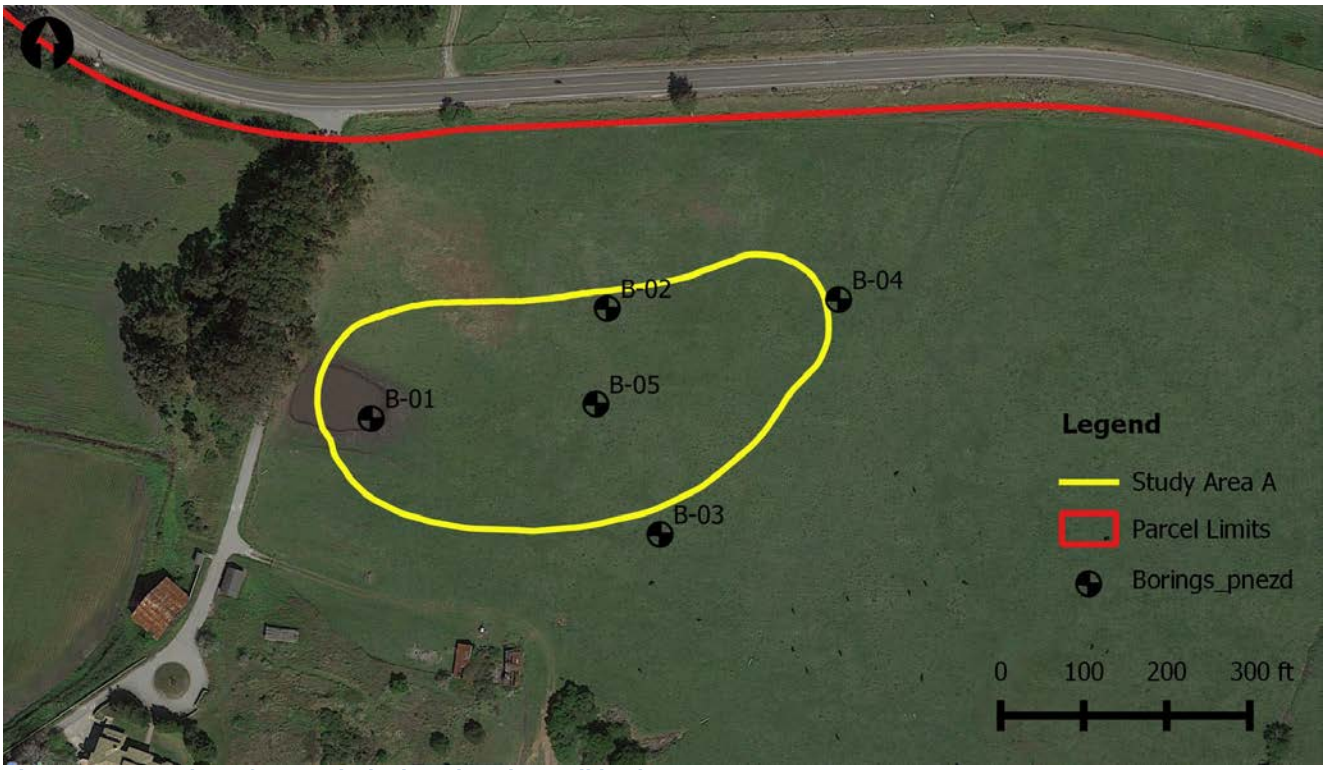


Figure 10: Location of geotechnical exploration soil borings.

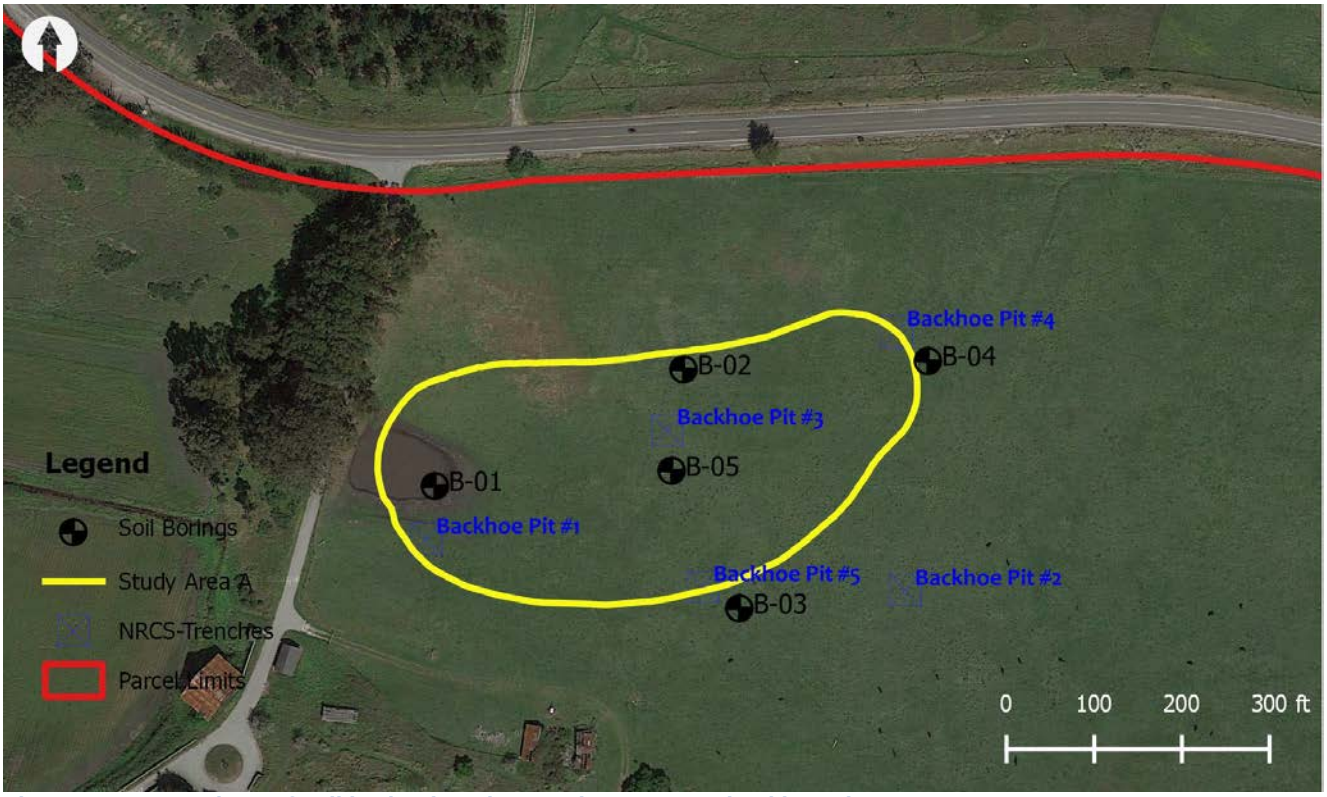


Figure 11: Comparison of soil boring locations and 1995 NRCS backhoe pits.

Geotechnical Laboratory Testing

Geotechnical laboratory testing was conducted on the soil samples collected from the borings at Fugro Consultants, Inc.'s soil mechanics laboratory in Oakland, California. The geotechnical laboratory test program included: classification tests (gradation, fines content, Atterberg limits, water content, unit weight) and compaction curves. The results of the laboratory tests are presented on boring logs (Appendix C) at the appropriate sample depths.

Site Conditions

Surface conditions

The project area is located at the northern portion of the Moty & Klingman Property. The property is bounded by Highway 84 (La Honda Road) to the north, situated at approximately El. + 150 ft. The potential reservoir sites are situated in an agricultural field used primarily for grazing of cows at the time of the exploration. The potential reservoir sites are east of the property driveway. Study Area A grades gently from approximately El. +142 ft at the northwest to approximately El. +114 ft to the southeast. An existing seasonal pond is located just to the east of the driveway. Study Area B grades from approximately El. +154 ft to the east down to approximately El. +118 ft to the west. At the time of our December 2015 field work, there was no standing water in the existing seasonal pond.

Subsurface conditions

Our exploration focused on Study Area A. We found four primary units consisting of (1) a dry dark brown/black fat clay (CH) with organics; (2) a very stiff, yellowish-brown, dry to moist sandy lean clay (CL); (3) a medium stiff to stiff gray sandy lean clay (CL); and (4) a hard, dry, grayish-brown to brown fat clay with sand (CH), likely a mudstone. Thicknesses of the surficial soils were thinnest on the sloping hillside and thicker down in the flatland areas. Additionally, deposits of more granular materials (sands and gravels) were observed in the borings performed in the flatland area, indicative of alluvial processes sorting and mixing transported soils.

Atterberg Limits were performed on samples from B-02, located on the sloping hillside, and boring B-03 and B-04 on the flatter portions. These tests indicate that the material on the hillside has a higher plasticity than the material on the flatter portions, likely the result of alluvial processes. All samples tested, had Plasticity Indices greater than 20. Moisture contents were on the order of 20% to 37%. Dry unit weights ranged from a low of 78 pcf in the yellowish-brown silty sand with gravel in B-04 to a high of 105 pcf. These are typical values of lean clays, sandy clays, and silty sands. These materials appear suitable for use in earthen reservoir embankments. Materials with a plasticity index greater than 15 are considered suitable for use as liners in water reservoirs.

Compaction curves were performed on the dark brown/black clay, the yellowish-brown sandy lean clay, and the gray sandy lean clay. The optimum moisture contents were 17%, 14%, & 15% and the maximum dry densities were 106 pcf, 113 pcf, and 110 pcf, respectively. Based on the results of the compaction tests, the in-situ materials below the surficial dark brown/black clays are primarily wet of optimum. The in-situ materials appear suitable for construction when excavated, reworked, and compacted to 90 percent relative compaction (ASTM D1557).

We note that the hard mudstone may require additional processing to be used as embankment material. We were able to drill 10 feet into this friable material with our solid stem auger. However, deep excavations may encounter more competent bedrock, requiring additional effort to excavate and process.

Discussion of previous (1995) subsurface findings

Our subsurface exploration program is generally consistent with the findings from the 1995 backhoe exploration program. The surficial soil covering thins at the sloping hillside. The presence and thickness of sands and gravels increases in the flatlands areas to the east, which appears to correlate to the drainage that extends just east of B-04, draining downslope in a Northeast to Southwest fashion.

Depth to bedrock (mudstone?), based on soil boring B-02, is on the order of 15 to 20 feet, which corresponds to the depths encountered in backhoe pit #3. Backhoe pit #2 encountered more sandy material (SP-SM, SC, SM), than any of the borings. Backhoe pit #4 also reported to encounter silty sands (SM, SP-SM). This backhoe pit corresponds approximately with soil boring B-04, which encountered silty sand with gravel at a depth of approximately 15-20 feet. Backhoe pit #1 was located near soil boring B-01. These explorations both find lean clay with sand beneath the dark brown/black surficial fat clay (CH).

Overall, the findings as part of this field exploration are in general alignment with the findings from 1995 (11). The site-specific geotechnical laboratory testing finds the onsite materials to be generally suitable for construction of an earthen water reservoir, whereas the previous exploration found more unsuitable materials, but based on visual classifications. Soils closer to the eastern margin of Study Area A may contain more sandy soil (silty sands, silty sands with gravels), which was observed in both studies. We believe these sandy materials can be used in construction of the embankment, provided they are mixed with clay. These sandy materials are not suitable for use as liner material.

It is not anticipated that significant liquefaction-induced settlements will be realized. A formal liquefaction evaluation will be performed as part of the final design. Additionally, evaluation of short-term and long-term settlements will also be performed as part of the final design process, however, the information gathered to date, does not indicate a significant problem associated with settlements for the preferred alternative.

Groundwater

Free groundwater was not encountered in any of the borings performed for the current study; however, borings were drilled in December, with a very dry fall. Fluctuations in the ground water levels could occur and perched groundwater conditions could develop from changes in seasons, variations in rainfall, and other factors. Additionally, ground water may also flow locally through springs and seeps in the bedrock.

Reservoir Geometry

The reservoir was designed to achieve a 'balanced' site, where the quantity of excavated material is balanced with the quantity of 'fill' material required to achieve the target grades in the project plans. A shrinkage factor of 8% was assumed in the earthwork calculations. An initial exterior slope of 3 horizontal to 1 vertical (3H:1V) for fill slopes; 2.5H:1V for exterior cut slopes and an interior slope of 2.5H:1V. The crest width was 10 feet, with a slope of 1% (draining into the reservoir).

For the preferred alternative, shallower exterior slopes were used to make the reservoir view-scape less pronounced. Exterior slopes of 5 horizontal to 1 vertical (5H:1V) were used for fill slopes and 3 horizontal to 1 vertical (3H:1V) for cut slopes.

Alternatives Considered

Four primary alternatives were identified and evaluated, two within Area A and two within Area B. At each evaluation area, two reservoir capacities were examined; 17 AC-FT and 25 AC-FT. The project team decided that area A was preferred over the area B location for construction of the water reservoir. Layouts for the four alternatives are presented in Appendix D. A feasibility-level opinion of probable cost was also identified as part of the alternatives evaluation. The costs are summarized in below.

Table 1: Summary of feasibility-level opinion of probable cost

Site	Bottom	Crest	WSE	AF	Grading CY	@$7.5/CY	$/AF
A	103	125	122	25	46200	346500	13860
A	101.5	123.5	121.5	17	33000	247500	14559
B	128.25	144.25	142.25	25	77000	577500	23100
B	124	140	138	17	55550	416625	24507

After review of the presented options and several meetings with the project team, it was decided to target a reservoir with a capacity of 18.5 AC-FT, situated in the Area A region.

The preferred reservoir option will be developed as part of the final design phase of this project.

Site Preparation and Grading Requirements

Site Preparation

The site should be cleared of all obstructions, including concrete, buried foundations, slabs, utility lines, and debris. Holes resulting from the removal of underground obstructions extending below the proposed finish grade should be cleared and backfilled with suitable material compacted to the requirements in "Fill Placement and Compaction." We recommend backfilling operations for any excavations to remove deleterious material be carried out under the observation of the geotechnical engineer.

After clearing, the portions of the site containing surface vegetation or organic laden topsoil should be stripped to an appropriate depth to remove these materials. At the time of our field investigation, we estimated that a stripping depth of approximately 1 inch would be required. The amount of actual stripping should be determined in the field by the geotechnical engineer at the time of construction. Stripped materials should be removed from the site, or stockpiled for later use in landscaping, if approved by the owner.

Subgrade Preparation

Following excavation to the required grades, soil subgrades in areas to receive engineered fill, as defined in "Engineered Fill Materials," be scarified to a depth of at least 6 inches, moisture conditioned to slightly above optimum moisture content and compacted to at least 90% relative compaction (ASTMD1557) for embankment fills and 92% relative compaction (ASTMD1557) for reservoir clay liner. The top 6 inches of

subgrade in spillway areas should be moisture conditioned and compacted to at least 95 percent relative compaction. Locally weak soils, if encountered, should be excavated and replaced, or otherwise stabilized as recommended by the geotechnical engineer at the time of construction. The compacted surface should be firm and unyielding and should be protected from damage caused by traffic or weather. Soil subgrades should be kept moist during construction. If the subgrade is allowed to become dry, it should be moisture conditioned to eliminate shrinkage cracks.

In order to achieve satisfactory compaction of the subgrade and fill materials, it may be necessary to adjust the water content at the time of construction. This may require that water be added to soils that are too dry, or that scarification and aeration be performed in any soils that are too wet. Materials in the bottom of the existing reservoir may be above optimum moisture content and may require a "drying out' period prior to compaction, depending on the time of year construction occurs and the duration of drawdown (and drying) prior to start of construction.

Engineered Fill Materials

All fill placed at the site should consist of engineered fill meeting the requirements presented in this report, except for landscaping materials which are placed on level ground. Onsite soil below the stripped layer and having an organic content of less than 3 percent by volume can be used as fill. All engineered fill placed at the site, including onsite soils, should not contain rocks or lumps larger than 3 inches in greatest dimension and contain no more than 15 percent larger than 2.5 inches.

Fill Placement and Compaction

Fill material should be spread and compacted in lifts not exceeding 8 inches in uncompacted thickness. The moisture content of the natural onsite, potentially expansive clayey soils reused as fill should be slightly above the optimum moisture content for the soil at the time of compaction. In order to achieve satisfactory compaction of the subgrade and fill materials, it may be necessary to adjust the water content at the time of construction. This may require that water be added to soils that are too dry, or that aeration be performed in any soils that are too wet.

Pipe Bedding and Trench Backfill

Pipeline trenches should be backfilled with materials satisfying the criteria described above for fill, placed in lifts of approximately 8 inches in uncompacted thickness. However, thicker lifts may be used provided the method of compaction is approved by the project geotechnical engineer and the required minimum degree of compaction is achieved. Onsite soil used for trench backfill should be compacted to at least 90 percent relative compaction by mechanical means only (jetting should not be permitted). Sand can be used for trench backfill if it is compacted to at least 95 percent relative compaction and sufficient water is added during backfilling operations to prevent the soil from "bulking" during compaction. The upper 3 feet of trench backfill below slab and pavements should be compacted to at least 95 percent relative compaction.

Reservoir Geometry

A shrinkage factor of 9% was assumed in the earthwork calculations. An exterior slope of 6 horizontal to 1 vertical (6H:1V) for fill slopes; 3H:1V for exterior cut slopes and an interior slope of 3H:1V. The crest width was 16 feet, with a slope of 1% (draining into the reservoir).

The crest was situated at El. +120 ft and the bottom of the reservoir was situated at El. +100 ft. The design water elevation was +118 ft and the spillway was situated at El. +118 ft.

Additional Geotechnical Services

We recommend that Storesund Consulting be retained to provide geotechnical services during site grading to observe compliance with the design concepts, specifications and recommendations presented in this report. Our presence will also allow us to modify design if unanticipated subsurface conditions are encountered. During construction, our field engineer should observe and/or test the following:

- Soil conditions exposed by site grading and foundation excavations, to check that they are consistent with those encountered during the field exploration,
- Construction of the pump station;
- Excavation and backfill of supply line trenches; and
- Fill placement and compaction, including backfill of utilities.

Limitations

Our services consist of professional opinions, conclusions, and recommendations that are made in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

The analyses and recommendations contained in this report are based on the data obtained from the subsurface explorations conducted for this study and relevant previous explorations. These explorations indicate subsurface conditions only at specific locations and times, and only to the depths penetrated. Variations may exist and conditions not observed or described in this report could be encountered during construction. Our conclusions and recommendations are based on our analysis of the observed conditions. If conditions other than those described in this report are encountered, we should be notified so that we can provide additional recommendations, if warranted. We also note that topographic information is provided in accordance with the California Business and Professions Code Section 6731.

This report has been prepared for the exclusive use of TU and their consultants for specific application to the Coastal Streamflow Stewardship Project – Moty-Klingman Property as described herein. In the event that there are any changes in the ownership, nature, design, or location of the proposed project, or if any future additions are planned, the conclusions and recommendations contained in this report should not be considered valid unless 1) the project changes are reviewed by Storesund Consulting, and 2) conclusions and recommendations presented in this report are modified or verified in writing. Reliance on this report by others must be at their risk unless we are consulted on the use or limitations. We cannot be responsible for the impacts of any changes in geotechnical standards, practices, or regulations subsequent to performance of services without our further consultation. We can neither vouch for the accuracy of information supplied by others, nor accept consequences for un-consulted use of segregated portions of this report.

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APPENDIX A

NRCS SOIL SURVEY PROPERTIES

Physical Soil Properties

San Mateo Area, California

[Entries under "Erosion Factors--T" apply to the entire profile. Entries under "Wind Erodibility Group" and "Wind Erodibility Index" apply only to the surface layer. Absence of an entry indicates that data were not estimated]

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
DuC2:														
Dublin	0-35	---	---	40-60	1.30-1.45	0.42-1.40	0.14-0.16	6.0-8.9	1.0-4.0	.24	.24	5	7	38
	35-60	---	---	30-40	1.25-1.40	0.42-1.40	0.15-0.17	6.0-8.9	0.0-1.0	.28	.28			
Corralitos	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Soquel	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Tunitas	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Unnamed	---	---	---	---	---	---	---	---	---	---	---	---	---	---
DuD2:														
Dublin	0-35	---	---	40-60	1.30-1.45	0.42-1.40	0.14-0.16	6.0-8.9	1.0-4.0	.20	.20	5	7	38
	35-60	---	---	30-40	1.30-1.40	0.42-1.40	0.15-0.17	6.0-8.9	0.0-1.0	.28	.28			
Corralitos	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Soquel	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Tunitas	---	---	---	---	---	---	---	---	---	---	---	---	---	---
DwA:														
Dublin	0-43	---	---	40-60	1.30-1.40	0.42-1.40	0.14-0.16	6.0-8.9	1.0-4.0	.20	.20	5	7	38
	43-60	---	---	30-40	1.30-1.40	0.42-1.40	0.15-0.17	6.0-8.9	0.0-1.0	.28	.28			
Corralitas	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Soquel	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Physical Soil Properties

San Mateo Area, California

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
DwA:														
Tunitas	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Unnamed	---	---	---	---	---	---	---	---	---	---	---	---	---	---
DwB:														
Dublin	0-43	---	---	40-60	1.30-1.40	0.42-1.40	0.14-0.16	6.0-8.9	1.0-4.0	.20	.20	5	7	38
	43-60	---	---	30-40	1.30-1.40	0.42-1.40	0.15-0.17	6.0-8.9	0.0-1.0	.28	.28			
Corralitas	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Soquel	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Tunitas	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Unnamed	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Physical Soil Properties

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

"Depth" to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

"Sand" as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

"Silt" as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

"Clay" as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

"Moist bulk density" is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

"Saturated hydraulic conductivity" refers to the ability of a soil to transmit water or air. The term "permeability" indicates saturated hydraulic conductivity (Ksat). The estimates in the table indicate the rate of water movement, in micrometers per second, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Ksat is considered in the design of soil drainage systems and septic tank absorption fields.

"Available water capacity" refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

"Linear extensibility" refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

"Organic matter" is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Physical Soil Properties

"Erosion factors" are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

"Erosion factor Kf" indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

"Erosion factor T" is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

"Wind erodibility groups" are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

"Wind erodibility index" is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (http://www.statlab.iastate.edu/soils/nssh/)

Engineering Properties

San Mateo Area, California

[Absence of an entry indicates that the data were not estimated]

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percent passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 Inches	3-10 Inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
DuC2:												
Dublin	0-35	Clay	CH	A-7	0	0	100	100	95-100	85-95	50-70	30-40
	35-60	Clay loam	CH, CL	A-7	0	0	100	100	95-100	85-95	45-55	25-35
Corralitos	---	---	---	---	---	---	---	---	---	---	---	---
Soquel	---	---	---	---	---	---	---	---	---	---	---	---
Tunitas	---	---	---	---	---	---	---	---	---	---	---	---
Unnamed	---	---	---	---	---	---	---	---	---	---	---	---
DuD2:												
Dublin	0-35	Clay	CH	A-7	0	0	100	100	95-100	85-95	50-70	30-40
	35-60	Clay loam	CH, CL	A-7	0	0	100	100	95-100	85-95	45-55	25-35
Corralitos	---	---	---	---	---	---	---	---	---	---	---	---
Soquel	---	---	---	---	---	---	---	---	---	---	---	---
Tunitas	---	---	---	---	---	---	---	---	---	---	---	---
DwA:												
Dublin	0-43	Clay	CH	A-7	0	0	100	100	95-100	85-95	50-70	30-40
	43-60	Clay loam	CH, CL	A-7	0	0	100	100	95-100	85-95	45-55	25-35
Corralitas	---	---	---	---	---	---	---	---	---	---	---	---

Engineering Properties

San Mateo Area, California

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percent passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 Inches	3-10 Inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
DwA:												
Soquel	---	---	---	---	---	---	---	---	---	---	---	---
Tunitas	---	---	---	---	---	---	---	---	---	---	---	---
Unnamed	---	---	---	---	---	---	---	---	---	---	---	---
DwB:												
Dublin	0-43	Clay	CH	A-7	0	0	100	100	95-100	85-95	50-70	30-40
	43-60	Clay loam	CH, CL	A-7	0	0	100	100	95-100	85-95	45-55	25-35
Corralitas	---	---	---	---	---	---	---	---	---	---	---	---
Soquel	---	---	---	---	---	---	---	---	---	---	---	---
Tunitas	---	---	---	---	---	---	---	---	---	---	---	---
Unnamed	---	---	---	---	---	---	---	---	---	---	---	---

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

"Depth" to the upper and lower boundaries of each layer is indicated.

"Texture" is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

"Classification" of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

"Rock fragments" larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

"Percentage (of soil particles) passing designated sieves" is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

"Liquid limit" and "plasticity index" (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Brief Soil Descriptions (CA)

San Mateo Area, California

[Absence of an entry indicates that the feature is not a concern or that data were not estimated. Data applies to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

DuC2--Dublin clay, sloping, eroded

Composition

- Dublin and similar soils: 85 percent of the unit
- Corralitos and similar soils: 5 percent of the unit
- Soquel and similar soils: 5 percent of the unit
- Tunitas and similar soils: 4 percent of the unit
- Unnamed and similar soils: 1 percent of the unit

Setting

Landform(s): alluvial fans, flood plains
Elevation: 1499 to 1499 feet
Precipitation: 10 to 35 inches
Slope gradient: 7 to 16 percent
Air temperature: 57 to 63 ºF
Frost-free period: 245 to 300 days

Characteristics of Dublin and similar soils

Average total avail. water in top five feet (in.): 9.2
Available water capacity class: High
Parent material: alluvium
Restrictive feature(s): none
Depth to Water table: none within the soil profile
Drainage class: moderately well drained
Flooding hazard: none
Ponding hazard: none
Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 7
Wind erodibility index (WEI): 38
Land capability class, irrigated: 3e
Land capability class, nonirrigated: 3e
Hydric soil: no
Hydrologic group: D
Runoff class: very high
Potential frost action: none

Saturated hydraulic conductivity class: Moderately Low

Representative soil profile:

Horizon -- Depth (inches)	Texture	Available water capacity (inches)	pH	Salinity (mmhos/cm)	SAR
H1 -- 0 to 35	Clay	4.9 to 5.6	6.6 to 7.3	0.0	0
H2 -- 35 to 60	Clay loam	3.7 to 4.2	7.4 to 8.4	0.0 to 2.0	0

Ecological class(es):

DuD2--Dublin clay, moderately steep, eroded

Composition

- Dublin and similar soils: 85 percent of the unit
- Corralitos and similar soils: 5 percent of the unit
- Soquel and similar soils: 5 percent of the unit
- Tunitas and similar soils: 5 percent of the unit

Setting

Landform(s): alluvial fans, flood plains
Elevation: 1499 to 1499 feet
Precipitation: 10 to 35 inches
Slope gradient: 16 to 31 percent
Air temperature: 57 to 63 ºF
Frost-free period: 245 to 300 days

Characteristics of Dublin and similar soils

Average total avail. water in top five feet (in.): 9.2
Available water capacity class: High
Parent material: alluvium
Restrictive feature(s): none
Depth to Water table: none within the soil profile
Drainage class: moderately well drained
Flooding hazard: none
Ponding hazard: none
Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 7
Wind erodibility index (WEI): 38
Land capability class, irrigated: 4e
Land capability class, nonirrigated: 4e
Hydric soil: no
Hydrologic group: D
Runoff class: very high
Potential frost action: none

Saturated hydraulic conductivity class: Moderately Low

Representative soil profile:

Horizon -- Depth (inches)	Texture	Available water capacity (inches)	pH	Salinity (mmhos/cm)	SAR
H1 -- 0 to 35	Clay	4.9 to 5.6	6.6 to 7.3	0.0	0
H2 -- 35 to 60	Clay loam	3.7 to 4.2	7.4 to 8.4	0.0 to 2.0	0

Ecological class(es):

DwA--Dublin clay, nearly level, imperfectly drained

Composition

- Dublin and similar soils: 85 percent of the unit
- Corralitas and similar soils: 5 percent of the unit
- Soquel and similar soils: 5 percent of the unit
- Tunitas and similar soils: 3 percent of the unit
- Unnamed and similar soils: 2 percent of the unit

Setting

Landform(s): alluvial fans, flood plains
Elevation: 20 to 1499 feet
Precipitation: 10 to 35 inches
Slope gradient: 0 to 2 percent
Air temperature: 57 to 63 ºF
Frost-free period: 225 to 300 days

Characteristics of Dublin and similar soils

Average total avail. water in top five feet (in.): 9.1
Available water capacity class: High
Parent material: alluvium
Restrictive feature(s): none
Depth to Water table: 0 to 54 inches
Drainage class: somewhat poorly drained
Flooding hazard: none
Ponding hazard: none
Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 7
Wind erodibility index (WEI): 38
Land capability class, irrigated: 2w
Land capability class, nonirrigated: 3w
Hydric soil: no
Hydrologic group: D
Runoff class: high
Potential frost action: none

Saturated hydraulic conductivity class: Moderately Low

Representative soil profile:

Horizon -- Depth (inches)	Texture	Available water capacity (inches)	pH	Salinity (mmhos/cm)	SAR
H1 -- 0 to 43	Clay	6.0 to 6.9	6.6 to 7.3	0.0	0
H2 -- 43 to 60	Clay loam	2.5 to 2.9	7.4 to 8.4	0.0 to 2.0	0

Ecological class(es):

DwB--Dublin clay, gently sloping, imperfectly drained

Composition

- Dublin and similar soils: 85 percent of the unit
- Corralitas and similar soils: 5 percent of the unit
- Soquel and similar soils: 5 percent of the unit
- Tunitas and similar soils: 3 percent of the unit
- Unnamed and similar soils: 2 percent of the unit

Setting

Landform(s): alluvial fans, flood plains
Elevation: 20 to 1499 feet
Precipitation: 10 to 35 inches
Slope gradient: 3 to 5 percent
Air temperature: 57 to 63 ºF
Frost-free period: 225 to 300 days

Characteristics of Dublin and similar soils

Average total avail. water in top five feet (in.): 9.1
Available water capacity class: High
Parent material: alluvium
Restrictive feature(s): none
Depth to Water table: 0 to 54 inches
Drainage class: somewhat poorly drained
Flooding hazard: none
Ponding hazard: none
Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 7
Wind erodibility index (WEI): 38
Land capability class, irrigated: 2w
Land capability class, nonirrigated: 3e
Hydric soil: no
Hydrologic group: D
Runoff class: high
Potential frost action: none

Saturated hydraulic conductivity class: Moderately Low

Representative soil profile:

Horizon -- Depth (inches)	Texture	Available water capacity (inches)	pH	Salinity (mmhos/cm)	SAR
H1 -- 0 to 43	Clay	6.0 to 6.9	6.6 to 7.3	0.0	0
H2 -- 43 to 60	Clay loam	2.5 to 2.9	7.4 to 8.4	0.0 to 2.0	0

Ecological class(es):

APPENDIX B

1995 NRCS SITE EVALUATION

United States Department of Agriculture

Natural Resources Conservation Service

785 MAIN STREET, SUITE C
HALF MOON BAY, CA 94019
PH: (415) 726-4660; FAX: 726-0494

January 16,1996

Karen Moty
P.O. Box 3000
San Gregorio, CA 94074

Dear Karen:

I am forwarding for your information, a trip report by Julia Grim, a geologist at our State Office in Davis, California. The report summarizes observations and conclusions made following a site visit to a proposed pond site on the ranch located at 3030 La Honda Road near San Gregorio, California.

Final design and construction of the pond should assume that some of the fine sandy layers that underlie the site are prone to seismic-induced liquefaction, and that some of the deposits are unsuitable as fill or as foundation.

Natural Resource Conservation Service assistance is made available free of charge through a working agreement with the San Mateo County Resource Conservation District.

Sincerely,

USDA NATURAL RESOURCES
CONSERVATION SERVICE

Rixon J. Rafter
Agricultural Engineer

Enclosure

cc: Richard J. Casale, District Conservationist, Aptos (w/o encl.)
San Mateo County RCD, Half Moon Bay (w/encl.)

Geologist's Trip Report
Klingman Ranch, San Mateo County, California
November 16, 1995

NRCS Participants: Julia K. Grim, Geologist, Davis, CA
Rixon J. Rafter, Agricultural Engineer, Half Moon Bay, CA

Other Participants: Karen Moty, Owner

Background: The owners of Klingman Ranch would like to install a 25± acre-foot irrigation pond on their property. The team conducted a brief field reconnaissance of the site, including excavating and logging material from five back-hoe pits.

Published Site Descriptions:

The pond site is located in the San Gregorio Creek valley, on Land Grant Property near Section 13, T. 7 S., R.5 W, in San Mateo County, California (La Honda 7.5-minute quadrangle). San Gregorio Creek is located in Hydrologic Unit Area #18050006.

Published geologic maps offer two variations regarding the geology of the site: older and smaller-scale maps show the site as underlain by old stream terrace deposits, the upper beds of which are commonly composed of fine silt (Cummings et. al, 1962; Brabb and Pampeyan, 1972). At the 1:24,000 scale, Brabb (1980) maps the steeper, northern edge of the pond site as underlain by colluvium, which he describes as "loose to firm, friable, unsorted sand, silt, clay, gravel, rock debris, and organic material (derived from the adjacent hillslopes) in varying proportions." Brabb (1980) mapped the flats in the southern portion of the pond site as underlain by coarse-grained stream terrace deposits, which generally include poorly consolidated gravels, sands, and silts.

The hillslope north of the site are underlain mostly by gray siltstones and mudstones of the Pomponio Member of the Purisma Formation, although the spur overlooking Clear Creek and Highway 84 to the north is underlain by the San Gregorio sandstone Member of the Purisma Formation, which stratigraphically overlies the Pomponio mudstones (Cummings et. al, 1962; Brabb, 1980).

The site is located in a structurally complex, tectonically active area. Older sedimentary beds are generally folded in a series of NW-trending 'valleys' (e.g. the Pescadero syncline) and 'ridges' (e.g. Haskin Hill and La Honda anticlines), and bedding orientation is highly variable. The San Gregorio Fault Zone, which is considered potentially active, passes to within 2.5 miles of the pond site to the southwest. The San Andreas Fault Zone passes to within 8 miles of the pond site to the northeast.

Soils at the pond site are mapped as sloping and eroded, gently sloping, and imperfectly drained variants of the Dublin clay (Wagner and Nelson, 1961). Dublin clays typically consist of a thick, very dark gray clay that is massive and firm when moist, but when dried, crumbles to very hard, fine and medium, subangular blocks, and forms deep cracks on the surface. Dublin clays are typically very slowly permeable, possess a very high water holding capacity, and are difficult to work.

Observations:

1. The site is located on an elevated/abandoned stream terrace, with the steeper northern edge passing into the transition zone where ancient stream (alluvial) deposits interfinger with colluvium delivered from steep slopes to the north.

2. No rain had fallen by the November 16 date of our visit, and deep cracks in the heavy black clay soil were common.

3. Five back-hoe pits were dug at the site using a Case 580C back-hoe (?), and the excavated materials described. No samples were collected for testing. Depths of the pits ranged from 12.4 to 15.2 feet, with the two holes on the steeper north face stopped by consolidated or cemented sedimentary bedrock.

4. Logs and interpreted cross-sections of the back-hoe pits are attached. As interpreted, the unconsolidated and semiconsolidated deposits that underlie the pond site generally consist of:

   UNIT 1. Three to seven feet of heavy black clay soil (field classified using the Unified Soil Classification System as CH). This soil material contains organic matter, roots, and seeds, and is prone to severe shrinking and swelling during alternating cycles of wetting and drying.

   UNIT 2. Up to five feet of tan or yellowish-brown sandy clays to clayey sands (field classified as CH/CL to SC) underlies the black soil layer. This unit thins toward the northeast, with only one foot of CH material exposed by back-hoe pit #4. This material is plastic to slightly plastic, contains poorly graded fine to very fine sand, and appeared to have good strength and compaction characteristics.

   UNIT 3. Approximately six feet of nonplastic fine sands to silty fine sands were exposed by back-hoe pit #2, between 6-12 feet depth (SP-SM and SC/SM). The bottom two feet of this layer felt very silty and light (low density).

   UNIT 4. Three to more than seven feet of tan or yellowish-brown, nonplastic to slightly plastic, clayey to silty fine sand (SC and SM) underlies all but the eastern edge of the proposed pond site. Where exposed in back-hoe pit #3, this unit is thinly laminated and overlies sandstone. One possible interpretation is, therefore, that this unit represents weathered (or otherwise altered) sandstone - possibly the San Gregorio Member of the Purisma Formation. Deeper pits at back-hoe holes 1 and 5 would help confirm or refute this preliminary interpretation.

   UNIT 5. Bluish-black to gray, organic rich, silty sand to silty clayey sand was exposed at depth in back-hoe pits #2 and 4, near the eastern edge of the proposed pond site. Where observed, sediment in this unit was moist or wet, nonplastic, and weak. Finer-grained material in back-hoe pit #2 graded downward to a silty sand with gravel-sized fragments of both mudstone/shale and sandstone, which in turn was underlain by mudstone/shale bedrock (Pomponio Member of the Purisma Formation?). The preliminary interpretation presented in the attached cross-sections identifies this unit as a weathered shale and/or a thin alluvial deposit emplaced over a shaly bedrock-lined channel. More holes and deeper holes would be needed to delineate the geometry of this unit and the underlying bedrock to confirm or refute this interpretation.

Conclusions:

1. Three factors that occur locally combine to create a potential hazard associated with liquefaction:

   * The site is located in a seismically active area. Using empirically-derived relations developed by Krinitzky et. al (1987), it is roughly estimated that a 7.7M earthquake on the San Gregorio Fault or a 7.8M event on the San Andreas could potentially generate horizontal accelerations in the "soft" materials that underlie the pond site as high as 1.0g, assuming a focal depth > 20 km.
   * Sediments underlying the site would commonly be saturated. Seasonal water storage in the reservoir and the site's location in the San Gregorio River Valley would both contribute to create seasonally shallow ground water/saturated conditions.
   * Lenses or layers of relatively young, weakly consolidated, fine sandy and silty sediment underlie the pond site. The liquefaction potential of these deposits is high where the clay content and penetration resistance are low, and where they are not overlain by a suffiently thick nonliquefiable surface layer. Assuming a maximum acceleration on the order of 0.4-0.5g, the thickness of the confining surface layer should be at least twice the thickness of the liquefiable sand layer, and maybe greater (based on a graph by Ishihara, 1985 in Hardman and Youd, 1987, p. 9). A more detailed, site-specific evaluation would be required to more accurately define the hazard and design appropriate mitigative measures.

2. Aside from these seismic/liquefaction concerns, the proposed pond site is underlain by unconsolidated and semiconsolidated fine-grained sedimentary deposits that vary as to their appropriateness as foundation and fill material:

   * Seeds, organic material, and a high shrink-swell potential make UNIT 1 less desirable as either fill or foundation material, although the black heavy clays that comprise this unit could be stockpiled and spread over the disturbed area to provide a seed base and soil material to facilitate revegetation.

   * The lean to heavy clays and clayey fine sands that comprise UNIT 2 appears to be suitable as either fill or foundation material. This unit thins towards the northeast edge of the proposed pond site.

   * Nonplastic silty fine sands and silts in UNIT 3 appears to be unsuitable as fill; as described in the field, these deposits appeared to have a low density, which suggests low strength. Sampling and lab analyses for classification, strength, and compaction should be done for this unit if final reservoir design calls for this material to be used as either fill or exposed in the foundation.

   * Clayey to silty sands in UNIT 4 appear to be generally suitable as fill, although they may be prone to seismic-induced liquefaction, which would result in a temporary loss of bearing strenth and/or ground settlement. Some lenses or layers in this unit may not contain much clay, so seepage may be a potential concern where exposed in the reservoir.

   * The organic-rich silty fine sands in UNIT 5, which underlie the eastern edge of the pond site, are weak and are unsuitable as fill material.

Submitted:

JULIA K. GRIM
Geologist

Concurred:

CHARLES K. DAVIS
State Conservation Engineer

References:

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Hardman, S.L., and Youd, T.L., Feb. 1987, Mapping the Extent and Thickness of Liquefiable Soil Layers at Engineering Sites: State-of-the-Art for Assessing Earthquake Hazards in the United States, Report 22, U.S.A. Corps of Engineers Waterways Experiment Station Miscellaneous paper S-73-1, 58 p. plus appendices.

Krinitzky, E.L., Chang, F.K., and Nuttli, O.W., Sept. 1987, Parameters for Specifying Magnitude-Related Earthquake Ground Motions: State-of-the-Art for Assessing Earthquake Hazards in the United States, Report 26, U.S.A. Corps of Engineers Waterways Experiment Station Miscellaneous paper S-73-1, 161 p..

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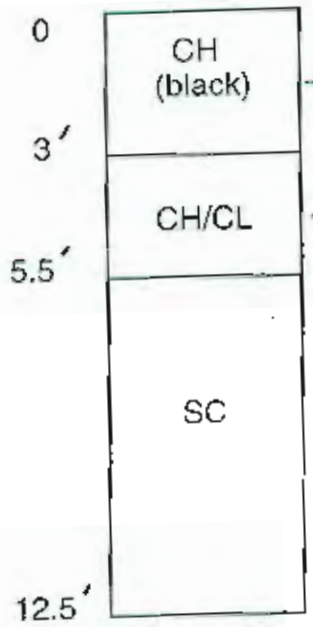
BH#1

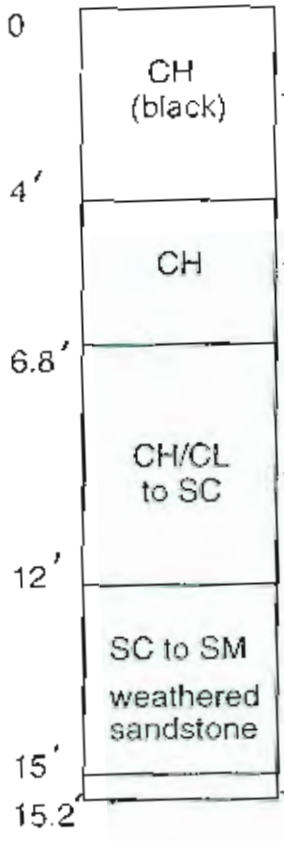


Grayish black heavy clay. Many deep cracks on the surface indicate high shrink-swell.

Yellowish-brown fine sandy clay. Moderately plastic, good compaction. No bedding or horizons obs.

Yellowish-brown clayey fine sand. Moderately to slightly plastic.

BH#3



Black heavy clay. Dry to sl. moist. High shrink-swell.

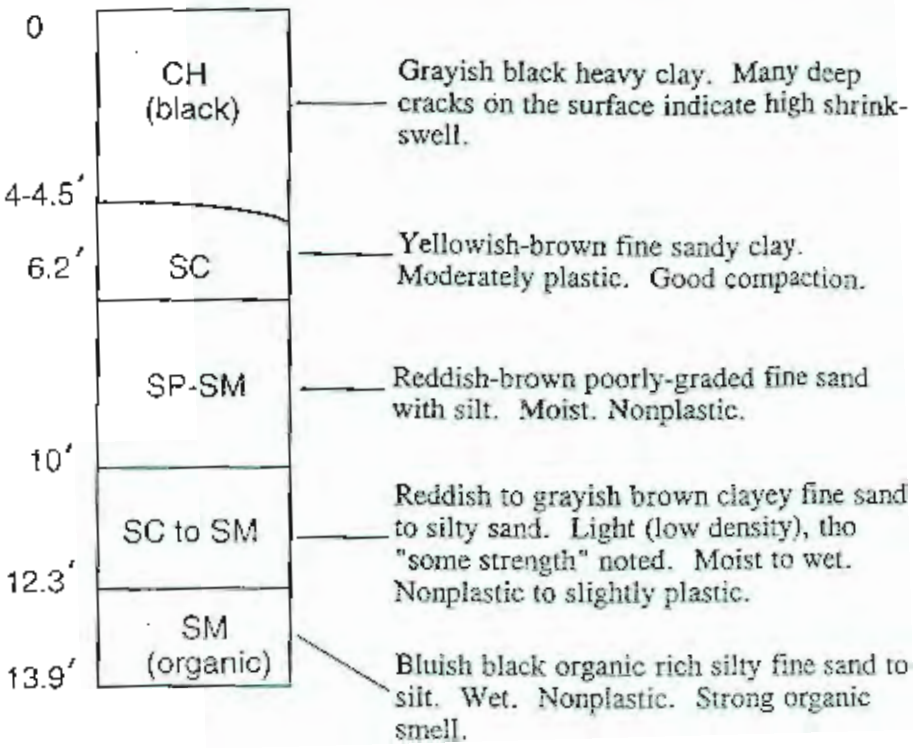
Black to brownish black heavy clay with fine sand. Plastic. "Good material"

Light brown fine sandy clay to clayey fine sand. Moderately plastic. Good compaction. Moist.

Fractured, weathered very fine sandstone. Thinly bedded. Excavated as angular, platy fragments to 6-10" plus clayey to silty fine sand. Wet.

Bedded, very fine-grained sandstone. Refusal.

BH#2



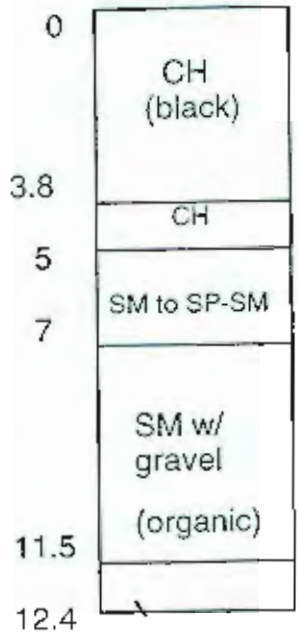
Logs of Back-Hoe Pits
dug 11-16-95 JG/RR
KLINGMAN RANCH

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed Date	Approved by
Drawn JKG 12/4/95	Title
Traced	Title
Checked	Sheet No. p. 1 of 2

SCS-ENG-213A REV 8-75

BH#4



Black heavy clay. Dry to sl. moist. Blocky. High shrink-swell.

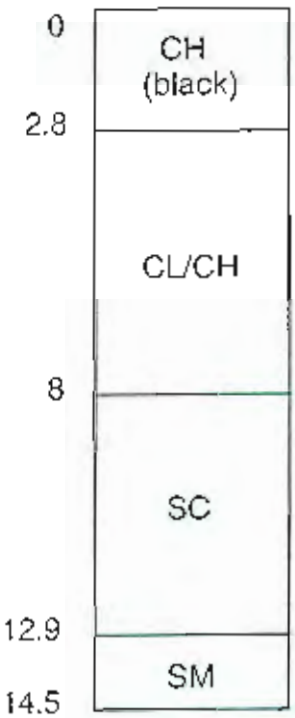
Yellowish-brown heavy clay with fine sand. Plastic. "Good strength".

Bluish black to gray organic-rich silty fine sand to silty, clayey fine sand. Moist, granular, weak. Strong organic smell.

Bluish gray organic rich silty sand with gravel. Bimodal gravel fragments: Weak, platy mudstone fragments 1/2"-1", and rounded fine sandstone fragments to 6"-8".

Blackish brown weathered mudstone or shale. Thinly bedded. Excavated as angular, platy fragments to 6". Refusal.

BH#5



Black heavy clay. High shrink-swell.

Yellowish brown lean to heavy clay with fine sand. Moderate plasticity.

Yellowish brown clayey fine sand. Moderate plasticity.

Yellowish brown silty fine sand. Nonplastic.

Logs of Back-Hoe Pits
dug 11-16-95 JG/RR
KLINGMAN RANCH

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed
Drawn JKG 12/4/95
Traced
Checked

Approved by
Title
Title
Sheet No. p 2 of 2
Drawing No.

SCS-ENG-313A REV 8-78

Ft. Elev.

A

C

Proposed Embankment

BH#1

CH (black)

CH/CL

SC

BH#3

CH (black)

CH

CH/CL to SC

SC to SM weathered sandstone

BH#4

CH (black)

CH

SM to SP-SM

SM w/ gravel (organic)

Weathered mudstone/shale (refusal)

① ② ④ ⑤

weathered Sandstone

Weathered Shale

?

Sandstone

Shale

?

A

B

Proposed Embankment

BH#1

CH (black)

CH/CL

SC

BH#5

CH (black)

CL/CH

SC

SM

BH#2

CH (black)

SC

SP-SM

SC to SM

SM (organic)

① ② ③ ④ ⑤

weathered Sandstone

?

Weathered Shale

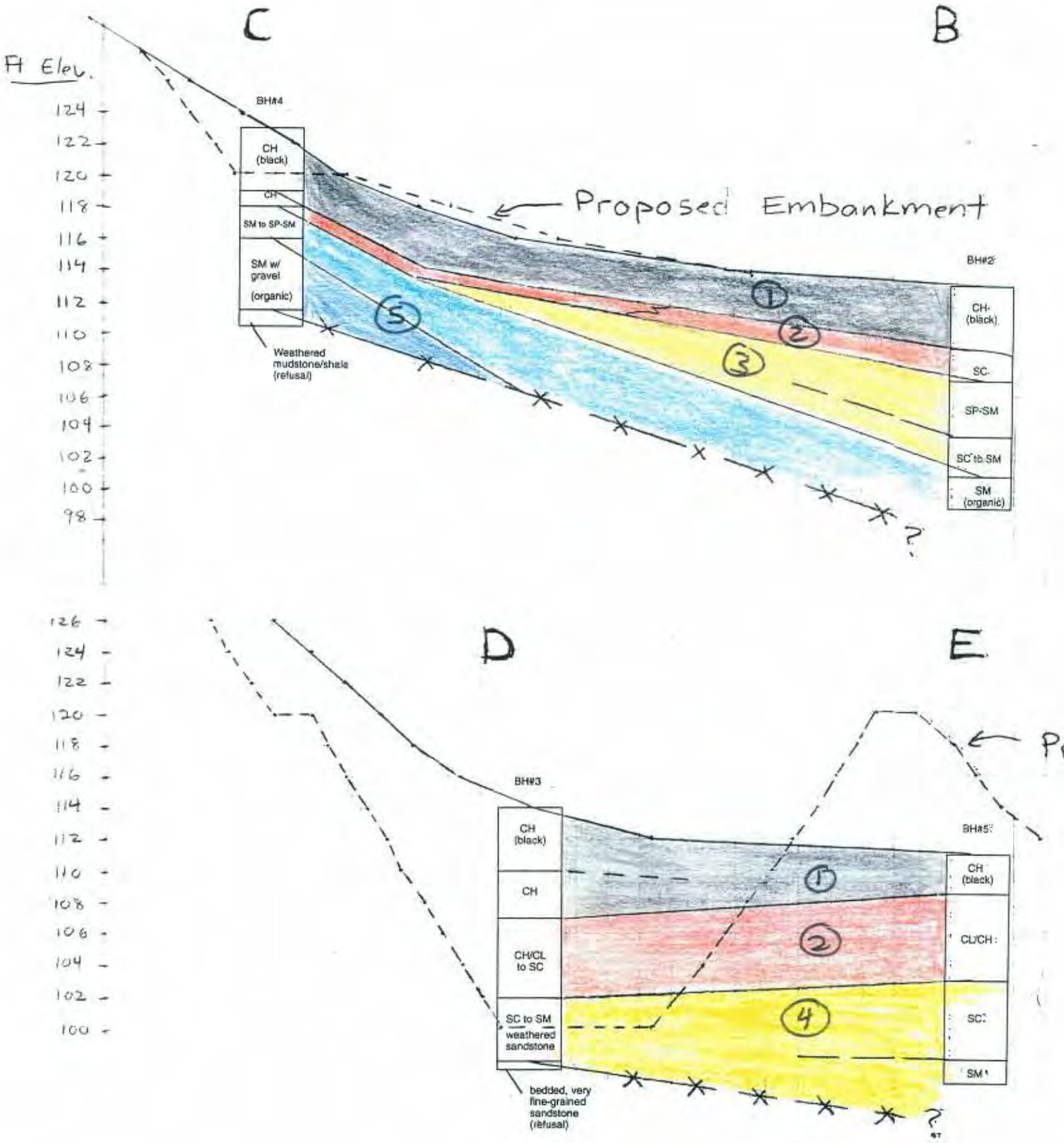
?

Geologic Cross-Sections
KLINGMAN RANCH

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

JKG 12-5-95
JKG-12-5-95

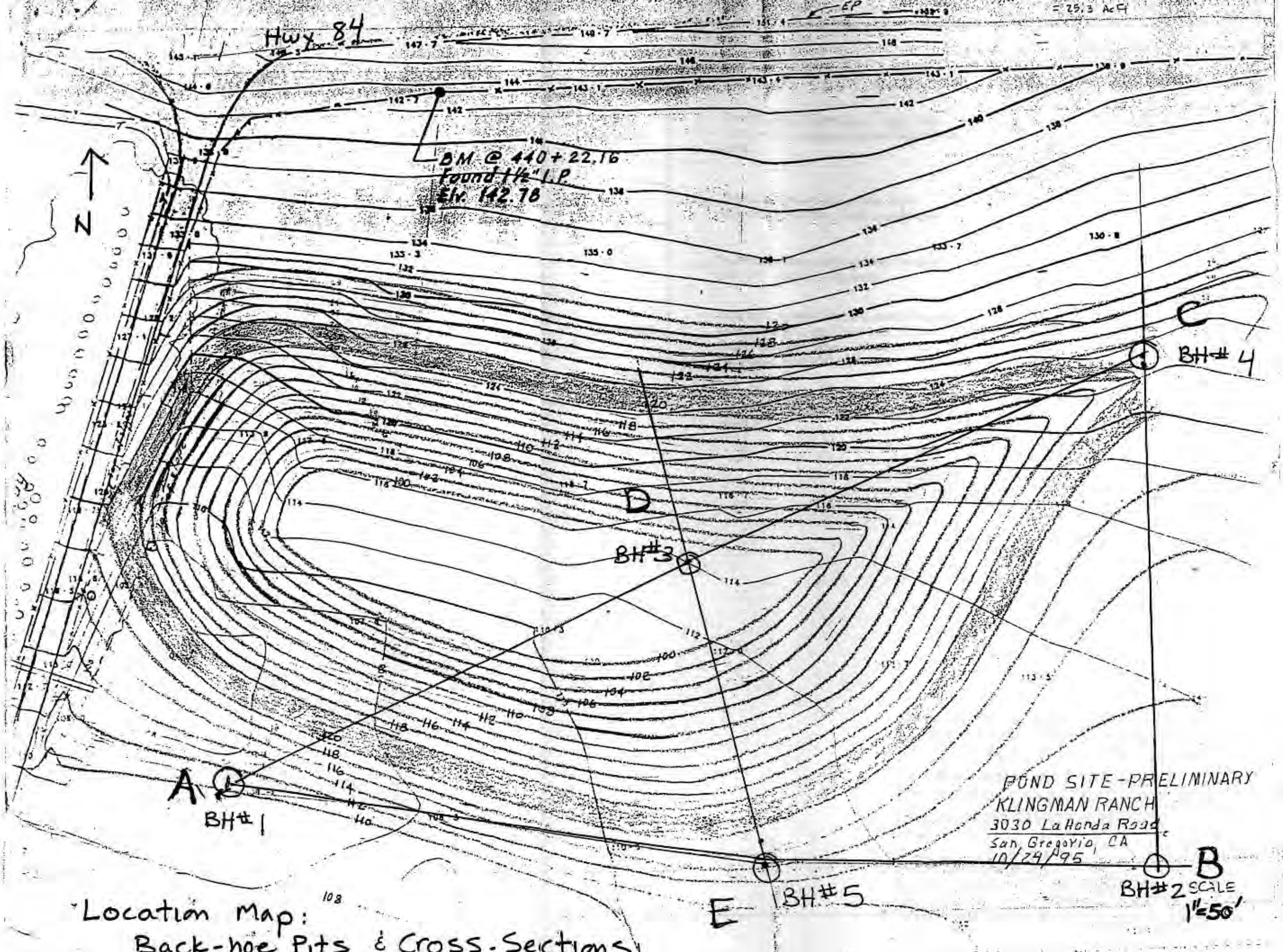
Vertical Scale: 1" = 8' Horizontal Scale: 1" = 50'



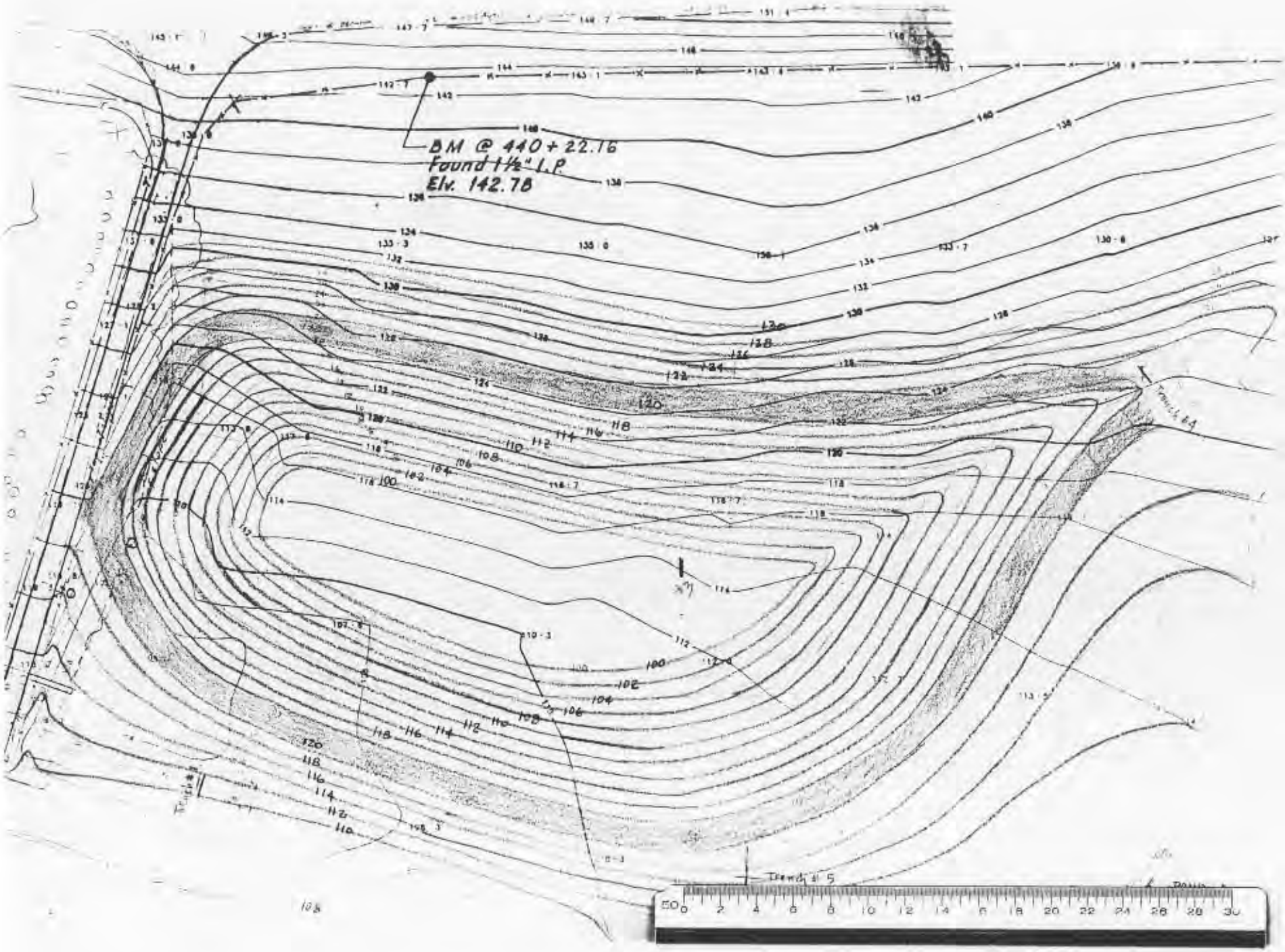
Geologic Cross-Sections
Interpreted from Back-Hoe Pits
dug 11-16-95 JG/RR
KLINGMAN RANCH

JKG 12-5-95
JKG 12-5-95

Vertical Scale: 1" = 8' Horizontal Scale: 1" = 50'



Location Map:
Back-hoe Pits & Cross-Sections


BM @ 440+22.16
Found 1½" I.P.
Elv. 142.78

APPENDIX C

GEOTECHNICAL SOIL BORINGS & LABORATORY TESTING RESULTS

CLASSIFICATION AND MATERIAL SYMBOLS

MAJOR DIVISIONS PER ASTM D2488-06			MAJOR GROUP NAMES AND MATERIAL SYMBOLS	
COARSE-GRAINED SOILS (More than 50% retained on the No. 200 sieve)	GRAVELS (MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE)	Clean gravels less than 5% fines	GW	Well-Graded GRAVEL
			GP	Poorly Graded GRAVEL
		Gravels with more than 12% fines	GM	SILTY GRAVEL
			GC	CLAYEY GRAVEL
	SANDS (MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE)	Clean sand less than 5% fines	SW	Well-Graded SAND
			SP	Poorly Graded SAND
		Sands with more than 12% fines	SM	SILTY SAND
			SC	CLAYEY SAND
FINE-GRAINED SOILS (50% or more passes the No. 200 sieve)	SILTS AND CLAYS (Liquid Limit Less than 50%)		ML	SILT
			CL	Lean CLAY
			OL	ORGANIC SILT
	SILTS AND CLAYS (Liquid Limit Greater than 50%)		MH	Elastic SILT
			CH	Fat CLAY
			OH	ORGANIC CLAY
HIGHLY ORGANIC SOILS			PT	Peat or Highly Organic Soils

Notes:
Classification of soils on the boring logs is in general accordance with ASTM D2488, or D2487 if appropriate laboratory data are available.
The geologic formation is noted in bold font at the top of interpreted interval on the boring logs.

OTHER MATERIAL SYMBOLS

- Debris or Mixed Fill
- Pavement with Aggregate Base

SAMPLER TYPE

- SPT (Driven) 1-3/8" ID 2" OD
- Modified California (Driven) 2-3/8" ID 3" OD
- Modified California (Driven) 1-7/8" ID 2-1/2" OD
- Shelby Tube (Pushed) 2-7/8" ID 3" OD
- Pitcher Barrel (Rotary-cut) 2-7/8" ID
- Osterberg (Piston) 2-7/8" ID
- 101 Geobarrel (Rotary-cut) 2-7/8" ID
- Rock Core (Rotary-cut) See log for size
- Vibracore (Vibrated) See log for size
- Push-core (Pushed) See log for size
- Collected from Auger
- Other See log for details

Note: Refer to text of report for additional details or other sampler types.

BLOW COUNT

Number of blows required to drive sampler each of three 6-in. intervals, as measured in the field (uncorrected). An SPT hammer (140 lb., falling 30-in.) was used unless otherwise noted on the boring log. For example:

Blow Count	Description
5 7 8	5, 7, and 8 blows for first, second, and third interval, respectively.
35 50/3"	35 blows for the first interval. 50 blows for the first 3 inches of the second interval. Lack of third value implies that driving was stopped 3 inches into the second interval.
WOH WOH 5	"WOH" indicates that the weight of the hammer was sufficient to advance the sampler over the first two intervals. 5 blows were required to advance the sampler over the third interval.

N-VALUE

The N-Value represents the blowcount for the last 12 inches of the sample drive if three 6-inch intervals were driven. N-value presented is independant of impact energy. If 50 hammer blows were insufficient to drive through either the second or the third interval, the total number of blows and total length driven are reported (excluding the first interval). "ref" (refusal) indicates that 50 blows were insufficient to drive through the first 6-inch interval.

Parenthesis () indicate that an approximate correction has been applied for non-SPT drive samplers. For example, a factor of 0.63 is commonly used to adjust blow counts obtained using a 3-inch outside diameter modified California sampler to correspond to Standard Peneteration Test.

UNDRAINED SHEAR STRENGTH

A value of undrained shear strength is reported. The value is followed by a letter code indicating the type of test that was performed, as follows:

U - Unconfined Compression
Q - Unconsolidated Undrained Triaxial
T - Torvane
P - Pocket Penetrometer
M - Miniature Vane
F - Field Vane
R - R-value

OTHER TESTS

Field or laboratory tests without a dedicated column on the boring log are reported in the Other Tests column. A letter code is used to indicate the type of test. For certain tests, a value representing the test result is also provided. Typical letter codes are as follows. Additional codes may be used. Refer to the report text and the laboratory testing results for additional information.

k - Permeability (cm/s)
Consol - Consolidation
Gs - Specific Gravity
MA - Particle Size Analysis
EI - Expansion Index
OVM - Organic Vapor Meter

WATER LEVEL SYMBOLS

- Initial water level
- Final water level
- Seepage encountered

INCREASING MOISTURE CONTENT

Dry
Moist
Wet

CONSISTENCY OF COHESIVE SOIL

CONSISTENCY	UNDRAINED SHEAR STRENGTH (KIPS PER SQUARE FOOT)
Very Soft	< 0.25
Soft	0.25 to 0.50
Medium Stiff	0.50 to 1.0
Stiff	1.0 to 2.0
Very Stiff	2.0 to 4.0
Hard	> 4.0

Note: In absence of test data, consistency has been estimated based on manual observation.

APPARENT DENSITY OF COHESIONLESS SOIL

APPARENT DENSITY	SPT N-VALUE
Very Loose	0 to 4
Loose	5 to 9
Medium Dense	10 to 29
Dense	30 to 49
Very Dense	> 49

TERMS AND SYMBOLS USED ON BORING LOGS

PLATE A-1

DEPTH, ft	MATERIAL SYMBOL	SAMPLER TYPE	BLOW COUNT OR PRESSURE, psi	SPT N VALUE OR RQD%	RECOVERY	LOCATION: N 1946037.377 E 6023526.593 CA State Plane (NAD83) MATERIAL DESCRIPTION	DRY UNIT WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX	UNDRAINED SHEAR STRENGTH, S_u, ksf	OTHER TESTS
			5 7 8	15		Fat CLAY (CH): stiff, dark brown, dry, w/rootlets							
			4 5 7	12									
			3 4 5	9									
5			3 6 10	16									
			6 5 5	10		Lean CLAY with SAND (CL): very stiff, yellowish brown, dry to moist, w/trace to some fine-grained sand							
10			3 3 4	7									
15			5 4 6	10									
20			4 3 7	10									
			3 3 5	8		Lean CLAY with SAND (CL): medium stiff, gray, moist to wet, w/ fine-grained sand, low plasticity							
25													
30			9 13 1	14		Lean CLAY with GRAVEL (CL): stiff, gray, moist to wet, w/ fine to coarse-grained sand, trace fine gravel, low plasticity							
35			8 8 9	17									
40			25	50/4"		- trace caliche							
						NOTES: 1. Terms and symbols defined on Plate A-1.							

BORING DEPTH: 41.0 ft
BACKFILL: Grout
DEPTH TO WATER: Not Encountered
FIELDWORK DATE: December 1, 2015
DRILLING METHOD: 6-in. dia. Solid Stem Auger

HAMMER TYPE: Rope and Cathead
RIG TYPE: Simco 2400 SK-1
DRILLED BY: Cenozoic Exploration
LOGGED BY: R Storesund
CHECKED BY:

LOG OF BORING NO. B-01
Moty Reservoir
San Gregorio, California

Project No. 2000.010

Storesund Consulting

LOCATION:

N 1946163.898 E 6023813.288 CA State Plane (NAD83)

DEPTH, ft	MATERIAL SYMBOL	SAMPLER TYPE	BLOW COUNT OR PRESSURE, psi	SPT N VALUE OR RQD%	RECOVERY	MATERIAL DESCRIPTION	DRY UNIT WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX	UNDRAINED SHEAR STRENGTH, S_u, ksf	OTHER TESTS
			2 3 6	(6)		Fat CLAY (CH): medium stiff, dark brown, dry, w/rootlets in top 12" to 24", high plasticity							
			4 5 10	(9)			90	25		66	51		
			6 10 12	(14)		Fat CLAY with SAND (CH): very stiff, yellowish brown, dry to moist, w/ trace angular fine gravels, blocky structure	88	32		69	53		
5			7 14 19	(21)		Fat CLAY with SAND (CH): very stiff, greenish gray, dry to moist, trace fine sub-rounded gravel							
10			7 14 20	(21)			90	31		58	45		
15			7 7 17	(15)		- trace coarse gravel, sub-rounded to rounded - fine-grained sandy lense @ bottom of sampler	85	32					
20			29	50/3"		Fat CLAY with SAND (CH): hard, grayish brown, dry, Mudstone(?)	87	24		56	29		
			15	50/5"									
25													
30				50/6"									

NOTES:
1. Terms and symbols defined on Plate A-1.

BORING DEPTH: 30.5 ft
BACKFILL: Grout
DEPTH TO WATER: Not Encountered
FIELDWORK DATE: December 1, 2015
DRILLING METHOD: 6-in. dia. Solid Stem Auger

HAMMER TYPE: Rope and Cathead
RIG TYPE: Simco 2400 SK-1
DRILLED BY: Cenozoic Exploration
LOGGED BY: R Storesund
CHECKED BY:

LOG OF BORING NO. B-02
Moty Reservoir
San Gregorio, California

Project No. 2000.010

Storesund Consulting

LOCATION:

N 1945891.471 E 6023871.387 CA State Plane (NAD83)

DEPTH, ft	MATERIAL SYMBOL	SAMPLER TYPE	BLOW COUNT OR PRESSURE, psi	SPT N VALUE OR RQD%	RECOVERY	MATERIAL DESCRIPTION	DRY UNIT WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX	UNDRAINED SHEAR STRENGTH, S_u, ksf	OTHER TESTS
			2 3 3	6		Fat CLAY (CH): medium stiff, dark brown, dry, w/ rootlets							
			2 3 4	7									
			6 8 11	19		SANDY Lean CLAY (CL): very stiff, yellowish brown, dry to moist, trace caliche, w/fine-grained sand							
5			4 6 8	14				25		42	30		
			2 3 4	7									
10			3 3 3	6									
						SANDY Lean CLAY (CL): stiff, gray, moist, w/fine-grained sand							
15			3 5 5	10				36		40	25		
						SANDY Lean CLAY (CL): very stiff, gray, moist, blocky w/black staining							
20			37 6 13	19		- cobble @20'?							
						Fat CLAY with SAND (CH): hard, grayish brown, dry, Mudstone(?)							
25			11 22 38	60									

NOTES:
1. Terms and symbols defined on Plate A-1.

BORING DEPTH: 26.5 ft
BACKFILL: Grout
DEPTH TO WATER: Not Encountered
FIELDWORK DATE: December 1, 2015
DRILLING METHOD: 6-in. dia. Solid Stem Auger

HAMMER TYPE: Rope and Cathead
RIG TYPE: Simco 2400 SK-1
DRILLED BY: Cenozoic Exploration
LOGGED BY: R Storesund
CHECKED BY:

LOG OF BORING NO. B-03
Moty Reservoir
San Gregorio, California

Project No. 2000.010

Storesund Consulting

LOCATION:

N 1946168.497 E 6024092.149 CA State Plane (NAD83)

DEPTH, ft	MATERIAL SYMBOL	SAMPLER TYPE	BLOW COUNT OR PRESSURE, psi	SPT N VALUE OR RQD%	RECOVERY	MATERIAL DESCRIPTION	DRY UNIT WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX	UNDRAINED SHEAR STRENGTH, S_u, ksf	OTHER TESTS
			5 9 13	(14)		Fat CLAY (CH): very stiff, dark brown, dry, w/rootlets, blocky	92	11					
			5 7 14	(13)									
			11 17 19	(23)		SANDY Lean CLAY (CL): very stiff, yellowish brown, dry to moist, w/slight yellowish-red mottling, trace coarse-grained sub-rounded sand							
5			6 10 13	(14)			105	20					
			6 8 13	(13)									
10			5 9 11	(13)			101	25		40	29		
						SANDY Lean CLAY (CL): medium dense, greenish gray, moist to wet, fine-grained sand							
15			5 7 9	(10)									
						SILTY SAND with GRAVEL (SM): medium dense, greenish gray, moist to wet, fine-grained sand							
20			11 22 18	(25)		- grades fine to coarse-grained sand, w/medium to coarse gravels	78	21					MA
						Fat CLAY with SAND (CH): hard, brown, dry, Mudstone(?)							
25			32	50/5"									

NOTES:
1. Terms and symbols defined on Plate A-1.

BORING DEPTH: 26.0 ft
BACKFILL: Grout
DEPTH TO WATER: Not Encountered
FIELDWORK DATE: December 1, 2015
DRILLING METHOD: 6-in. dia. Solid Stem Auger

HAMMER TYPE: Rope and Cathead
RIG TYPE: Simco 2400 SK-1
DRILLED BY: Cenozoic Exploration
LOGGED BY: R Storesund
CHECKED BY:

LOG OF BORING NO. B-04
Moty Reservoir
San Gregorio, California

Project No. 2000.010

Storesund Consulting

LOCATION:

N 1946049.062 E 6023797.047 CA State Plane (NAD83)

DEPTH, ft	MATERIAL SYMBOL	SAMPLER TYPE	BLOW COUNT OR PRESSURE, psi	SPT N VALUE OR RQD%	RECOVERY	MATERIAL DESCRIPTION	DRY UNIT WEIGHT, pcf	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX	UNDRAINED SHEAR STRENGTH, S_u, ksf	OTHER TESTS
						Fat CLAY (CH): medium stiff, dark brown, dry, w/rootlets							
5			5 9 12	(13)		Lean CLAY with SAND (CL): very stiff, yellowish brown, dry to moist, w/ trace to some fine-grained sand, some mottling	88	29					
10			3 4 5	(6)			83	37					
15			8 16 20	(23)		Lean CLAY with SAND (CL): very stiff, gray, moist - w/coarse gravels and cobbles	90	33					
20			10 24 40	(40)			83	27					
						NOTES: 1. Terms and symbols defined on Plate A-1.							

BORING DEPTH: 21.0 ft
BACKFILL: Grout
DEPTH TO WATER: Not Encountered
FIELDWORK DATE: December 1, 2015
DRILLING METHOD: 6-in. dia. Solid Stem Auger

HAMMER TYPE: Rope and Cathead
RIG TYPE: Simco 2400 SK-1
DRILLED BY: Cenozoic Exploration
LOGGED BY: R Storesund
CHECKED BY:

LOG OF BORING NO. B-05
Moty Reservoir
San Gregorio, California

Project No. 2000.010

DRILL HOLE	DEPTH, ft	SAMPLE NUMBER	MATERIAL DESCRIPTION	UWW pcf	UDW pcf	MC%	FINES %	ATTERBURG LIMITS		COMPACTION TEST		DIRECT SHEAR		COMPRESSIVE STRENGTH TESTS		CORROSIVITY TESTS				R-VALUE	EXPANSION INDEX	SAND EQUIVALENT (SE)	TEST LISTING
								LL	PI	MAX DD pcf	OPT MC %	C ksf	PHI deg	Qu, ksf	S_u (Cell Prs.) ksf	R	pH	Cl	So_4				
B-02	0.0		Fat CLAY (CH), Black							106	16.8												P
B-02	1.5		Fat CLAY (CH), Black	113	90	25		66	51														T, A
B-02	4.0		Fat CLAY with SAND (CH), Dark Grayish	116	88	32		69	53														T, A
			Brown																				
B-02	10.5		Fat CLAY with SAND (CH), Gray	118	90	31		58	45														T, A
B-02	15.5		SANDY Fat CLAY (CH), Gray	112	85	32																	T
B-02	20.0		Fat CLAY (CH), Very Dark Grayish Brown -	108	87	24		56	29														T, A
			Clay Stone																				
B-03	5.0		SANDY Lean CLAY (CL), Olive Brown			25	63	42	30														M, A, F
B-03	15.0		SANDY Lean CLAY (CL), Very Dark Gray			36		40	25														M, A
B-04	0.5		Fat CLAY (CH), Very Dark Brown	103	92	11																	T
B-04	4.0		Lean CLAY with SAND (CL), Dark Brown							113	13.7												P
B-04	5.5		Lean CLAY with SAND (CL), Dark Brown	126	105	20																	T
B-04	10.5		Lean CLAY with SAND (CL), Olive Brown	125	101	25		40	29														T, A
B-04	13.0		Lean CLAY with SAND (CL), Dark Olive							110	14.5												P
			Gray																				
B-04	21.0		SILTY SAND with GRAVEL (SM), Very	95	78	21	20																T, S
			Dark Gray																				
B-05	5.5		Lean CLAY (CL), Dark Yellowish Brown	113	88	29																	T
B-05	10.5		SANDY Fat CLAY (CH), Dark Yellowish	113	83	37																	T
			Brown																				
B-05	15.5		SANDY Fat CLAY (CH), Very Dark Gray	119	90	33																	T
B-05	20.5		CLAYEY SAND with GRAVEL (SC), Gray	106	83	27																	T

Classification Tests
UWW = Unit Wet Weight
UDW = Unit Dry Weight
MC = Moisture Content
Fines = % Passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index

Direct Shear Test
C = Assigned Cohesion, ksf
PHI = Assigned Friction Angle, degrees

Compaction Test
MAX DD = Maximum Dry Density
OPT MC = Optimum Moisture Content

Compressive Strength Tests
Qu = Unconfined Compression
Su = Undrained Shear Strength
u = Unconsolidated Undrained
p = Pocket Penetrometer
t = Torvane
m = Miniature Vane

Corrosivity Tests
R = Resistivity, ohm-cm, satur.
pH = pH
Cl = Chloride, ppm
SO_4 = Sulfate, ppm

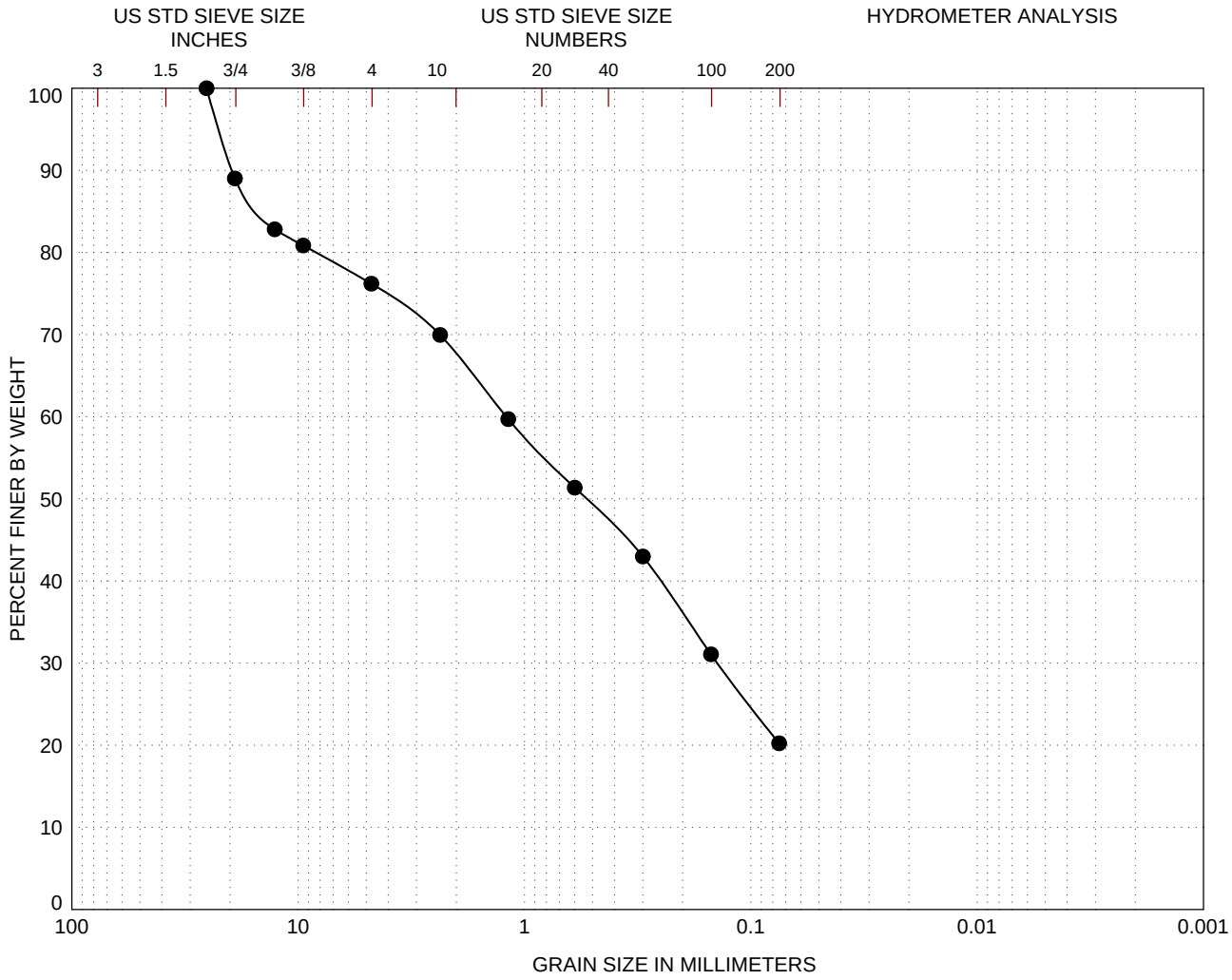
Test Listing Abbreviations
M = Moisture Content
T = Total & Dry Unit Weight
S = Sieve Analysis
FC = % Passing #200 Sieve
H = Hydrometer Analysis
A = Atterberg Limits
P = Compaction Test
D = Direct Shear Test
C = Consolidation Test
Co = Corrosivity Tests
CU = CU Triaxial
U = UU Triaxial
R = R-Value
SE = Sand Equivalent

SUMMARY OF LABORATORY TEST RESULTS

Moty Reservoir
San Gregorio, California

Storesund Consulting

PLATE B-1



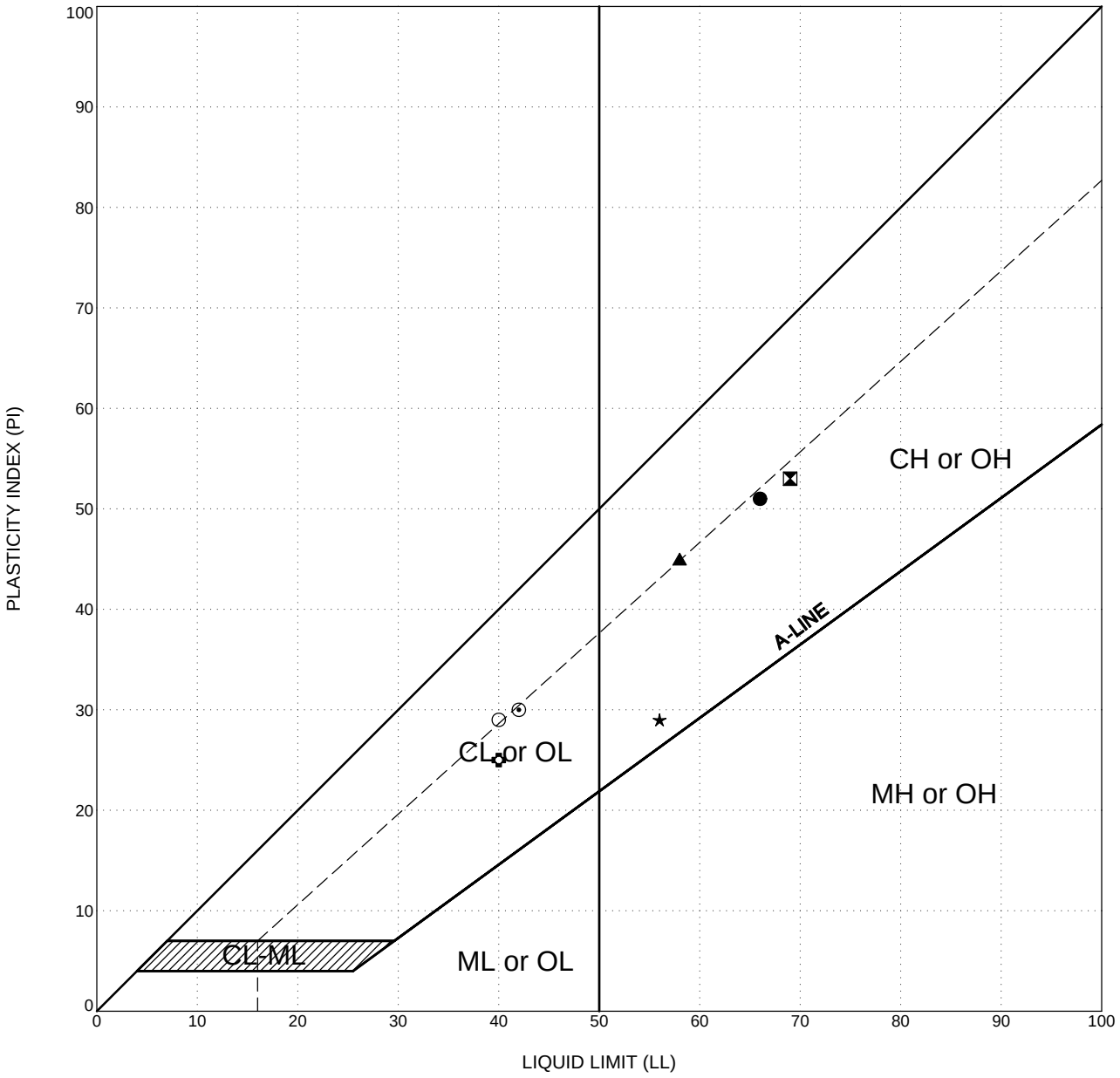
GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

LEGEND			CLASSIFICATION	Cc	Cu	D10	D30	D60
	(location)	(depth,ft)						
●	B-04	21.0	SILTY SAND with GRAVEL (SM), Very Dark Gray				0.14	1.20

GRAIN SIZE CURVES
Moty Reservoir
San Gregorio, California

PLATE B-2

Project No. 2000.010



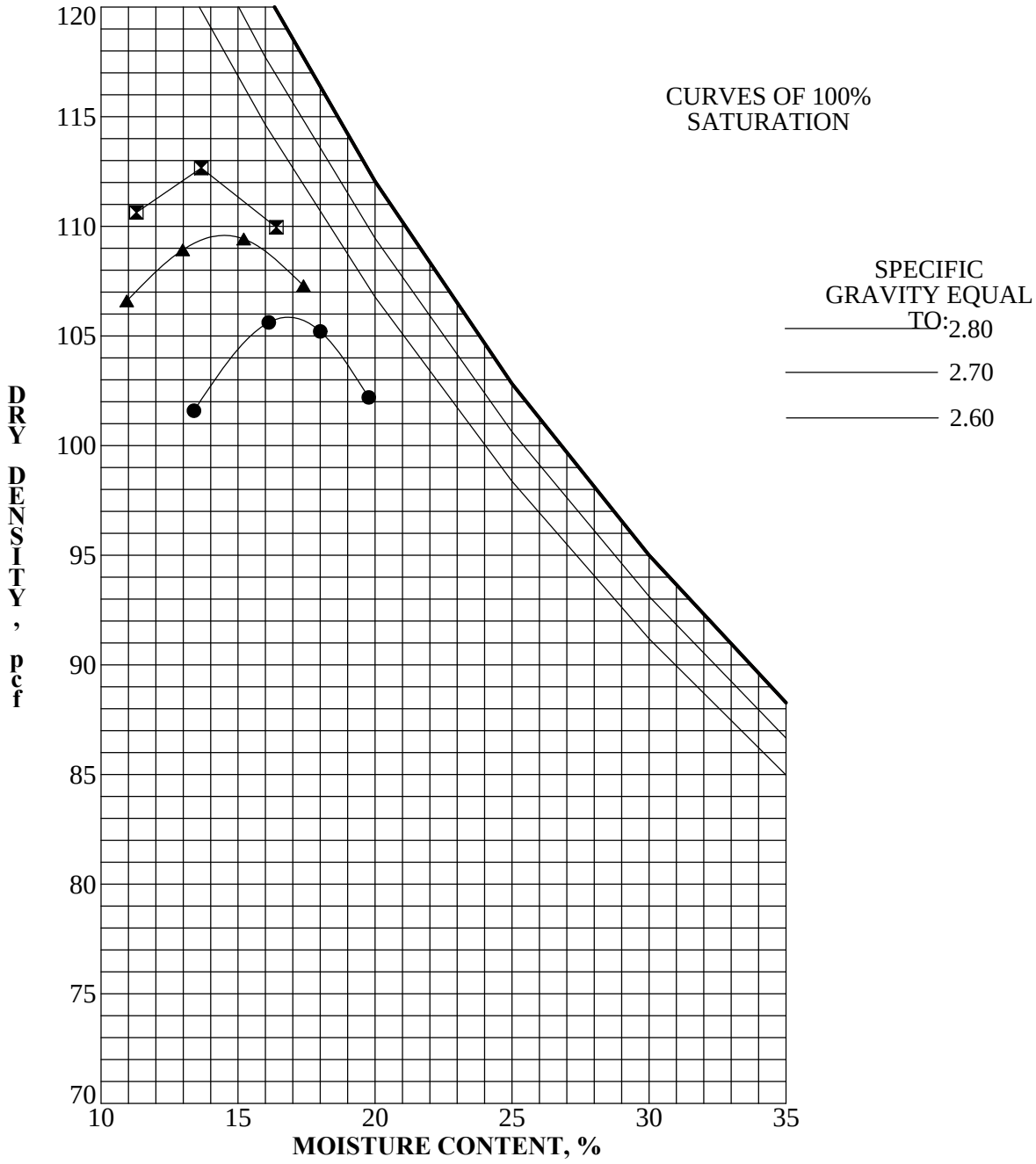
ATTERBERG LIMITS TEST RESULTS

LEGEND	location	depth, ft	CLASSIFICATION	LIQUID LIMIT(LL)	PLASTIC LIMIT(PL)	PLASTICITY INDEX (PI)
●	B-02	1.5	Fat CLAY (CH), Black	66	15	51
⊠	B-02	4.0	Fat CLAY with SAND (CH), Dark Grayish Brown	69	16	53
▲	B-02	10.5	Fat CLAY with SAND (CH), Gray	58	13	45
★	B-02	20.0	Fat CLAY (CH), Very Dark Grayish Brown - Clay Stone	56	27	29
⊙	B-03	5.0	SANDY Lean CLAY (CL), Olive Brown	42	12	30
✿	B-03	15.0	SANDY Lean CLAY (CL), Very Dark Gray	40	15	25
○	B-04	10.5	Lean CLAY with SAND (CL), Olive Brown	40	11	29

PLASTICITY CHART

Moty Reservoir
San Gregorio, California

PLATE B-3



Key Symbol	Location	Depth (Feet)	Sample Description (USCS)	Maximum Dry Density (pcf)	Optimum Water Content (%)	Test Designation
●	B-02	0.0	Fat CLAY (CH), Black ()	105.8	16.8	A
⊠	B-04	4.0	Lean CLAY with SAND (CL), Dark Brown ()	112.7	13.7	A
▲	B-04	13.0	Lean CLAY with SAND (CL), Dark Olive Gray ()	109.5	14.5	A

Storesund Consulting

PREP'D BY:
APP'D BY:
DATE: 1/5/16
DWG FILE:

COMPACTION TEST RESULTS

Moty Reservoir
San Gregorio, California

PLATE
B-4
PROJECT No.
2000.010

COMPACTION (70-120 PCF) 2000.010_MOTY RESERVOIR_20151222.GPJ STD.GDT 1/5/16

A.5 Project Specifications

Coastal Streamflow Stewardship Project – Moty-Klingman Property

PROJECT SPECIFICATIONS

Prepared By

R. Storesund, D.Eng., P.E., G.E.

May 2017

Storesund Consulting

SAN MATEO COUNTY RESOURCE CONSERVATION DISTRICT

TROUT UNLIMITED

Moty-Klingman Off-Stream Reservoir

SUMMARY OF PRE-CONSTRUCTION SUBMITTALS

- SWPPP
- Construction Schedule
- Work Zones
- AAP/SSHP
- QC Plan
- Traffic Control Plan
- Creek Pump Assembly
- Reservoir Pump Assembly

PROJECT TABLE OF CONTENTS

-- End of Project Table of Contents --

SECTION 00 01 15

LIST OF DRAWINGS
02/11

PART 1 GENERAL

1.1 SUMMARY

This section lists the drawings for the project

1.2 CONTRACT DRAWINGS

Contract drawings are as follows:

DRAWING NO.	TITLE
G-1	Title Sheet
C-1	Existing Conditions
C-2	Piping Layout
C-3	Over-Excavation
C-4	Reservoir Grading
C-5	Pump Details
C-6	Erosion Control
C-7	Notes
C-8	Details

1.3 SUPPLEMENTARY INFORMATION

1.3.1 Geotechnical Report

A geotechnical report titled "Coastal Streamflow Stewardship Project – Moty-Klingman Property, Basis of Design," prepared by Storesund Consulting, dated April 2017. The Owner does not guarantee that the subsurface conditions presented indicate actual conditions, except for the exact locations and the time that they were made. A copy of the report can be obtained from the Owner's Representative.

1.3.2 Pajaro Valley Irrigation Documents

These documents include an invoice of pre-purchased materials for the project (PVI Invoice #INV200016985 dated 4/12/2016), a quote for a trailer to mount the creek pump (quote #QTE10000486, dated 4/11/2017), and image of target lateral riser with ball valve.

1.3.3 Pacific Southwest Irrigation Documents

General schematic of the project irrigation layout.

1.3.4 Reservoir Pump Details

Details of reservoir pump configuration and associated assembly parts.

1.3.5 Electrical Shed Photos

Photographs of the electrical shed and interior components.

-- End of Document --

SECTION 00 41 00

BID SCHEDULES
01/07

PART 1 GENERAL

1.1 BASIS OF BIDS

1.1.1 Bid Items With Unit Prices

This contract will be solicited with bid items and unit prices required for specifically selected work. A description of the bid items and schedule of the unit price work is contained in 01 22 00.00 10 MEASUREMENT AND PAYMENT.

Any bid price for items indicated which are unbalanced as to price may be rejected as non-responsive. An unbalanced bid is one which is based on price significantly less than cost for some work and price which is significantly overstated for other work.

1.1.2 Variation in Estimated Quantity

If the quantity of a unit-priced item in this contract is an estimated quantity and the actual quantity of the unit-priced item varies more than 15 percent above or below the estimated quantity, an equitable adjustment in the contract price shall be made upon demand of either party. The equitable adjustment shall be based upon any increase or decrease in costs due solely to the variation above 115 percent or below 85 percent of the estimated quantity. If the quantity variation is such as to cause an increase in the time necessary for completion, the Contractor may request, in writing, an extension of time, to be received by the Owner's Representative within 10 days from the beginning of the delay, or within such further period as may be granted by the Owner's Representative before the date of final settlement of the contract. Upon the receipt of a written request for an extension, the Owner's Representative shall ascertain the facts and make an adjustment for extending the completion date as, in the judgment of the Owner's Representative, is justified.

1.1.3 Quantity Surveys

(a) Quantity surveys shall be conducted, and the data derived from these surveys shall be used in computing the quantities of work performed and the actual construction completed and in place.

(b) The Contractor shall conduct the original and final surveys and make the computations based on them. The Contractor shall conduct the surveys for any periods for which progress payments are requested and shall make the computations based on these surveys. All surveys conducted by the Contractor shall be conducted under the direction of a representative of the Owner's Representative, unless the Owner's Representative waives this requirement in a specific instance.

(c) Promptly upon completing a survey, the Contractor shall furnish the originals of all field notes and all other records relating to the survey or to the layout of the work to the Contracting Officer, who shall use them as necessary to determine the amount of progress payments. The

Contractor shall retain copies of all such material furnished to the Owner's Representative.

-- End of Document --

SECTION 01 11 00

SUMMARY OF WORK
08/11

PART 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

1.1.1 Project Description

The work includes the construction of a new 21.5 AF agricultural earthen reservoir, a creek diversion pump system, a reservoir distribution pump system, and agricultural irrigation lines. Electrical supply will be provided to the creek pump and reservoir pump. A new supply line will connect the creek pump to the reservoir. A new distribution system will irrigate the fields from the reservoir. Earthwork consists of over excavation, construction of an earthen embankment, and installation of a primary spillway.

1.1.2 Location

The work shall be located at the Moty-Klingman Property (3030 La Honda Road, San Gregorio, CA 94019), as indicated on the project drawings.

1.2 OCCUPANCY OF PREMISES

Before work is started, the Contractor shall arrange with the Owner's Representative a sequence of procedure, means of access, space for storage of materials and equipment, and use of approaches, corridors, and roadways.

1.3 EXISTING WORK

Remove or alter existing work in such a manner as to prevent injury or damage to any portions of the existing work which remain. Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as approved by the Owner's Representative. At the completion of operations, existing work shall be in a condition equal to or better than that which existed before new work started.

1.4 LOCATION OF UNDERGROUND FACILITIES

Notify Underground Service Alert (USA) at least two (2) working days in advance of and obtain digging permits (as necessary) prior to start of excavation. Verify the locations and elevations of existing piping, and utilities

Notify the Owner's Representative at least 48 hours prior to starting excavation work.

1.5 SALVAGE MATERIAL AND EQUIPMENT

Items designated by the Owner's Representative to be salvaged shall remain the property of the Owner.

The salvaged property shall be segregated, itemized, delivered, and off-loaded at the Owner designated storage area located within 1/2 mile of the construction site.

Contractor shall maintain property control records for material or equipment designated as salvage. Contractor's system of property control may be used if approved by the Owner's Representative. Contractor shall be responsible for storage and protection of salvaged materials and equipment until disposition by the Owner's Representative.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 22 00.00 10

MEASUREMENT AND PAYMENT
04/06

PART 1 GENERAL

1.1 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

1.2 LUMP SUM PAYMENT ITEMS

Payment items for the work of this contract for which contract lump sum payments will be made are listed in the BIDDING SCHEDULE and described below. All costs for items of work, which are not specifically mentioned to be included in a particular lump sum or unit price payment item, shall be included in the listed lump sum item most closely associated with the work involved. The lump sum price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for which separate payment is not otherwise provided.

1.2.1 MOBILIZATION AND DEMOBILIZATION

1.2.1.1 Payment

Payment will be made for costs associated with mobilization and demobilization (Mob/Demob) to and from the site. Mob/Demob will also include providing for an onsite portable toilet, preparation and submission of all pre-construction submittals, attending a pre-construction meeting prior to start of construction, and providing a stabilized entrance. Payment items for the work of this contract on which the contract unit price payments will be made are listed in the BIDDING SCHEDULE. The lump sum price and payment made for each item listed shall constitute full compensation for furnishing all

1.2.1.2 Unit of Measure

Unit of measure: lump sum.

1.2.2 [Enter Appropriate Subpart Title Here]IRRIGATION

1.2.2.1 Payment

Payment will be made for costs associated with: (a) staking out the utility line trenches; (b) running electrical service from the existing electrical shed to the creek pump location and providing panels and outlets for pump operation; (c) procuring and configuring a 10 HP pump on a trailer with suction hose, fish screen, and discharge hose to 4" PVC supply line (connection with 4" cam lock fitting); (d) running a 4" PVC line from the creek pump to the reservoir to allow filling of the reservoir; (e) running

electrical service from the existing electrical shed to the reservoir pump location and providing panels and outlets for pump operation; (f) running a 6" PVC line to serve as a main distribution to irrigation laterals; (g) running three 6" PVC laterals; (h) installation of lateral risers with ball valves at a spacing of 50 ft for each lateral. See materials from PVI that can be credited towards this work (and should be used to offset payment) as well as the image of the vertical riser with ball valve. CONTRACTOR IS RESPONSIBLE FOR ALL ELECTRICAL CONFIGURATIONS AND SHOULD EMPLOY A LICENSED ELECTRICAL CONTRACTOR TO ENSURE ALL WORK IS TO CODE. The lump sum price and payment made for each item listed shall constitute full compensation for furnishing all labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for each of the unit price items.

1.2.2.2 Unit of Measure

Unit of measure: lump sum.

1.2.3 EARTHWORK

1.2.3.1 Payment

Payment will be made for costs associated with excavation and grading for the off-stream reservoir, which includes performing required excavation and other operations incidental thereto, disposal area(s) and disposition of excess excavated material and unsuitable materials. The lump sum price and payment made for each item listed shall constitute full compensation for furnishing all labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for each of the unit price items. Earthwork includes:

* Clearing/Grubbing
* Over-excavation
* Installation of a seepage collection trench (OPTIONAL)
*Over-excavation survey
* Embankment construction
* Spillway construction
* Compaction testing
* Finish grade survey
* Installation of straw wattles
* Hydroseeding

1.2.3.1.1 Measurement

Unit of measure: lump sum.

1.2.4 ADMINISTRATION

1.2.4.1 Payment

Payment items for the work of this contract on which the contract unit price payments will be made are listed in the BIDDING SCHEDULE and shall include all required management; license and bonding; and contractor profit. The lump sum price and payment made for each item listed shall constitute full compensation.

1.2.4.2 Measurement

Unit of measure: lump sum.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS
05/11

PART 1 GENERAL

1.1 MINIMUM INSURANCE REQUIREMENTS

Procure and maintain during the entire period of performance under this contract in accordance with Section 0700 General Conditions.

1.2 SUPERVISION

Have at least one qualified supervisor capable of reading, writing, and conversing fluently in the English language on the job site during working hours. In addition, if a Quality Control (QC) representative is required on the contract, then that individual shall also have fluent English communication skills.

1.3 PRECONSTRUCTION CONFERENCE

After award of the contract but prior to commencement of any work at the site, meet with the Owner's Representative to discuss and develop a mutual understanding relative to the administration of the value engineering and safety program, preparation of the schedule prices, shop drawings, and other submittals, scheduling programming, and prosecution of the work. Major subcontractors who will engage in the work shall also attend.

1.4 AVAILABILITY OF CADD DRAWING FILES

After award and upon request, the electronic "Computer-Aided Drafting and Design (CADD)" drawing files will only be made available to the Contractor for use in preparation of construction drawings and data related to the referenced contract subject to the following terms and conditions.

Data contained on these electronic files shall not be used for any purpose other than as a convenience in the preparation of construction drawings and data for the referenced project. Any other use or reuse shall be at the sole risk of the Contractor and without liability or legal exposure to the Owner. The Contractor shall make no claim and waives to the fullest extent permitted by law, any claim or cause of action of any nature against the Owner, its agents or sub consultants that may arise out of or in connection with the use of these electronic files. The Contractor shall, to the fullest extent permitted by law, indemnify and hold the Owner harmless against all damages, liabilities or costs, including reasonable attorney's fees and defense costs, arising out of or resulting from the use of these electronic files.

These electronic CADD drawing files are not construction documents. Differences may exist between the CADD files and the corresponding construction documents. The Owner makes no representation regarding the accuracy or completeness of the electronic CADD files, nor does it make representation to the compatibility of these files with the Contractors hardware or software. In the event that a conflict arises between the signed and sealed construction documents prepared by the Owner and the furnished CADD files, the signed and sealed construction documents shall govern. The

Contractor is responsible for determining if any conflict exists. Use of these CADD files does not relieve the Contractor of duty to fully comply with the contract documents, including and without limitation, the need to check, confirm and coordinate the work of all contractors for the project.

If the Contractor uses, duplicates and/or modifies these electronic CADD files for use in producing construction drawings and data related to this contract, all previous indicia of ownership (seals, logos, signatures, initials and dates) shall be removed.

1.5 ELECTRONIC MAIL (E-MAIL) ADDRESS

The Contractor shall establish and maintain electronic mail (e-mail) capability along with the capability to open various electronic attachments in Microsoft, Adobe Acrobat, and other similar formats. Within 5 days after contract award, the Contractor shall provide the Owner's Representative a single (only one) e-mail address for electronic communications from the Owner's Representative related to this contract including, but not limited to contract documents, invoice information, request for proposals, and other correspondence. The Owner's Representative may also use email to notify the Contractor of base access conditions when emergency conditions warrant, such as hurricanes, terrorist threats, etc. Multiple email address will not allowed.

It is the Contractor's responsibility to make timely distribution of all Owner's Representative initiated e-mail with its own organization including field office(s). The Contractor shall promptly notify the Owner's Representative, in writing, of any changes to this email address.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 01 32 16.00 20

CONSTRUCTION PROGRESS DOCUMENTATION
11/09

PART 1 GENERAL

1.1 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Construction schedule

1.2 ACCEPTANCE

Prior to the start of work, prepare and submit to the Owner's Representative for acceptance a construction schedule in the form of a Bar Chart in accordance with the requirements below.

1.3 SCHEDULE FORMAT

1.3.1 Bar Chart Schedule

The Bar Chart shall show submittals, Owner review periods, material/equipment delivery, utility outages, on-site construction, inspection, testing, and closeout activities. The Bar Chart shall be time scaled and generated using an electronic spreadsheet program.

1.4 UPDATED SCHEDULES

Update the Construction schedule at weekly intervals or when the schedule has been revised. The updated schedule shall be kept current, reflecting actual activity progress and plan for completing the remaining work. Submit copies of purchase orders and confirmation of delivery dates as directed.

1.5 3-WEEK LOOK AHEAD SCHEDULE

The Contractor shall prepare and issue a 3-Week Look Ahead schedule to provide a more detailed day-to-day plan of upcoming work identified on the Construction Schedule. The work plans shall be keyed to activity numbers and updated each week to show the planned work for the current and following two-week period. Additionally, include upcoming outages, closures, preparatory meetings, and initial meetings. Identify critical path activities on the Three-Week Look Ahead Schedule. The detail work plans are to be bar chart type schedules, maintained separately from the Construction Schedule on an electronic spreadsheet program and printed on 8 ½ by 11 sheets as directed by the Owner's Representative. Activities shall not exceed 5 working days in duration and have sufficient level of detail to assign crews, tools and equipment required to complete the work. Three hard copies and one electronic file of the 3-Week Look Ahead Schedule shall be delivered to the Owner's Representative no later than 8 a.m. each Monday and reviewed during the weekly CQC Coordination Meeting.

1.6 CORRESPONDENCE AND TEST REPORTS:

All correspondence (e.g., letters, Requests for Information (RFIs), e-mails, meeting minute items, Production and QC Daily Reports, material delivery tickets, photographs, etc.) shall reference Schedule activities that are being addressed. All test reports (e.g., concrete, soil compaction, weld, pressure, etc.) shall reference schedule activities that are being addressed.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 33 00

SUBMITTAL PROCEDURES
05/11

PART 1 GENERAL

1.1 SUMMARY

The Owner's Representative may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections.

Units of weights and measures used on all submittals are to be the same as those used in the contract drawings.

Each submittal is to be complete and in sufficient detail to allow ready determination of compliance with contract requirements.

Contractor's Quality Control (CQC) System Manager and the Designer of Record, if applicable, to check and approve all items prior to submittal and stamp, sign, and date indicating action taken. Proposed deviations from the contract requirements are to be clearly identified. Include within submittals items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals.

Submittals requiring Owner approval are to be scheduled and made prior to the acquisition of the material or equipment covered thereby. Pick up and dispose of samples not incorporated into the work in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

1.2 DEFINITIONS

1.2.1 Submittal Descriptions (SD)

Submittals requirements are specified in the technical sections. Submittals are identified by Submittal Description (SD) numbers and titles as follows:

SD-01 Preconstruction Submittals

Submittals which are required prior to start of construction/work.

Certificates of insurance

Surety bonds

List of proposed Subcontractors

List of proposed products

Construction Progress Schedule

Submittal register

Schedule of prices

Health and safety plan

Work plan

Quality Control(QC) plan

Environmental protection plan

SD-02 Shop Drawings

Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work.

Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project.

Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be coordinated.

SD-03 Product Data

Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials, systems or equipment for some portion of the work.

Samples of warranty language when the contract requires extended product warranties.

SD-06 Test Reports

Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must have been within three years of date of contract award for the project.)

Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to job site.

Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

Investigation reports.

Daily logs and checklists.

Final acceptance test and operational test procedure.

SD-08 Manufacturer's Instructions

Preprinted material describing installation of a product, system or material, including special notices and (MSDS)concerning impedances, hazards and safety precautions.

SD-10 Operation and Maintenance Data

Data that is furnished by the manufacturer, or the system provider, to the equipment operating and maintenance personnel, including manufacturer's help and product line documentation necessary to maintain and install equipment. This data is needed by operating and maintenance personnel for the safe and efficient operation, maintenance and repair of the item.

This data is intended to be incorporated in an operations and maintenance manual or control system.

SD-11 Closeout Submittals

Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

Special requirements necessary to properly close out a construction contract. For example, Record Drawings and as-built drawings. Also, submittal requirements necessary to properly close out a major phase of construction on a multi-phase contract.

Interim "DD Form 1354" with cost breakout for all assets 30 days prior to facility turnover.

1.2.2 Work

As used in this section, on- and off-site construction required by contract documents, including labor necessary to produce submittals, except those SD-01 Pre-Construction Submittals noted above, construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction.

1.3 SUBMITTALS

Submit the following in accordance with this section.

SD-01 Preconstruction Submittals

Submittal Register

1.4 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.4.1 Designer of Record Approved (DA)

Designer of Record (DOR) approval is required for extensions of design, critical materials, any deviations from the solicitation, the accepted proposal, or the completed design, equipment whose compatibility with the entire system must be checked, and other items as designated by the Owner's Representative. Within the terms of the Contract Clause entitled, "Specifications and Drawings for Construction," they are considered to be "shop drawings." Contractor to provide the Owner with the number of copies

designated hereinafter of all DOR approved submittals. The Owner may review any or all Designer of Record approved submittals for conformance to the Solicitation, Accepted Proposal and the completed design. The Owner will review all submittals designated as deviating from the Solicitation or Accepted Proposal, as described below. Generally, design submittals should be identified as SD-05 Design Data submittals.

1.4.2 Owner Approved

Owner approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Owner's Representative. Owner approval is required for any deviations from the Solicitation or Accepted Proposal and other items as designated by the Owner's Representative. Within the terms of the Contract Clause entitled, "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.4.3 Information Only

Submittals not requiring Owner approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above.

1.5 PREPARATION

1.5.1 Transmittal Form

Transmit each submittal, except sample installations and sample panels to Owner's Representative. On the transmittal form identify Contractor, indicate date of submittal, and include information prescribed by transmittal form and required in paragraph entitled, "Identifying Submittals," of this section.

1.5.2 Identifying Submittals

When submittals are provided by a Subcontractor, the Prime Contractor is to prepare, review and stamp with Contractor's approval all specified submittals prior to submitting for Owner approval.

Identify submittals, except sample installations and sample panels, with the following information permanently adhered to or noted on each separate component of each submittal and noted on transmittal form. Mark each copy of each submittal identically, with the following:

a. Project title and location.

b. Construction contract number.

c. Date of the drawings and revisions.

d. Name, address, and telephone number of subcontractor, supplier, manufacturer and any other subcontractor associated with the submittal.

e. Section number of the specification section by which submittal is required.

f. Submittal description (SD) number of each component of submittal.

g. When a resubmission, add alphabetic suffix on submittal description, for example, submittal 18 would become 18A, to indicate resubmission.

h. Product identification and location in project.

1.5.3 Format for SD-02 Shop Drawings

Shop drawings are not to be less than 8 1/2 by 11 inches nor more than 30 by 42 inches, except for full size patterns or templates. Prepare drawings to accurate size, with scale indicated, unless other form is required. Drawings are to be suitable for reproduction and be of a quality to produce clear, distinct lines and letters with dark lines on a white background. Provide in paper and electronic formats.

Include on each drawing the drawing title, number, date, and revision numbers and dates, in addition to information required in paragraph entitled, "Identifying Submittals," of this section.

Number drawings in a logical sequence. Each drawing is to bear the number of the submittal in a uniform location adjacent to the title block. Place the Owner contract number in the margin, immediately below the title block, for each drawing.

Dimension drawings, except diagrams and schematic drawings; prepare drawings demonstrating interface with other trades to scale. Use the same unit of measure for shop drawings as indicated on the contract drawings. Identify materials and products for work shown.

Include the nameplate data, size and capacity on drawings. Also include applicable federal, military, industry and technical society publication references.

1.5.4 Format of SD-03 Product Data and SD-08 Manufacturer's Instructions

Present product data submittals for each section as a complete, bound volume. Include table of contents, listing page and catalog item numbers for product data.

Indicate, by prominent notation, each product which is being submitted; indicate specification section number and paragraph number to which it pertains.

Supplement product data with material prepared for project to satisfy submittal requirements for which product data does not exist. Identify this material as developed specifically for project, with information and format as required for submission of SD-07 Certificates.

Include the manufacturer's name, trade name, place of manufacture, and catalog model or number on product data. Also include applicable federal, military, industry and technical society publication references. Should manufacturer's data require supplemental information for clarification, submit as specified for SD-07 Certificates.

Where equipment or materials are specified to conform to industry and technical society reference standards of the organizations such as American National Standards Institute (ANSI), ASTM International (ASTM), National Electrical Manufacturer's Association (NEMA), Underwriters Laboratories (UL),

and Association of Edison Illuminating Companies (AEIC), submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance. In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing, and approved by the Owner's Representative. State on the certificate that the item has been tested in accordance with the specified organization's test methods and that the item complies with the specified organization's reference standard.

Collect required data submittals for each specific material, product, unit of work, or system into a single submittal and marked for choices, options, and portions applicable to the submittal. Mark each copy of the product data identically.

Submit manufacturer's instructions prior to installation.

1.5.5 Format of SD-04 Samples

Furnish samples in sizes below, unless otherwise specified or unless the manufacturer has prepackaged samples of approximately same size as specified:

a. Sample of Equipment or Device: Full size.

b. Sample of Materials Less Than 2 by 3 inches: Built up to 8 1/2 by 11 inches.

c. Sample of Materials Exceeding 8 1/2 by 11 inches: Cut down to 8 1/2 by 11 inches and adequate to indicate color, texture, and material variations.

d. Sample of Linear Devices or Materials: 10 inch length or length to be supplied, if less than 10 inches. Examples of linear devices or materials are conduit and handrails.

e. Sample of Non-Solid Materials: Pint. Examples of non-solid materials are sand and paint.

f. Color Selection Samples: 2 by 4 inches. Where samples are specified for selection of color, finish, pattern, or texture, submit the full set of available choices for the material or product specified. Sizes and quantities of samples are to represent their respective standard unit.

g. Sample Panel: 4 by 4 feet.

h. Sample Installation: 100 square feet.

Samples Showing Range of Variation: Where variations in color, finish, pattern, or texture are unavoidable due to nature of the materials, submit sets of samples of not less than three units showing extremes and middle of range. Mark each unit to describe its relation to the range of the variation.

Reusable Samples: Incorporate returned samples into work only if so specified or indicated. Incorporated samples are to be in undamaged condition at time of use.

Recording of Sample Installation: Note and preserve the notation of area constituting sample installation but remove notation at final clean up of project.

When color, texture or pattern is specified by naming a particular manufacturer and style, include one sample of that manufacturer and style, for comparison.

1.5.6 Format of SD-05 Design Data and SD-07 Certificates

Provide design data and certificates on 8 1/2 by 11 inches paper. Provide a bound volume for submittals containing numerous pages.

1.5.7 Format of SD-06 Test Reports and SD-09 Manufacturer's Field Reports

Provide reports on 8 1/2 by 11 inches paper in a complete bound volume.

Indicate by prominent notation, each report in the submittal. Indicate specification number and paragraph number to which it pertains.

1.5.8 Format of SD-01 Preconstruction Submittals and SD-11 Closeout Submittals

When submittal includes a document which is to be used in project or become part of project record, other than as a submittal, do not apply Contractor's approval stamp to document, but to a separate sheet accompanying document.

1.6 QUANTITY OF SUBMITTALS

1.6.1 Number of Copies of SD-02 Shop Drawings

Submit two (2) hard copies and one (1) electronic copy of submittals of shop drawings requiring review and approval by Owner's Representative.

1.6.2 Number of Copies of SD-03 Product Data and SD-08 Manufacturer's Instructions

Submit in compliance with quantity requirements specified for shop drawings.

1.6.3 Number of Samples SD-04 Samples

a. Submit two (2) samples, or two (2) sets of samples showing range of variation, of each required item. One approved sample or set of samples will be retained by approving authority and one will be returned to Contractor.

b. Submit one (1) sample panel or provide one sample installation where directed. Include components listed in technical section or as directed.

c. Submit one (1) sample installation, where directed.

d. Submit one (1) sample of non-solid materials.

1.6.4 Number of Copies SD-05 Design Data and SD-07 Certificates

Submit in compliance with quantity requirements specified for shop drawings.

1.6.5 Number of Copies SD-06 Test Reports and SD-09 Manufacturer's Field Reports

Submit in compliance with quantity and quality requirements specified for shop drawings other than field test results that will be submitted with QC reports.

1.6.6 Number of Copies of SD-01 Preconstruction Submittals and SD-11 Closeout Submittals

Unless otherwise specified, submit two (2) sets of administrative submittals (including one electronic copy).

1.7 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Owner's Representative is not required on information only submittals. The Owner reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Owner's Representative from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Owner laboratory or for check testing by the Owner in those instances where the technical specifications so prescribe.

1.8 VARIATIONS

Variations from contract requirements require both Designer of Record (DOR) and Owner approval and will be considered where advantageous to Owner.

1.8.1 Considering Variations

Discussion with Owner's Representative prior to submission, after consulting with the DOR, will help ensure functional and quality requirements are met and minimize rejections and re-submittals. When contemplating a variation which results in lower cost, consider submission of the variation as a Value Engineering Change Proposal (VECP).

Specifically point out variations from contract requirements in transmittal letters. Failure to point out deviations may result in the Owner requiring rejection and removal of such work at no additional cost to the Owner.

1.8.2 Proposing Variations

When proposing variation, deliver written request to the Owner's Representative, with documentation of the nature and features of the variation and why the variation is desirable and beneficial to Owner, including the DOR's written analysis and approval. If lower cost is a benefit, also include an estimate of the cost savings. In addition to documentation required for variation, include the submittals required for the item. Clearly mark the proposed variation in all documentation.

1.8.3 Warranting That Variations Are Compatible

When delivering a variation for approval, Contractor, including its Designer(s) of Record, warrants that this contract has been reviewed to

establish that the variation, if incorporated, will be compatible with other elements of work.

1.8.4 Review Schedule Is Modified

In addition to normal submittal review period, a period of 10 working days will be allowed for consideration by the Owner of submittals with variations.

1.9 SCHEDULING

Schedule and submit concurrently submittals covering component items forming a system or items that are interrelated. Include certifications to be submitted with the pertinent drawings at the same time. No delay damages or time extensions will be allowed for time lost in late submittals.

a. Coordinate scheduling, sequencing, preparing and processing of submittals with performance of work so that work will not be delayed by submittal processing. Allow for potential resubmittal of requirements.

b. Submittals called for by the contract documents will be listed on the register. If a submittal is called for but does not pertain to the contract work, the Contractor is to include the submittal in the register and annotate it "N/A" with a brief explanation. Approval by the Owner's Representative does not relieve the Contractor of supplying submittals required by the contract documents but which have been omitted from the register or marked "N/A."

c. Re-submit register and annotate monthly by the Contractor with actual submission and approval dates. When all items on the register have been fully approved, no further re-submittal is required.

d. Carefully control procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

g. Period of review for each resubmittal is the same as for initial submittal.

1.9.1 Constraints

Conform to provisions of this section, unless explicitly stated otherwise for submittals listed or specified in this contract.

Submit complete submittals for each definable feature of work. Submit at the same time components of definable feature interrelated as a system.

When acceptability of a submittal is dependent on conditions, items, or materials included in separate subsequent submittals, submittal will be returned without review.

Approval of a separate material, product, or component does not imply approval of assembly in which item functions.

1.10 OWNER APPROVING AUTHORITY

When approving authority is Owner's Representative, the Owner will:

a. Note date on which submittal was received.

b. Review submittals for approval within scheduling period specified and only for conformance with project design concepts and compliance with contract documents.

c. Identify returned submittals with one of the actions defined in paragraph entitled, "Review Notations," of this section and with markings appropriate for action indicated.

Upon completion of review of submittals requiring Owner approval, stamp and date approved submittals. One (1) copy of the approved submittal will be retained by the Owner's Representative and One (1) copy of the submittal will be returned to the Contractor.

1.10.1 Review Notations

Owner's Representative review will be completed within five (5) calendar days after date of submission. Submittals will be returned to the Contractor with the following notations:

a. Submittals marked "approved" or "accepted" authorize the Contractor to proceed with the work covered.

b. Submittals marked "approved as noted" "or approved except as noted, resubmittal not required," authorize the Contractor to proceed with the work covered provided he takes no exception to the corrections.

c. Submittals marked "not approved" or "disapproved," or "revise and resubmit," indicate noncompliance with the contract requirements or design concept, or that submittal is incomplete. Resubmit with appropriate changes. No work shall proceed for this item until resubmittal is approved.

d. Submittals marked "not reviewed" will indicate submittal has been previously reviewed and approved, is not required, does not have evidence of being reviewed and approved by Contractor, or is not complete. A submittal marked "not reviewed" will be returned with an explanation of the reason it is not reviewed. Resubmit submittals returned for lack of review by Contractor or for being incomplete, with appropriate action, coordination, or change.

1.11 DISAPPROVED SUBMITTALS

Contractor shall make corrections required by the Owner's Representative. If the Contractor considers any correction or notation on the returned submittals to constitute a change to the contract drawings or specifications; notice as required under the clause entitled, "Changes," is to be given to the Owner's Representative. Contractor is responsible for the dimensions and design of connection details and construction of work. Failure to point out deviations may result in the Owner requiring rejection and removal of such work at the Contractor's expense.

If changes are necessary to submittals, the Contractor shall make such revisions and submission of the submittals in accordance with the procedures above. No item of work requiring a submittal change is to be accomplished until the changed submittals are approved.

1.12 APPROVED SUBMITTALS

The Owner's Representative's approval or acceptance of submittals is not to be construed as a complete check, and indicates only that the general method of construction, materials, detailing and other information are satisfactory.

Approval or acceptance will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work.

After submittals have been approved or accepted by the Owner's Representative, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.13 APPROVED SAMPLES

Approval of a sample is only for the characteristics or use named in such approval and is not be construed to change or modify any contract requirements. Before submitting samples, the Contractor to assure that the materials or equipment will be available in quantities required in the project. No change or substitution will be permitted after a sample has been approved.

Match the approved samples for materials and equipment incorporated in the work. If requested, approved samples, including those which may be damaged in testing, will be returned to the Contractor, at his expense, upon completion of the contract. Samples not approved will also be returned to the Contractor at its expense, if so requested.

Failure of any materials to pass the specified tests will be sufficient cause for refusal to consider, under this contract, any further samples of the same brand or make of that material. Owner reserves the right to disapprove any material or equipment which previously has proved unsatisfactory in service.

Samples of various materials or equipment delivered on the site or in place may be taken by the Owner's Representative for testing. Samples failing to meet contract requirements will automatically void previous approvals. Contractor to replace such materials or equipment to meet contract requirements.

Approval of the Contractor's samples by the Owner's Representative does not relieve the Contractor of his responsibilities under the contract.

1.14 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained. No payment for materials incorporated in the work will be made if all required Designer of Record or required Owner approvals have not been obtained. No payment will be made for any materials incorporated into the work for any conformance review submittals or information only submittals found to contain errors or deviations from the Solicitation or Accepted Proposal.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 01 35 29.13

HEALTH, SAFETY, AND EMERGENCY RESPONSE PROCEDURES
01/08

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2008; Errata 1-2010; Changes 1-3 2010; Changes 4-6 2011) Safety and Health Requirements Manual

1.2 DESCRIPTION OF WORK

This section requires Contractors to implement practices and procedures for working safely and in compliance with OSHA and USACE regulation while performing cleanup activities on uncontrolled hazardous waste sites.

1.3 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Work Zones

SD-03 Product Data

Employee Certificates

Accident Prevention Plan/Site Safety and Health Plan (AAP/SSHP)

1.4 REGULATORY REQUIREMENTS

Comply with EM 385-1-1, OSHA requirements in 29 CFR 1910 and 29 CFR 1926 with work performed under this contract, especially OSHA's Standards 29 CFR 1926.65 and 29 CFR 1910.120 and state specific OSHA requirements where applicable. Submit to the Owner's Representative for resolution matters of interpretation of standards before starting work. The most stringent requirements apply where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary.

1.5 PRECONSTRUCTION SAFETY CONFERENCE

Conduct a preconstruction safety conference prior to the start of site activities and after submission of the Contractor's APP/SSHP. The objective of the meeting will be to discuss health and safety concerns related to the

impending work, discuss project health and safety organization and expectations, review and answer comments and concerns regarding the APP/SSHP or other health and safety concerns the Contractor may have. Ensure that those individuals responsible for health and safety at the project level are available and attend this meeting.

1.6 ACCIDENT PREVENTION PLAN/SITE SAFETY AND HEALTH PLAN (APP/SSHP)

Develop and implement a Site Safety and Health Plan and attach to the Accident Prevention Plan (APP) as an appendix (APP/SSHP). Address all occupational safety and health hazards. SSHP appendix elements that overlap with APP elements need not be duplicated in the APP/SSHP provided each SOH issue receives adequate attention and is documented in the APP/SSHP. The APP/SSHP is a dynamic document, subject to change as project operations/execution change. The APP/SSHP will require modification to address changing and previously unidentified health and safety conditions. It is the Contractor's responsibility to ensure that the APP/SSHP is updated accordingly. Submit amendments to the APP/SSHP to the COR as the APP/SSHP is updated. For long duration projects resubmit the APP/SSHP to the COR annually for review. The APP/SSHP must contain all updates.

1.6.1 Acceptance and Modifications

Prior to submittal, the APP/SSHP must be signed and dated by the Safety and Health Manager and the Site Superintendent. Submit for review ten (10) days prior to the Preconstruction Safety Conference. Deficiencies in the APP/SSHP will be discussed at the preconstruction safety conference, and be revised to correct the deficiencies and resubmitted for acceptance. Onsite work must not begin until the plan has been accepted. Maintain a copy of the written APP/SSHP onsite. Changes and modifications to must be made with the knowledge and concurrence of the Safety and Health Manager, the Site Superintendent, and the Owner's Representative. Bring to the attention of the Safety and Health Manager, the Site Superintendent, and the Owner's Representative any unforeseen hazard that becomes evident during the performance of the work, through the Site Safety and Health Officer (SSHO) for resolution as soon as possible. In the interim, take necessary action to re-establish and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public, and the environment. Disregard for the provisions of this specification or the accepted APP/SSHP will be cause for stopping work until the matter has been rectified.

1.6.2 Availability

Make available the APP/SSHP in accordance with 29 CFR 1910.120, (b)(1)(v) and 29 CFR 1926.65, (b)(1)(v).

1.7 PERSONAL PROTECTIVE EQUIPMENT

1.7.1 Site Specific PPE Program

Provide onsite personnel exposed to contaminants with appropriate personal protective equipment. Components of levels of protection (B, C, D and modifications) must be relevant to site-specific conditions, including heat and cold stress potential and safety hazards. Use only respirators approved by NIOSH. Keep protective equipment and clothing clean and well maintained. Include site-specific procedures to determine PPE program effectiveness and

for onsite fit-testing of respirators, cleaning, maintenance, inspection, and storage of PPE within the PPE section of the APP/SSHP.

1.8 HEAT STRESS MONITORING AND MANAGEMENT

Document in the APP/SSHP and implement the procedures and practices in section 06.J. in EM 385-1-1 to monitor and manage heat stress.

1.9 EMERGENCY EQUIPMENT AND FIRST AID REQUIREMENTS

Maintain, as a minimum, the following items onsite and available for immediate use:

a. First aid equipment and supplies approved by the consulting physician.

d. Provide fire extinguishers of sufficient size and type at site facilities and in all vehicles and at any other site locations where flammable or combustible materials present a fire risk.

1.10 SAFETY AND HEALTH PHASE-OUT REPORT

Submit a Safety and Health Phase-Out Report in conjunction with the project close out report and will be received prior to final acceptance of the work. Include the following minimum information:

a. Summary of the overall performance of safety and health (accidents or incidents including near misses, unusual events, lessons learned, etc.).

d. Signatures of Safety and Health Manager and SSHO.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 01 50 00

TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS
08/09

PART 1 GENERAL

1.1 SUMMARY

Requirements of this Section apply to, and are a component of, each section of the specifications.

1.2 SUBMITTALS

Submitted the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Construction site plan
Traffic control plan

1.3 CONSTRUCTION SITE PLAN

Prior to the start of work, submit a site plan showing the locations and dimensions of temporary facilities (including layouts and details, equipment and material storage area (onsite and offsite), and access and haul routes, avenues of ingress/egress to the fenced area and details of the fence installation. Identify any areas which may have to be graveled to prevent the tracking of mud. Indicate if the use of a supplemental or other staging area is desired. Show locations of safety and construction fences, site trailers, construction entrances, trash dumpsters, temporary sanitary facilities, and worker parking areas.

PART 2 PRODUCTS

2.1 TEMPORARY TRAFFIC CONTROL

2.1.1 Haul Roads

At contractors expense construct access and haul roads necessary for proper prosecution of the work under this contract. Construct with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic are be avoided. Provide necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic. The method of dust control, although optional, must be adequate to ensure safe operation at all times. Location, grade, width, and alignment of construction and hauling roads are subject to approval by the Owner's Representative. Lighting must be adequate to assure full and clear visibility for full width of haul road and work areas during any night work operations.

2.1.2 Barricades

Erect and maintain temporary barricades to limit public access to hazardous areas. Whenever safe public access to paved areas such as roads, parking

areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic barricades will be required. Securely place barricades clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

2.1.3 Fencing

a. Provide fencing along the construction site at all open excavations and tunnels to control access by unauthorized people. Fencing must be installed to be able to restrain a force of at least 250 pounds against it.

PART 3 EXECUTION

3.1 EMPLOYEE PARKING

Contractor employees will park privately owned vehicles in an area designated by the Owner's Representative. This area will be within reasonable walking distance of the construction site. Contractor employee parking must not interfere with existing and established parking requirements of the Owner installation.

3.2 AVAILABILITY AND USE OF UTILITY SERVICES

3.2.1 Temporary Utilities

Provide temporary utilities required for construction. Materials may be new or used, must be adequate for the required usage, not create unsafe conditions, and not violate applicable codes and standards.

3.2.2 Payment for Utility Services

a. The Owner will make all reasonably required utilities available to the Contractor from existing outlets and supplies, as specified in the contract. Unless otherwise provided in the contract, the amount of each utility service consumed will be charged to or paid for by the Contractor at prevailing rates charged to the Owner or, where the utility is produced by the Owner, at reasonable rates determined by the Owner's Representative. Carefully conserve any utilities furnished without charge.

3.2.3 Meters and Temporary Connections

At the Contractors expense and in a manner satisfactory to the Owner's Representative, provide and maintain necessary temporary connections, distribution lines, and meter bases required to measure the amount of each utility used for the purpose of determining charges. Notify the Owner's Representative, in writing, five (5) working days before final electrical connection is desired so that a utilities contract can be established. The Owner will provide a meter and make the final hot connection after inspection and approval of the Contractor's temporary wiring installation. The Contractor will not make the final electrical connection.

3.2.4 Final Meter Reading

Before completion of the work and final acceptance of the work by the Owner, notify the Owner's Representative, in writing, 5 working days before termination is desired. The Owner will take a final meter reading, disconnect service, and remove the meters. Then remove all the temporary distribution lines, meter bases, and associated paraphernalia. Pay all outstanding utility bills before final acceptance of the work by the Owner.

3.2.5 Sanitation

a. Provide and maintain within the construction area minimum field-type sanitary facilities approved by the Owner's Representative and periodically remove waste to a commercial facility. Any penalties and / or fines associated with improper discharge will be the responsibility of the Contractor. Maintain these conveniences at all times without nuisance. Include provisions for pest control and elimination of odors. Owner toilet facilities will not be available to Contractor's personnel.

3.2.6 Telephone

Contractor shall have a mobile phone onsite during work hours to send and receive calls. Mobile phone number shall be submitted to Owner's Representative at least two (2) days prior to site mobilization.

3.2.7 Fire Protection

Provide temporary fire protection equipment for the protection of personnel and property during construction. Remove debris and flammable materials daily to minimize potential hazards.

3.3 TRAFFIC PROVISIONS

3.3.1 Maintenance of Traffic

a. Conduct operations in a manner that will not close any thoroughfare or interfere in any way with traffic on railways or highways except with written permission of the Owner's Representative at least 15 calendar days prior to the proposed modification date, and provide a Traffic Control Plan detailing the proposed controls to traffic movement for approval. The plan must be in accordance with State and local regulations and the MUTCD, Part VI. Contractor may move oversized and slow-moving vehicles to the worksite provided requirements of the highway authority have been met.

b. Conduct work so as to minimize obstruction of traffic, and maintain traffic on at least half of the roadway width at all times. Obtain approval from the Owner's Representative prior to starting any activity that will obstruct traffic.

c. Provide, erect, and maintain, at contractors expense, lights, barriers, signals, passageways, detours, and other items, that may be required by the Life Safety Signage, overhead protection authority having jurisdiction.

3.3.2 Protection of Traffic

Maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Owner's Representative. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment the work, and the erection and maintenance of adequate warning, danger, and direction signs, will be as required by the State and local authorities having jurisdiction. Protect the traveling public from damage to person and property. Minimize the interference with public traffic on roads selected for hauling material to and from the site. Investigate the adequacy of existing roads and their allowable load limit. Contractor is responsible for the repair of any damage to roads caused by construction operations.

3.3.3 Dust Control

Dust control methods and procedures must be approved by the Owner's Representative. Treat dust abatement on access roads with applications water sprinklers, or similar methods or treatment.

3.4 CONTRACTOR'S TEMPORARY FACILITIES

Contractor may utilized Contractor-owned or -leased trailers as a temporary facility during construction. The location of this temporary facility must be identified on the Construction Site Plan.

3.4.1 Safety

Protect the integrity of any installed safety systems or personnel safety devices. If entrance into systems serving safety devices is required, the Contractor must obtain prior approval from the Owner's Representative. If it is temporarily necessary to remove or disable personnel safety devices in order to accomplish contract requirements, provide alternative means of protection prior to removing or disabling any permanently installed safety devices or equipment and obtain approval from the Owner's Representative.

3.4.2 Administrative Field Offices

Contractor may provide and maintain administrative field office facilities within the construction area at the designated site. The Contractor may, at its option, furnish and maintain a trailer-type mobile office acceptable to the Owner's Representative and providing as a minimum the facilities specified above. Securely anchor the trailer to the ground at all four corners to guard against movement during high winds.

3.4.3 Supplemental Storage Area

Upon Contractor's request, the Owner's Representative will designate another or supplemental area for the Contractor's use and storage of trailers, equipment, and materials. This area may not be in close proximity of the construction site but will be within the installation boundaries. Fencing of materials or equipment will not be required at this site; however, the Contractor is responsible for cleanliness and orderliness of the area used and for the security of any material or equipment stored in this area. Utilities will not be provided to this area by the Owner.

3.4.4 Appearance of Trailers

a. Trailers utilized by the Contractor for administrative or material storage purposes must present a clean and neat exterior appearance and be in a state of good repair. Trailers which, in the opinion of the Owner's Representative, require exterior painting or maintenance will not be allowed on installation property.

3.4.5 Maintenance of Storage Area

a. Keep fencing in a state of good repair and proper alignment. Grassed or unpaved areas, which are not established roadways, will be covered with a layer of gravel as necessary to prevent rutting and the tracking of mud onto paved or established roadways, should the Contractor elect to traverse them with construction equipment or other vehicles; gravel gradation will be at the Contractor's discretion. Mow and maintain grass located within the boundaries of the construction site for the duration of the project. Grass and vegetation along fences, buildings, under trailers, and in areas not accessible to mowers will be edged or trimmed neatly.

3.4.6 Security Provisions

Provide adequate outside security lighting at the Contractor's temporary facilities. The Contractor will be responsible for the security of its own equipment; in addition, the Contractor will notify the appropriate law enforcement agency requesting periodic security checks of the temporary project field office.

3.4.7 Weather Protection of Temporary Facilities and Stored Materials

Take necessary precautions to ensure that roof openings and other critical openings in the building are monitored carefully. Take immediate actions required to seal off such openings when rain or other detrimental weather is imminent, and at the end of each workday. Ensure that the openings are completely sealed off to protect materials and equipment in the building from damage.

3.4.7.1 Building and Site Storm Protection

When a warning of gale force winds is issued, take precautions to minimize danger to persons, and protect the work and nearby Owner property. Precautions must include, but are not limited to, closing openings; removing loose materials, tools and equipment from exposed locations; and removing or securing scaffolding and other temporary work. Close openings in the work when storms of lesser intensity pose a threat to the work or any nearby Owner property.

3.5 SITE COMMUNICATION

Whenever the Contractor has the individual elements of its site so located that operation by normal voice between these elements is not satisfactory, the Contractor must install a satisfactory means of communication, such as telephone or other suitable devices and made available for use by Owner personnel.

3.6 TEMPORARY PROJECT SAFETY FENCING

If required by site conditions to maintain safety,, furnish and erect temporary project safety fencing at the work site. The safety fencing must be a high visibility orange colored, high density polyethylene grid or approved equal, a minimum of 42 inches high, supported and tightly secured to steel posts located on maximum 10 foot centers, constructed at the approved location. Alternative safety fencing may be requested prior to commencement of work. Notify Owner's Representative a minimum of 5 days prior to installation of the fence for suggested alternatives. Maintain the safety fencing during the life of the contract and, upon completion and acceptance of the work, will become the property of the Contractor and be removed from the work site.

3.7 CLEANUP

Remove construction debris, waste materials, packaging material and the like from the work site daily. Any dirt or mud which is tracked onto paved or surfaced roadways must be cleaned away. Store within the fenced area described above or at the supplemental storage area any materials resulting from demolition activities which are salvageable. Neatly stack stored materials not in trailers, whether new or salvaged.

3.8 RESTORATION OF STORAGE AREA

Upon completion of the project remove the bulletin board, signs, barricades, haulroads, and any other temporary products from the site. After removal of trailers, materials, and equipment from within the fenced area, remove the fence that will become the property of the Contractor. Restore to the original or better condition, areas used by the Contractor for the storage of equipment or material, or other use. Gravel used to traverse grassed areas must be removed and the area restored to its original condition, including top soil and seeding as necessary.

-- End of Section --

SECTION 01 57 23

TEMPORARY STORM WATER POLLUTION CONTROL
04/08

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D 4439	(2004) Geosynthetics
ASTM D 4491	(1999a; R 2009) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(2004; R 2009) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(2008) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(2004) Determining Apparent Opening Size of a Geotextile
ASTM D 4873	(2002; R 2009) Identification, Storage, and Handling of Geosynthetic Rolls and Samples

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 832-R-92-005	(1992) Storm Water Management for Construction Activities Developing Pollution Preventions and Plans and Best Management Practices

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 122.26	Storm Water Discharges (Applicable to State NPDES Programs, see section 123.25)

1.2 SYSTEM DESCRIPTION

The work consists of implementing the storm water pollution prevention measures to prevent sediment from entering streams or water bodies as specified in the requirements of the National Pollution Discharge Elimination System (NPDES) permit.

1.3 EROSION AND SEDIMENT CONTROLS

The controls and measures required of the Contractor are described below.

1.3.1 Stabilization Practices

Contractor shall follow industry best practices standards for stabilization practices to be implemented at the project site for erosion and sediment control. On the daily CQC Report, record the dates when the major grading activities occur, (e.g., clearing and grubbing, excavation, embankment, and grading); when construction activities temporarily or permanently cease on a portion of the site; and when stabilization practices are initiated. Except as provided in paragraphs UNSUITABLE CONDITIONS and NO ACTIVITY FOR LESS THAN 21 DAYS, initiate stabilization practices as soon as practicable, but no more than 14 days, in any portion of the site where construction activities have temporarily or permanently ceased.

1.3.1.1 Unsuitable Conditions

Where the initiation of stabilization measures by the fourteenth day after construction activity temporarily or permanently ceases or is precluded by unsuitable conditions caused by the weather, initiate stabilization practices as soon as practicable after conditions become suitable.

1.3.1.2 No Activity for Less Than 21 Days

When the total time period in which construction activity is temporarily ceased on a portion of the site is 21 days minimum, stabilization practices do not have to be initiated on that portion of the site until 14 days have elapsed after construction activity temporarily ceased.

1.3.1.3 Burnoff

Burnoff of the ground cover is not permitted.

1.3.1.4 Protection of Erodible Soils

Immediately finish the earthwork brought to a final grade, as indicated or specified, and protect the side slopes and back slopes upon completion of rough grading. Plan and conduct earthwork to minimize the duration of exposure of unprotected soils.

1.3.2 Erosion, Sediment and Stormwater Control

e. If required, submit a Storm Water Notice of Intent for NPDES coverage under the general permit for construction activities and a Storm Water Pollution Prevention Plan (SWPPP) for the project to the Owner's Representative prior to the commencement of work. The SWPPP shall meet the requirements of the State of California general permit for storm water discharges from construction sites. Submit the SWPPP along with any required Notice of Intents, Notice of Termination, and appropriate permit fees, via the Owner's Representative, to the appropriate State of California agency for approval, a minimum of 14 calendar days prior to the start of any land disturbing activities. Maintain an approved copy of the SWPPP at the construction on-site office, and continually update as regulations require, to reflect current site conditions. Include within the SWPPP:

(1) Identify potential sources of pollution which may be reasonably expected to affect the quality of storm water discharge from the site.

(2) Describe and ensure implementation of practices which will be used to reduce the pollutants in storm water discharge from the site.

(3) Ensure compliance with terms of the State of California general permit for storm water discharge.

(4) Select applicable best management practices from EPA 832-R-92-005.

(5) Include a completed copy of the Registration Statement, BMP Inspection Report Template and Notice of Termination except for the effective date.

(6) Storm Water Pollution Prevention Measures and Notice of Intent 40 CFR 122.26, EPA 832-R-92-005. Provide a "Storm Water Pollution Prevention Plan" (SWPPP) for the project. The SWPPP will meet the requirements of the State of California general permit for storm water discharges from construction sites. Submit the SWPPP along with any required Notice of Intents, Notice of Termination, and appropriate permit fees, via the Owner's Representative, to the appropriate State agency for approval, a minimum of 14 calendar days prior to the start of construction. A copy of the approved SWPPP will be kept at the construction on-site office, and continually updated as regulations require to reflect current site conditions.

(7) Storm Water Pollution Prevention Measures and Notice of Intent 40 CFR 122.26, EPA 832-R-92-005. Provide a "Storm Water Pollution Prevention Plan" (SWPPP) for the project. The SWPPP will meet the requirements of the State of California general permit for storm water discharges from construction activities. Submit the SWPPP to the Owner's Representative for review a minimum of 15 days prior to the start of any land disturbing activities. Maintain an approved copy of the SWPPP at the construction on-site office, and continually update as regulations require, to reflect current site conditions.

(9) Install, inspect, and maintain best management practices (BMPs) as required by the general permit. Prepare and submit to DCR, BMP Inspection Reports as required by the general permit.

(10) Once construction is complete and the site has been stabilized with a final, sustainable cover, submit the Notice of Termination to DCR within 30 days after all land disturbing activities end.

1.3.3 Stormwater Drainage

There will be no discharge of excavation ground water to the sanitary sewer, storm drains, or to the river. Discharge of hazardous substances will not be permitted under any circumstances. Construction site runoff will be prevented from entering any storm drain or the river directly by the use of silt fences or other approved method.

1.3.4 Structural Practices

Implement structural practices to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Implement structural practices in

a timely manner, during the construction process, to minimize erosion and sediment runoff. Include the following devices;

1.3.4.1 Silt Fences

Provide silt fences as a temporary structural practice to minimize erosion and sediment runoff. Properly install silt fences to effectively retain sediment immediately after completing each phase of work where erosion would occur in the form of sheet and rill erosion (e.g. clearing and grubbing, excavation, embankment, and grading). Install silt fences in the locations indicated on the drawings. Obtain approval from the Owner's Representative prior to final removal of silt fence barriers.

]1.4 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Storm Water Pollution Prevention Plan
Storm Water Notice of Intent

Pollution prevention plan and Notice of intent for NPDES coverage under the general permit for construction activities

1.5 DELIVERY, STORAGE, AND HANDLING

Identify, store and handle filter fabric in accordance with ASTM D 4873.

PART 2 PRODUCTS

2.1 COMPONENTS FOR SILT FENCES

2.1.1 Filter Fabric

Provide geotextile that complies with the requirements of ASTM D 4439, and consists of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and contains stabilizers and/or inhibitors added to the base plastic to make the filaments resistant to deterioration due to ultraviolet and heat exposure. Provide synthetic filter fabric that contains ultraviolet ray inhibitors and stabilizers to assure a minimum of six months of expected usable construction life at a temperature range of 0 to 120 degrees F. The filter fabric shall meet the following requirements:

FILTER FABRIC FOR SILT SCREEN FENCE		
PHYSICAL PROPERTY	TEST PROCEDURE	STRENGTH REQUIREMENT
Grab Tensile Elongation (percent)	ASTM D 4632	100 lbs. min. 30 percent max.

FILTER FABRIC FOR SILT SCREEN FENCE		
Trapezoid Tear	ASTM D 4533	55 lbs. min.
Permittivity	ASTM D 4491	0.3 sec-1
AOS (U.S. Std Sieve)	ASTM D 4751	20-100

2.1.2 Silt Fence Stakes and Posts

Use either wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction, shall have a minimum cross section of 2 by 2 inches when oak is used and 4 by 4 inches when pine is used, and have a minimum length of 5 feet. Steel posts (standard "U" or "T" section) utilized for silt fence construction, shall have a minimum weight of 1.33 pounds/linear foot and a minimum length of 5 feet.

PART 3 EXECUTION

3.1 INSTALLATION OF SILT FENCES

Extend silt fences a minimum of 16 inches above the ground surface without exceeding 34 inches above the ground surface. Provide filter fabric from a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, splice together filter fabric at a support post, with a minimum 6 inch overlap, and securely sealed. Excavate trench approximately 4 inches wide and 4 inches deep on the upslope side of the location of the silt fence. The 4 by 4 inch trench shall be backfilled and the soil compacted over the filter fabric. Remove silt fences upon approval by the Owner's Representative.

3.2 FIELD QUALITY CONTROL

Maintain the temporary and permanent vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition by performing routine inspections to determine condition and effectiveness, by restoration of destroyed vegetative cover, and by repair of erosion and sediment control measures and other protective measures. Use the following procedures to maintain the protective measures.

3.2.1 Silt Fence Maintenance

Inspect the silt fences in accordance with paragraph, titled "Inspections," of this section. Any required repairs shall be made promptly. Pay close attention to the repair of damaged silt fence resulting from end runs and undercutting. Should the fabric on a silt fence decompose or become ineffective, and the barrier is still necessary, replace the fabric promptly. Remove sediment deposits when deposits reach one-third of the height of the barrier. Remove a silt fence when it is no longer required. The immediate area occupied by the fence and any sediment deposits shall be shaped to an acceptable grade. The areas disturbed by this shaping shall be seeded in accordance with Section 32 05 33 LANDSCAPE ESTABLISHMENT, except that the coverage requirements in paragraph, titled "Establishment" of this section do not apply.

3.2.2 Diversion Dike Maintenance

Inspect diversion dikes in accordance with paragraph, titled "Inspections," of this section. Pay close attention to the repair of damaged diversion dikes and accomplish necessary repairs promptly. When diversion dikes are no longer required, shape to an acceptable grade. Seed the areas disturbed by this shaping in accordance with Section 32 92 19 SEEDING.

3.3 INSPECTIONS

3.3.1 General

Inspect disturbed areas of the construction site, areas that have not been finally stabilized used for storage of materials exposed to precipitation, stabilization practices, structural practices, other controls, and area where vehicles exit the site at least once every seven (7) calendar days and within 24 hours of the end of any storm that produces 0.5 inches or more rainfall at the site. Conduct inspections at least once every month where sites have been finally stabilized.

3.3.2 Inspections Details

Inspect disturbed areas and areas used for material storage that are exposed to precipitation for evidence of, or the potential for, pollutants entering the drainage system. Observe erosion and sediment control measures identified in the Storm Water Pollution Prevention Plan to ensure that they are operating correctly. Inspect discharge locations or points to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Inspect locations where vehicles exit the site for evidence of offsite sediment tracking.

3.3.3 Inspection Reports

For each inspection conducted, prepare a report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the Storm Water Pollution Prevention Plan, maintenance performed, and actions taken. Furnish the report to the Owner's Representative within 24 hours of the inspection as a part of the Contractor's daily CQC REPORT. A copy of the inspection report shall be maintained on the job site.

-- End of Section --

SECTION 01 78 00

CLOSEOUT SUBMITTALS
08/11

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

TR-06-X	(2006; Supplement 2009) A/E/C (Architectural, Engineering, and Construction) CADD Standard - Release 3.0

1.2 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

As-Built Record of Equipment and Materials

Warranty Tags

SD-08 Manufacturer's Instructions

Preventative Maintenance
Condition Monitoring (Predictive Testing)
Inspection
Posted Instructions

SD-10 Operation and Maintenance Data

Operation and Maintenance Manuals

SD-11 Closeout Submittals

Record Drawings

1.3 PROJECT RECORD DOCUMENTS

1.3.1 Record Drawings

Drawings showing final as-built conditions of the project. This paragraph covers record drawings complete, as a requirement of the contract. The terms "drawings," "contract drawings," "drawing files," "working record drawings" and "final record drawings" refer to contract drawings which are

revised to be used for final record drawings showing as-built conditions. The manually prepared drawings must consist of 1 set of completed final as-built original transparency drawings, 2 sets of blue-line prints of the transparencies, and the approved marked working as-built prints.

1.3.1.1 Working Record and Final Record Drawings

Revise two (2) sets of paper drawings by red-line process to show the as-built conditions during the prosecution of the project. Keep these working as-built marked drawings current on a weekly basis and at least one set available on the jobsite at all times. Changes from the contract plans which are made in the work or additional information which might be uncovered in the course of construction must be accurately and neatly recorded as they occur by means of details and notes. Prepare final record (as-built) drawings after the completion of each definable feature of work as listed in the Contractor Quality Control Plan (Foundations, Utilities, Structural Steel, etc., as appropriate for the project). The working as-built marked prints and final record (as-built) drawings will be jointly reviewed for accuracy and completeness by the Owner's Representative and the Contractor prior to submission of each payment cycle. If the Contractor fails to maintain the working and final record drawings as specified herein, the Owner's Representative will deduct from the monthly progress payment an amount representing the estimated cost of maintaining the record drawings. This monthly deduction will continue until an agreement can be reached between the Owner's Representative and the Contractor regarding the accuracy and completeness of updated drawings. Show on the working and final record drawings , but not limited to, the following information:

a. The actual location, kinds and sizes of all sub-surface utility lines. In order that the location of these lines and appurtenances may be determined in the event the surface openings or indicators become covered over or obscured, show by offset dimensions to two permanently fixed surface features the end of each run including each change in direction on the record drawings. Locate valves, splice boxes and similar appurtenances by dimensioning along the utility run from a reference point. Also record the average depth below the surface of each run.

c. Correct grade, elevations, cross section, or alignment of roads, earthwork, structures or utilities if any changes were made from contract plans.

d. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor; including but not limited to fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.

e. The topography, invert elevations and grades of drainage installed or affected as part of the project construction.

f. Changes or modifications which result from the final inspection.

g. Where contract drawings or specifications present options, show only the option selected for construction on the final as-built prints.

h. If borrow material for this project is from sources on Owner property, or if Owner property is used as a spoil area, furnish a contour map of the final borrow pit/spoil area elevations.

j. Modifications (include within change order price the cost to change working and final record drawings to reflect modifications) and compliance with the following procedures.

(1) Follow directions in the modification for posting descriptive changes.

(2) Place a Modification Circle/Delta at the location of each deletion.

(3) For new details or sections which are added to a drawing, place a Modification Circle/Delta by the detail or section title.

(4) For minor changes, place a Modification Circle by the area changed on the drawing (each location).

(5) For major changes to a drawing, place a Modification Circle by the title of the affected plan, section, or detail at each location.

(6) For changes to schedules or drawings, place a Modification Circle either by the schedule heading or by the change in the schedule.

(7) The Modification Circle size shall be 1/2 inch diameter unless the area where the circle is to be placed is crowded. Smaller size circle shall be used for crowded areas.

1.3.1.2 Drawing Preparation

Modify the record drawings as may be necessary to correctly show the features of the project as it has been constructed by bringing the contract set into agreement with approved working as-built prints, and adding such additional drawings as may be necessary. These working as-built marked prints must be neat, legible and accurate. These drawings are part of the permanent records of this project and must be returned to the Owner's Representative after approval by the Owner. Any drawings damaged or lost by the Contractor must be satisfactorily replaced by the Contractor at no expense to the Owner.

1.3.1.3 Computer Aided Design and Drafting (CADD) Drawings

Only employ personnel proficient in the preparation of CADD drawings to modify the contract drawings or prepare additional new drawings. Additions and corrections to the contract drawings must be equal in quality and detail to that of the originals. Line colors, line weights, lettering, layering conventions, and symbols must be the same as the original line colors, line weights, lettering, layering conventions, and symbols. If additional drawings are required, prepare them using the specified electronic file format applying [the same graphic standards specified for original drawings][TR-06-X]. The title block and drawing border to be used for any new final record drawings must be identical to that used on the contract drawings. Accomplish additions and corrections to the contract drawings using CADD files. The Contractor will be furnished "as-designed" drawings in AutoCad Release 2010 format compatible with a Windows operating system.

The electronic files will be supplied on compact disc, read-only memory (CD-ROM) or electronic file format via internet. Provide all program files and hardware necessary to prepare final record drawings. The Owner's Representative will review final record drawings for accuracy and return them to the Contractor for required corrections, changes, additions, and deletions.

a. Provide CADD "base" colors of red, green, and blue. Color code for changes as follows:

(1) Deletions (Red) - Over-strike deleted graphic items (lines), lettering in notes and leaders.

(2) Additions (Green) - Added items, lettering in notes and leaders.

(3) Special (Blue) - Items requiring special information, coordination, or special detailing or detailing notes.

b. Rename the Contract Drawing files in a manner related to the contract number as instructed in the Pre-Construction conference. Use only those renamed files for the Marked-up changes. All changes shall be made on the layer/level as the original item.

c. When final revisions have been completed, show the wording "RECORD DRAWINGS / AS-BUILT CONDITIONS" followed by the name of the Contractor in letters at least 3/16 inch high on the cover sheet drawing. Mark all other contract drawings either "Record" drawing denoting no revisions on the sheet or "Revised Record" denoting one or more revisions. Date original contract drawings in the revision block.

d. Within ten(10) days after Owner approval of all of the working record drawings for a phase of work, prepare the final CADD record drawings for that phase of work and submit two sets of blue-lined prints of these drawings for Owner review and approval. The Owner will promptly return one set of prints annotated with any necessary corrections. Submit one set of electronic files on compact disc, read-only memory (CD-ROM), one set of mylars, two sets of blue-line prints and one set of the approved working record drawings. They must be complete in all details and identical in form and function to the contract drawing files supplied by the Owner. Any transactions or adjustments necessary to accomplish this is the responsibility of the Contractor. The Owner reserves the right to reject any drawing files it deems incompatible with the customer's CADD system. Paper prints, drawing files and storage media submitted will become the property of the Owner upon final approval. Failure to submit final record drawing files and marked prints as specified will be cause for withholding any payment due the Contractor under this contract. Approval and acceptance of final record drawings must be accomplished before final payment is made to the Contractor.

1.3.1.4 Manually Prepared Drawings

Employ only personnel proficient in the preparation of manually prepared drawings to modify the original contract drawing or prepare additional new drawings. Additions and corrections to the contract drawings must be neat, clean and legible, shall be done to the same level of detail, and match the adjacent existing line work, and lettering being annotated in type, density,

size and style. Drafting work must be done using the same medium (pencil, plastic lead or ink) that was employed on the original contract drawings and with graphite lead on paper base material. The Owner's Representative will review record drawings for accuracy and conformance to the above specified drafting standards. Corrections, changes, additions, and deletions required must meet these standards. The title block to be used for any new record drawings must be similar to that used on the original drawings.

a. When final revisions have been completed, Letter or stamp each drawing with the words "RECORD DRAWINGS / AS-BUILT CONDITIONS" followed by the name of the Contractor in letters at least 3/16 inch high. Mark original contract drawings either "Record" drawings denoting no revisions on the sheet or "Revised Record" denoting one or more revisions Date all original contract drawings in the revision block.

b. Within ten (10) days after Owner approval of all of the working record drawings for a phase of work, prepare the final record drawings for that phase of work and submit two sets of blue-line prints of these drawings for Owner review and approval. The Owner will promptly return one set of prints annotated with any necessary corrections. Within seven (7) days revise the drawings accordingly at no additional cost and submit one set of final prints for the completed phase of work to the Owner. Within ten (10) days of substantial completion of all phases of work, submit the final record drawing package for the entire project. Submit two blue-line prints of these drawings and the return of the approved marked record prints, complete in all details. Paper prints and reproducible drawings will become the property of the Owner upon final approval. Failure to submit final record drawings and marked prints, as required herein, will be cause for withholding any payment due the Contractor under this contract. Approval and acceptance of final record drawings must be accomplished before final payment is made to the Contractor.

1.3.1.5 Payment

No separate payment will be made for record drawings required under this contract, and all costs accrued in connection with such drawings are considered a subsidiary obligation of the Contractor.

1.4 CLEANUP

Leave premises "broom clean."

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 31 00 00

EARTHWORK
08/08

PART 1 GENERAL

1.1 MEASUREMENT PROCEDURES

1.1.1 Excavation

The unit of measurement for excavation and fill placement will be the cubic yard, computed by differencing topographic surveys conducted before and after the excavation and fill placement operations when the material is acceptably utilized or disposed of as herein specified. The measurements will include authorized excavation of rock , authorized excavation of unsatisfactory subgrade soil, and the volume of loose, scattered rocks and boulders collected within the limits of the work; allowance will be made on the same basis for selected backfill ordered as replacement. The measurement will not include the volume of subgrade material or other material that is scarified or plowed and reused in-place, and will not include the volume excavated without authorization or the volume of any material used for purposes other than directed. The measurement will not include the volume of any excavation performed prior to the taking of elevations and measurements of the undisturbed grade.

1.1.2 Topsoil Requirements

Separate excavation, hauling, and spreading or piling of topsoil and related miscellaneous operations will be considered subsidiary obligations of the Contractor, covered under the contract unit price for excavation.

1.1.3 Overhaul Requirements

Allow the unit of measurement for overhaul to be the yard. The overhaul distance will be the distance in stations between the center of volume of the overhaul material in its original position and the center of volume after placing, minus the free-haul distance in stations. The haul distance will be measured along the shortest route determined by the Owner's Representative as feasible and satisfactory.

1.2 PAYMENT PROCEDURES

Payment will constitute full compensation for all labor, equipment, tools, supplies, and incidentals necessary to complete the work.

1.2.1 Classified Excavation

Classified excavation will be paid for on a lump sum basis as outlined in the BID SCHEDULE.

1.2.2 Unclassified Excavation

Unclassified excavation will be paid for on a lump sum basis as outlined in the BID SCHEDULE.

1.2.3 Authorized Overhaul

The number of yards of overhaul to be paid for will be the product of number of cubic yards of overhaul material measured in the original position, multiplied by the overhaul distance measured in stations of 100 feet and will be paid for at the contract unit price per station-yard for overhaul in excess of the free-haul limit as designated in paragraph DEFINITIONS.

1.3 CRITERIA FOR BIDDING

Base bids on the following criteria:

a. Surface elevations are as indicated.

b. Pipes or other artificial obstructions, except those indicated, will not be encountered.

c. Ground water elevations indicated by the boring log were those existing at the time subsurface investigations were made and do not necessarily represent ground water elevation at the time of construction.

e. Material character is indicated by the soil boring logs .

f. Hard materials and rock may be encountered in the excavations.

1.4 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM C 136	(2006) Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM D 1140	(2000; R 2006) Amount of Material in Soils Finer than the No. 200 (75-micrometer) Sieve
ASTM D 1556	(2007) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(2009) Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3) (2700 kN-m/m3)
ASTM D 2167	(2008) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D 2216	(2010) Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 2487	(2010) Soils for Engineering Purposes (Unified Soil Classification System)

ASTM D 2937	(2010) Density of Soil in Place by the Drive-Cylinder Method
ASTM D 422	(1963; R 2007) Particle-Size Analysis of Soils
ASTM D 4318	(2010) Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D 6938	(2010) Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 600/4-79/020	(1983) Methods for Chemical Analysis of Water and Wastes
EPA SW-846.3-3	(1999, Third Edition, Update III-A) Test Methods for Evaluating Solid Waste: Physical/Chemical Methods

1.5 DEFINITIONS

1.5.1 Satisfactory Materials

Satisfactory materials comprise any materials classified by ASTM D 2487 as SC, CH, and CL. Satisfactory materials for grading comprise stones less than 3 inches in any dimension.

1.5.2 Unsatisfactory Materials

Materials which do not comply with the requirements for satisfactory materials are unsatisfactory. Unsatisfactory materials also include man-made fills; trash; refuse; backfills from previous construction; and material classified as satisfactory which contains root and other organic matter or frozen material. Notify the Owner's Representative when encountering any contaminated materials.

1.5.3 Cohesionless and Cohesive Materials

Cohesionless materials include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic. Perform testing, required for classifying materials, in accordance with ASTM D 4318, ASTM C 136, ASTM D 422, and ASTM D 1140.

1.5.4 Degree of Compaction

Degree of compaction required, except as noted in the second sentence, is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557 abbreviated as a percent of laboratory maximum density.

1.5.5 Overhaul

Overhaul is the authorized transportation of satisfactory excavation or borrow materials in excess of the free-haul limit of 1,000 yards. Overhaul is the product of the quantity of materials hauled beyond the free-haul limit, and the distance such materials are hauled beyond the free-haul limit, expressed in station feet.

1.5.6 Topsoil

Material suitable for topsoils obtained from onsite and/or offsite areasis defined as: Natural, friable soil representative of productive, well-drained soils in the area, free of subsoil, stumps, rocks larger than one inch diameter, brush, weeds, toxic substances, and other material detrimental to plant growth.

1.5.7 Hard/Unyielding Materials

Hard/Unyielding materials comprise weathered rock, dense consolidated deposits, or conglomerate materials which are not included in the definition of "rock" with stones greater than 6 inches in any dimension, whichever is smaller. These materials usually require the use of heavy excavation equipment, ripper teeth, or jack hammers for removal.

1.5.8 Rock

Solid homogeneous interlocking crystalline material with firmly cemented, laminated, or foliated masses or conglomerate deposits, neither of which can be removed without systematic drilling and blasting, drilling and the use of expansion jacks or feather wedges, or the use of backhoe-mounted pneumatic hole punchers or rock breakers; also large boulders, buried masonry, or concrete other than pavement exceeding 1/2 cubic yard in volume. Removal of hard material will not be considered rock excavation because of intermittent drilling and blasting that is performed merely to increase production.

1.5.9 Unstable Material

Unstable materials are too wet to properly support the (appurtenant) structure(s).

1.5.10 Select Granular Material

1.5.10.1 General Requirements

Select granular material consist of materials classified as GW, GP, SW, SP, by ASTM D 2487 where indicated. The liquid limit of such material must not exceed 35 percent when tested in accordance with ASTM D 4318. The plasticity index must not be greater than 12 percent when tested in accordance with ASTM D 4318, and not more than 35 percent by weight may be finer than No. 200 sieve when tested in accordance with ASTM D 1140.

1.5.11 Expansive Soils

Expansive soils are defined as soils that have a plasticity index equal to or greater than 20 when tested in accordance with ASTM D 4318.

1.6 SYSTEM DESCRIPTION

Available subsurface information is noted in 00 01 15 LIST OF DRAWINGS. These data represent the best subsurface information available; however, variations may exist in the subsurface between exploration locations.

1.6.1 Classification of Excavation

Finish the specified excavation on a classified basis, in accordance with the following designations and classifications.

1.6.1.1 Common Excavation

Include common excavation with the satisfactory removal and disposal of all materials not classified as rock excavation.

1.6.1.2 Rock Excavation

Submit notification of encountering rock in the project. Include rock excavation with excavating, grading, disposing of material classified as rock, and the satisfactory removal and disposal of boulders 1/2 cubic yard or more in volume; solid rock; rock material that is in ledges, bedded deposits, and unstratified masses, which cannot be removed without systematic drilling and blasting; firmly cemented conglomerate deposits possessing the characteristics of solid rock impossible to remove without systematic drilling and blasting; and hard materials (see Definitions). Include the removal of any concrete or masonry structures, except pavements, exceeding 1/2 cubic yard in volume that may be encountered in the work in this classification. If at any time during excavation, including excavation from borrow areas, the Contractor encounters material that may be classified as rock excavation, uncover such material and notify the Owner's Representative. Do not proceed with the excavation of this material until the Owner's Representative has classified the materials as common excavation or rock excavation and has taken cross sections as required. Failure on the part of the Contractor to uncover such material, notify the Owner's Representative, and allow ample time for classification and cross sectioning of the undisturbed surface of such material will cause the forfeiture of the Contractor's right of claim to any classification or volume of material to be paid for other than that allowed by the Owner's Representative for the areas of work in which such deposits occur.

1.6.2 Primary Spillway

If required, submit shop drawings for the primary spillway.

1.7 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Primary Spillway

SD-06 Test Reports

Testing
Borrow Site Testing

PART 2 PRODUCTS

2.1 REQUIREMENTS FOR OFFSITE SOILS

Test offsite soils brought in for use as backfill for Total Petroleum Hydrocarbons (TPH), Benzene, Toluene, Ethyl Benzene, and Xylene (BTEX) and full Toxicity Characteristic Leaching Procedure (TCLP) including ignitability, corrosivity and reactivity. Backfill shall contain a maximum of 100 parts per million (ppm) of total petroleum hydrocarbons (TPH) and a maximum of 10 ppm of the sum of Benzene, Toluene, Ethyl Benzene, and Xylene (BTEX) and shall pass the TCPL test. Determine TPH concentrations by using EPA 600/4-79/020 Method 418.1. Determine BTEX concentrations by using EPA SW-846.3-3 Method 5030/8020. Perform TCLP in accordance with EPA SW-846.3-3 Method 1311. Within 24 hours of conclusion of physical tests, submit two (2) copies of test results, including calibration curves and results of calibration tests. Do not bring material onsite until tests have been approved by the Owner's Representative.

2.2 BURIED WARNING AND IDENTIFICATION TAPE

Provide metallic core or metallic-faced, acid- and alkali-resistant, polyethylene plastic warning tape manufactured specifically for warning and identification of buried utility lines. Provide tape on rolls, 2 inches minimum width, color coded as specified below for the intended utility with warning and identification imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (intended service) LINE BELOW" or similar wording. Provide permanent color and printing, unaffected by moisture or soil.

Warning Tape Color Codes

[Red:]	[Electric]
[Yellow:]	[Gas, Oil; Dangerous Materials]
[Orange:]	[Telephone and Other Communications]
[Blue:]	[Water Systems]
[Green:]	[Sewer Systems]
[White:]	[Steam Systems]
[Gray:]	[Compressed Air]

2.2.1 Warning Tape for Metallic Piping

Provide acid and alkali-resistant polyethylene plastic tape conforming to the width, color, and printing requirements specified above, with a minimum thickness of 0.003 inch and a minimum strength of 1500 psi lengthwise, and 1250 psi crosswise, with a maximum 350 percent elongation.

2.2.2 Detectable Warning Tape for Non-Metallic Piping

Provide polyethylene plastic tape conforming to the width, color, and printing requirements specified above, with a minimum thickness of 0.004 inch, and a minimum strength of 1500 psi lengthwise and 1250 psi crosswise. Manufacture tape with integral wires, foil backing, or other means of enabling detection by a metal detector when tape is buried up to 3 feet deep. Encase metallic element of the tape in a protective jacket or provide with other means of corrosion protection.

2.3 DETECTION WIRE FOR NON-METALLIC PIPING

Insulate a single strand, solid copper detection wire with a minimum of 12 AWG.

PART 3 EXECUTION

3.1 STRIPPING OF TOPSOIL

Where indicated or directed, strip topsoil to a depth of 1 inch. Spread topsoil on areas already graded and prepared for topsoil, or transported and deposited in stockpiles convenient to areas that are to receive application of the topsoil later, or at locations indicated or specified. Keep topsoil separate from other excavated materials, brush, litter, objectionable weeds, roots, stones larger than 2 inches in diameter, and other materials that would interfere with planting and maintenance operations.

3.2 GENERAL EXCAVATION

Perform excavation of every type of material encountered within the limits of the project to the lines, grades, and elevations indicated and as specified. Perform the grading in accordance with the typical sections shown and the tolerances specified in paragraph FINISHING. Transport satisfactory excavated materials and place in fill or embankment within the limits of the work. Excavate unsatisfactory materials encountered within the limits of the work below grade and replace with satisfactory materials as directed. Include such excavated material and the satisfactory material ordered as replacement in excavation. Dispose surplus satisfactory excavated material not required for fill or embankment in areas approved for surplus material storage or designated waste areas. Dispose unsatisfactory excavated material in designated waste or spoil areas. During construction, perform excavation and fill in a manner and sequence that will provide proper drainage at all times. Excavate material required for fill or embankment in excess of that produced by excavation within the grading limits from the borrow areas indicated or from other approved areas selected by the Contractor as specified.

3.2.1 Drainage

Provide for the collection and disposal of surface and subsurface water encountered during construction. Completely drain construction site during periods of construction to keep soil materials sufficiently dry. Construct storm drainage features at the earliest stages of site development, and throughout construction grade the construction area to provide positive surface water runoff away from the construction activity and/or provide temporary ditches, swales, and other drainage features and equipment as required to maintain dry soils. When unsuitable working platforms for equipment operation and unsuitable soil support for subsequent construction features develop, remove unsuitable material and provide new soil material as specified herein. It is the responsibility of the Contractor to assess the soil and ground water conditions presented by the plans and specifications and to employ necessary measures to permit construction to proceed.

3.2.2 Dewatering

Control groundwater flowing toward or into excavations to prevent sloughing of excavation slopes and walls, boils, uplift and heave in the excavation and to eliminate interference with orderly progress of construction. Do not permit French drains, sumps, ditches or trenches within 3 feet of the foundation of any structure, except with specific written approval, and after specific contractual provisions for restoration of the foundation area have been made. Take control measures by the time the excavation reaches the water level in order to maintain the integrity of the in situ material. While the excavation is open, maintain the water level continuously, at least 2 feet below the working level.

3.2.3 Pipe Trench Excavation Requirements

Excavate the trench as recommended by the manufacturer of the pipe to be installed. Slope trench walls below the top of the pipe, or make vertical, and of such width as recommended in the manufacturer's printed installation manual. Provide vertical trench walls where no manufacturer's printed installation manual is available. Shore trench walls more than 4 feet high, cut back to a stable slope, or provide with equivalent means of protection for employees who may be exposed to moving ground or cave in. Excavate trench walls which are cut back to at least the angle of repose of the soil. Give special attention to slopes which may be adversely affected by weather or moisture content. Do not exceed the trench width below the pipe top of 24 inches plus pipe outside diameter (O.D.) for pipes of less than 24 inches inside diameter, and do not exceed 36 inches plus pipe outside diameter for sizes larger than 24 inches inside diameter. Where recommended trench widths are exceeded, provide redesign, stronger pipe, or special installation procedures by the Contractor. The Contractor is responsible for the cost of redesign, stronger pipe, or special installation procedures without any additional cost to the Owner.

3.2.3.1 Bottom Preparation

Grade the bottoms of trenches accurately to provide uniform bearing and support for the bottom quadrant of each section of the pipe. Excavate bell holes to the necessary size at each joint or coupling to eliminate point bearing. Remove stones of 6 inch or greater in any dimension, or as recommended by the pipe manufacturer, whichever is smaller, to avoid point bearing.

3.2.3.2 Removal of Unyielding Material

Where unyielding material is encountered in the bottom of the trench, remove such material 6 inches below the required grade and replaced with suitable materials as provided in paragraph BACKFILLING AND COMPACTION.

3.2.3.3 Removal of Unstable Material

Where unstable material is encountered in the bottom of the trench, remove such material to the depth directed and replace it to the proper grade with select granular material as provided in paragraph BACKFILLING AND COMPACTION. When removal of unstable material is required due to the Contractor's fault or neglect in performing the work, the Contractor is responsible for excavating the resulting material and replacing it without additional cost to the Owner.

3.2.3.4 Excavation for Appurtenances

Provide excavation for manholes, catch-basins, inlets, or similar structures sufficient to leave at least 12 inches clear between the outer structure surfaces and the face of the excavation or support members. Clean rock or loose debris and cut to a firm surface either level, stepped, or serrated, as shown or as directed. Remove loose disintegrated rock and thin strata. Specify removal of unstable material. When concrete or masonry is to be placed in an excavated area, take special care not to disturb the bottom of the excavation. Do not excavate to the final grade level until just before the concrete or masonry is to be placed.

3.3 SELECTION OF BORROW MATERIAL

Select borrow material to meet the requirements and conditions of the particular fill or embankment for which it is to be used. Obtain borrow material from the borrow areas within the limits of the project site, orfrom approved private sources. Unless otherwise provided in the contract, the Contractor is responsible for obtaining the right to procure material, pay royalties and other charges involved, and bear the expense of developing the sources, including rights-of-way for hauling from the owners. Borrow material from approved sources on Owner-controlled land may be obtained without payment of royalties. Unless specifically provided, do not obtain borrow within the limits of the project site without prior written approval. Consider necessary clearing, grubbing, and satisfactory drainage of borrow pits and the disposal of debris thereon related operations to the borrow excavation.

3.4 OPENING AND DRAINAGE OF EXCAVATION AND BORROW PITS

Notify the Owner's Representative sufficiently in advance of the opening of any excavation or borrow pit or borrow areas to permit elevations and measurements of the undisturbed ground surface to be taken. Except as otherwise permitted, excavate borrow pits and other excavation areas providing adequate drainage. Transport overburden and other spoil material to designated spoil areas or otherwise dispose of as directed. Provide neatly trimmed and drained borrow pits after the excavation is completed. Ensure that excavation of any area, operation of borrow pits, or dumping of spoil material results in minimum detrimental effects on natural environmental conditions.

3.5 GRADING AREAS

Where indicated, divide work into grading areas within which satisfactory excavated material will be placed in embankments, fills, and required backfills. Do not haul satisfactory material excavated in one grading area to another grading area except when so directed in writing. Place and grade stockpiles of satisfactory and unsatisfactory and wasted materials. Keep stockpiles in a neat and well drained condition, giving due consideration to drainage at all times. Clear, grub, and seal by rubber-tired equipment, the ground surface at stockpile locations; separately stockpile excavated satisfactory and unsatisfactory materials. Protect stockpiles of satisfactory materials from contamination which may destroy the quality and fitness of the stockpiled material. If the Contractor fails to protect the stockpiles, and any material becomes unsatisfactory, remove and replace such material with satisfactory material from approved sources.

3.6 FINAL GRADE OF SURFACES TO SUPPORT CONCRETE

Do not excavate to final grade until just before concrete is to be placed. Only use excavation methods that will leave the foundation rock in a solid and unshattered condition. Roughen the level surfaces, and cut the sloped surfaces, as indicated, into rough steps or benches to provide a satisfactory bond. Protect shales from slaking and all surfaces from erosion resulting from ponding or water flow.

3.7 GROUND SURFACE PREPARATION

3.7.1 General Requirements

Remove and replace unsatisfactory material with satisfactory materials, as directed by the Owner's Representative, in surfaces to receive fill or in excavated areas. Scarify the surface to a depth of 6 inches before the fill is started. Plow, step, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so that the fill material will bond with the existing material. When subgrades are less than the specified density, break up the ground surface to a minimum depth of 6 inches, pulverizing, and compacting to the specified density. When the subgrade is part fill and part excavation or natural ground, scarify the excavated or natural ground portion to a depth of 12 inches and compact it as specified for the adjacent fill.

3.8 UTILIZATION OF EXCAVATED MATERIALS

Dispose unsatisfactory materials removing from excavations into designated waste disposal or spoil areas. Use satisfactory material removed from excavations, insofar as practicable, in the construction of fills, embankments, subgrades, shoulders, bedding (as backfill), and for similar purposes. Submit procedure and location for disposal of unused satisfactory material. Submit proposed source of borrow material. Do not waste any satisfactory excavated material without specific written authorization. Dispose of satisfactory material, authorized to be wasted, in designated areas approved for surplus material storage or designated waste areas as directed. Clear and grub newly designated waste areas on Owner-controlled land before disposal of waste material thereon. Stockpile and use coarse rock from excavations for constructing slopes or embankments adjacent to streams, or sides and bottoms of channels and for protecting against erosion. Do not dispose excavated material to obstruct the flow of any stream, endanger a partly finished structure, impair the efficiency or appearance of any structure, or be detrimental to the completed work in any way.

3.9 BURIED TAPE AND DETECTION WIRE

3.9.1 Buried Warning and Identification Tape

Provide buried utility lines with utility identification tape. Bury tape 12 inches below finished grade; under pavements and slabs, bury tape 6 inches below top of subgrade.

3.9.2 Buried Detection Wire

Bury detection wire directly above non-metallic piping at a distance not to exceed 12 inches above the top of pipe. Extend the wire continuously and unbroken, from manhole to manhole. Terminate the ends of the wire inside the manholes at each end of the pipe, with a minimum of 3 feet of wire, coiled,

remaining accessible in each manhole. Furnish insulated wire over it's entire length. Install wires at manholes between the top of the corbel and the frame, and extend up through the chimney seal between the frame and the chimney seal. For force mains, terminate the wire in the valve pit at the pump station end of the pipe.

3.10 BACKFILLING AND COMPACTION

Place backfill adjacent to any and all types of structures, and compact to at least 90 percent laboratory maximum density (per ASTM D 1557for cohesive materials or 95 percent laboratory maximum density (per ASTM D 1557)for cohesionless materials, to prevent wedging action or eccentric loading upon or against the structure. Prepare ground surface on which backfill is to be placed and provide compaction requirements for backfill materials in conformance with the applicable portions of paragraphs GROUND SURFACE PREPARATION. Finish compaction by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment. All backfill shall be firm and unyielding.

3.10.1 Trench Backfill

Backfill trenches to the grade shown. Do not backfill the trench until all specified tests are performed.

3.10.1.1 Replacement of Unyielding Material

Replace unyielding material removed from the bottom of the trench with select granular material or initial backfill material.

3.10.1.2 Replacement of Unstable Material

Replace unstable material removed from the bottom of the trench or excavation with select granular material placed in layers not exceeding 6 inches loose thickness.

3.10.1.3 Bedding and Initial Backfill

Place initial backfill material and compact it with approved tampers to a height of at least one foot above the utility pipe or conduit. Bring up the backfill evenly on both sides of the pipe for the full length of the pipe. Take care to ensure thorough compaction of the fill under the haunches of the pipe. Except as specified otherwise in the individual piping section, provide bedding for buried piping in accordance with AWWA C600, Type 4, except as specified herein. Compact backfill to top of pipe to 90 percent of ASTM D 1557 maximum density.

3.10.1.4 Final Backfill

Fill the remainder of the trench, except for special materials for roadways, railroads and airfields, with satisfactory material.

3.10.2 Backfill for Appurtenances

After the manhole, catchbasin, inlet, or similar structure has been constructed and the concrete has been allowed to cure for 10 days, place backfill in such a manner that the structure is not be damaged by the shock of falling earth. Deposit the backfill material, compact it as specified for

final backfill, and bring up the backfill evenly on all sides of the structure to prevent eccentric loading and excessive stress.

3.11 EMBANKMENTS

3.11.1 Earth Embankments

Construct earth embankments from satisfactory materials free of organic or frozen material and rocks with any dimension greater than 3 inches. Place the material in successive horizontal layers of loose material not more than 12 inches in depth. Spread each layer uniformly on a soil surface that has been moistened or aerated as necessary, and scarified or otherwise broken up so that the fill will bond with the surface on which it is placed. After spreading, plow, disk, or otherwise brake up each layer; moisten or aerate as necessary; thoroughly mix; and compact to at least 90 percent laboratory maximum density (per ASTM D 1557). Compaction requirements for the upper portion of earth embankments forming subgrade for pavements are identical with those requirements specified in paragraph SUBGRADE PREPARATION. Finish compaction by sheepsfoot rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment.

3.11.2 HYDROSEEDING

Hydroseeding shall occur upon completion of the earthen embankment as delineated on the project drawings.

3.12 SUBGRADE PREPARATION

3.12.1 Proof Rolling

Finish proof rolling on an exposed subgrade free of surface water (wet conditions resulting from rainfall) which would promote degradation of an otherwise acceptable subgrade. Operate the proof rolling equipment in a systematic manner to ensure the number of passes over all areas, and at speeds between 2-1/2 to 3-1/2 mph. Notify the Owner's Representative a minimum of 3 days prior to proof rolling. Perform proof rolling in the presence of the Owner's Representative. Undercut rutting or pumping of material as directed by the Owner's Representative to a depth of 6 inches] and replace with satisfactory material.

3.12.2 Construction

Shape subgrade to line, grade, and cross section, and compact as specified. Include plowing, disking, and any moistening or aerating required to obtain specified compaction for this operation. Remove soft or otherwise unsatisfactory material and replace with satisfactory excavated material or other approved material as directed. Excavate rock encountered in the cut section to a depth of 6 inches below finished grade for the subgrade (or as indicated in the plans). Bring up low areas resulting from removal of unsatisfactory material or excavation of rock to required grade with satisfactory materials, and shape the entire subgrade to line, grade, and cross section and compact as specified. After rolling, the surface of the subgrade for roadways shall not show deviations greater than 1/2 inch when tested with a 12-foot straightedge applied both parallel and at right angles to the centerline of the area. Overbuild slopes and trim to achieve finish grades. Do not vary the elevation of the finish subgrade more than 0.1 foot from the established grade and cross section.

3.12.3 Compaction

Finish compaction by sheepsfoot rollers, vibratory compactors, or other approved equipment. Except for paved areas and railroads, compact each layer of the embankment to at least 90 percent of laboratory maximum density (per ASTM D 1557).

3.13 FINISHING

Finish the surface of excavations, embankments, and subgrades to a smooth and compact surface in accordance with the lines, grades, and cross sections or elevations shown. Provide the degree of finish for graded areas within 0.1 foot of the grades and elevations indicated. Finish gutters and ditches in a manner that will result in effective drainage. Finish the surface of areas to be turfed from settlement or washing to a smoothness suitable for the application of turfing materials. Track walk embankment slopes to receive hydroseeding. Repair graded, topsoiled, or backfilled areas prior to acceptance of the work, and re-established grades to the required elevations and slopes.

3.13.1 Subgrade and Embankments

During construction, keep embankments and excavations shaped and drained. Maintain ditches and drains along subgrade to drain effectively at all times. Do not disturb the finished subgrade by traffic or other operation. Protect and maintain the finished subgrade in a satisfactory condition until ballast, subbase, base, or pavement is placed. Do not permit the storage or stockpiling of materials on the finished subgrade. Do not lay subbase, base course, ballast, or pavement until the subgrade has been checked and approved, and in no case place subbase, base, surfacing, pavement, or ballast on a muddy, spongy, or frozen subgrade.

3.14 PLACING TOPSOIL

On areas to receive topsoil, prepare the compacted subgrade soil to a 2 inches depth for bonding of topsoil with subsoil. Spread topsoil evenly to a thickness of 6 inches and grade to the elevations and slopes shown. Do not spread topsoil when frozen or excessively wet or dry. Obtain material required for topsoil in excess of that produced by excavation within the grading limits.

3.15 TESTING

Perform testing by an Owner-approved commercial testing laboratory or the Contractor's validated testing facility. Submit qualifications of the commercial testing laboratory or the Contractor's testing facilities. If the Contractor elects to establish testing facilities, do not permit work requiring testing until the Contractor's facilities have been inspected and approved by the Owner's Representative.

a. Determine field in-place density in accordance with ASTM D 1556, ASTM D 2167, and/or ASTM D 6938. When ASTM D 6938 is used, check the calibration curves and adjust using only the sand cone method as described in ASTM D 1556. ASTM D 6938 results in a wet unit weight of soil in determining the moisture content of the soil when using this

method. If required, check field-determined soil moisture contents in the laboratory using ASTM D 2216

b. Check the calibration curves furnished with the moisture gauges along with density calibration checks as described in ASTM D 6938; check the calibration of both the density and moisture gauges at the beginning of a job on each different type of material encountered and at intervals as directed by the Owner's Representative. ASTM D 2937, use the Drive Cylinder Method only for soft, fine-grained, cohesive soils. When test results indicate, as determined by the Owner's Representative, that compaction is not as specified, remove the material, replace and recompact to meet specification requirements.

c. Perform tests on recompacted areas to determine conformance with specification requirements. Appoint a registered professional civil engineer to certify inspections and test results. These certifications shall state that the tests and observations were performed by or under the direct supervision of the engineer and that the results are representative of the materials or conditions being certified by the tests. The following number of tests, if performed at the appropriate time, will be the minimum acceptable for each type operation.

3.15.1 Fill and Backfill Material Gradation

One test per 500 cubic yards stockpiled or in-place source material or a minimum of one test per material type. Determine gradation of fill and backfill material in accordance with ASTM C 136, ASTM D 422, and/or ASTM D 1140.

3.15.2 In-Place Densities

a. One test per 25 cubic feet, or fraction thereof, of each lift of fill or backfill areas compacted by hand-operated machines.

b. One test per 500 cubic yards, or fraction thereof, of each lift of embankment or backfill.

3.15.3 Check Tests on In-Place Densities

If ASTM D 6938 is used, check in-place densities by ASTM D 1556 as follows:

a. One check test per lift for each 250 cubic feet, or fraction thereof, of each lift of fill or backfill compacted by other than hand-operated machines.

c. One check test per lift for each 5000 cubic yards, or fraction thereof, of embankment.

3.15.4 Optimum Moisture and Laboratory Maximum Density

Perform tests for each type material or source of material including borrow material to determine the optimum moisture and laboratory maximum density values. One representative test per 5000 cubic yards of fill and backfill, or when any change in material occurs which may affect the optimum moisture content or laboratory maximum density.

3.15.5 Tolerance Tests for Subgrades

Perform continuous checks on the degree of finish specified in paragraph SUBGRADE PREPARATION during construction of the subgrades.

3.16 DISPOSITION OF SURPLUS MATERIAL

Provide surplus material or other soil material not required or suitable for filling or backfilling, and brush, refuse, stumps, roots, and timber as as directed by the Owner's Representative.

-- End of Section --

SECTION 32 84 24

IRRIGATION SPRINKLER SYSTEMS
08/11

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

UNDERWRITERS LABORATORIES (UL)

UL 651	(2011; Reprint Jun 2016) UL Standard for Safety Schedule 40 and 80 Rigid PVC Conduit and Fittings

1.2 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Creek Pump Assembly

Reservoir Pump Assembly

SD-03 Product Data

Piping materials, tubing, and fittings

Valves and accessories

Vertical Riser heads

1.3 DELIVERY, STORAGE, AND HANDLING

1.3.1 Delivery

Deliver materials in original rolls, packages, cartons, and containers with the name of manufacturer, brand, and model. Inspect materials delivered to the site for damage.

1.3.2 Storage

Store materials on site in enclosures or under protective covering. Store [plastic piping and] rubber gaskets under cover out of direct sunlight. Do not store materials directly on ground. Keep inside of pipes and fittings free from dirt and debris.

1.3.3 Handling

Handle and carry pipe, fittings, valves, and accessories in such a manner as to ensure delivery to trench in sound undamaged condition. Do not drag pipe.

1.4 QUALITY ASSURANCE

1.4.1 Required Test

Submit tests signed by an authorized official of a testing laboratory of sprinkler head, valve, automatic controller, emitter heads, vacuum breaker, backflow preventer, and water hammer arrester.

PART 2 PRODUCTS

2.1 CREEK PUMP ASSEMBLY

Creek pump assembly shall be developed based, in part, on the materials previously purchased and reflected on PVI Invoice #INV200016985, dated 4/12/2016. The assembly shall identify all components (fish screen, suction hose, trailer, mounting details for pump, electrical connection detail, as well as discharge connection details). Value engineering options may be presented and taken under consideration by the Owner.

2.2 RESERVOIR PUMP ASSEMBLY

Reservoir pump assembly shall be developed based, in part, on the materials previously purchased and reflected on PVI Invoice #INV200016985, dated 4/12/2016. A schematic of the assembly has been prepared and is reflected in the project drawings as well as details represented in the document "Reservoir Pump Details." Value engineering options may be presented and taken under consideration by the Owner.

2.3 PIPING MATERIALS

2.3.1 Galvanized Steel Pipe and Associated Fittings

2.3.1.1 Pipe

ASTM A53/A53M, Schedule 40.

2.3.1.2 Fittings

ASME B16.3, Class 150.

2.3.2 Polyvinyl Chloride (PVC) Pipe, Fittings and Solvent Cement

2.3.2.1 Pipe

ASTM D1785, PVC 1120 Schedule 40; or ASTM D2241, PVC 1120 SDR 21, Class 100.

2.3.2.2 Fittings

a. Solvent Welded Socket Type: ASTM D2466, Schedule 40.

b. Threaded Type: ASTM D2464, Schedule 40.

2.3.2.3 Solvent Cement

ASTM D2564.

2.4 VALVES

2.4.1 Isolation Valve

2.4.1.1 Ball Valves, Less than 3 Inches

API Std 598, plastic body, threaded ends.

2.5 ELECTRICAL CIRCUITS

2.5.1 Control Wiring for Electrically Operated Valves

2.5.2 Conduit

UL 651, rigid polyvinyl chloride conduit, Schedule 40.

2.6 CONCRETE MATERIALS

2500 psi compressive concrete strength at 28 days as specified under Section 03 30 00 CAST-IN-PLACE CONCRETE.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Piping System

3.1.1.1 Thrust Blocks

Install thrust blocks at bends, tees, plugs and valves or 4 inches and larger mainline piping. Place concrete so that sides subject to thrust or load are against undisturbed earth, and valves and fittings are serviceable after concrete has set.

3.1.2 Piping Installation

3.1.2.1 Polyvinyl Chloride (PVC) Pipe

a. Solvent-Cemented Joints: ASTM D2855.

b. Threaded Joints: full cut with a maximum of three threads remain exposed on pipe and nipples. Make threaded joints tight without recourse to wicks or fillers, other than polytetrafluoroethylene thread tape.

c. Piping: ASTM D2774 or ASTM D2855, and pipe manufacturer's instructions. Install pipe in a serpentine (snaked) manner to allow for expansion and contraction in trench before backfilling. Install pipes at temperatures over 40 degrees F.

3.1.2.2 Threaded Brass or Galvanized Steel Pipe

Prior to installation ream pipe. Cut threads as specified in ASME B1.2. Make joints with pipe joint compound applied to male end only.

3.2 FIELD QUALITY CONTROL

The Contractor will conduct and the Contracting Officer and the QC representative will witness field inspections and field tests specified in this section. Perform field tests, and provide labor, equipment, and incidentals required for testing.

3.2.1 Pressure Test

3.2.1.1 Duration

During pressure test, maintain a hydrostatic pressure of 100 psi without pumping for a period of one hour with an allowable pressure drop of 5 psi before backfilling system.

3.2.1.2 Leaks

Correct leaks. Make necessary corrections to stop leakage.

3.2.1.3 Retest

Retest system twice until pressure can be maintained for duration of test.

3.2.2 Operation Test

3.2.2.1 Accessories

At conclusion of pressure test, install irrigation heads or drip heads, quick coupling assemblies, and hose bib, and test entire system for operation under normal operating pressure. Make necessary corrections or adjustments to raise or lower pressure for each system if tests results do not match pressure requirements.

3.2.2.2 Acceptance

Operation test is acceptable if system operates through at least one complete cycle for areas to be irrigated.

End of Section --

Project Documents From:

Pajaro Valley Irrigation

25 Sakata Lane

Watsonville, CA 95076

Phone: (831) 722-2283

Fax: (831) 722-6364

Pajaro Valley Irrigation
25 Sakata Lane
Watsonville CA 95076
Phn: (831) 722-2283
Fax: (831) 722-6364

Invoice	INV200016985
Date	4/12/2016
Page	1
Customer	3117
PO Number	MOTY / SAN GREGORIO

Date/Time Printed 4/12/2016 4:43:10 PM

Bill To:

Trout Unlimited
4221 Hollis St
Eneryville CA 94608

Jennelle Root Martell

Ordered	Item Number	Description	Unit Price	Ext. Price
1	MLB10B2	10HP Berkley Pump 3ph	$1,990.00	$1,990.00
1	PRSM-T260	260 Gallon Pump Rite Screen	$1,750.00	$1,750.00
1	MLDD10	10HP Danfoss VFD Drive	$3,695.00	$3,695.00
1	SO	4" Suction Hose wth Footvalve	$480.00	$480.00
1,560	PP-020-CON	2" Sch 40 Electrical Conduit	$0.82	$1,279.20
1,560	PP-040-125	4" Class 125 PVC Pipe	$1.15	$1,794.00
1	MLB25B2.5	Berkley 25hp 2 1/2" Pump 3ph	$3,225.00	$3,225.00
1	MLDD25	Danfoss 25HP VFD Panel	$4,945.00	$4,945.00
1,560	PP-060-100	6" Class 100 PVC Pipe	$2.00	$3,120.00

Subtotal	$22,278.20
Misc	$0.00
Tax	$2,060.74
Freight	$209.30
Amt Received	$0.00
Total	$24,548.24

Authorized Signature

Pajaro Valley Irrigation
25 Sakata Lane
Watsonville CA **95076**

Quote	QTE10000486
Date	4/11/2017
Page	1

Bill To:

MOTY

Ship To:

Cash Sale

Purchase Order No.	Customer ID	Salesperson ID	Shipping Method	Payment Terms	Req Ship Date	Master No.
TRAILER	1046	GARY	UPS GROUND	Net 30	0/0/0000	24,054

Quantity	Item Number	Description	UOM	Discount	Unit Price	Ext. Price
1	ZNTMO-37560	Pump Utility Trailer	EACH	$0.00	$386.39	$386.39
1	MM	Miscellaneous Materials	EACH	$0.00	$350.00	$350.00
6	LABOR-FAB	Fabricator's Labor	EACH	$0.00	$70.00	$420.00

Subtotal	$1,156.39
Misc	$0.00
Tax	$104.08
Freight	$65.00
Trade Discount	$0.00
Total	$1,325.47

Project Documents From:

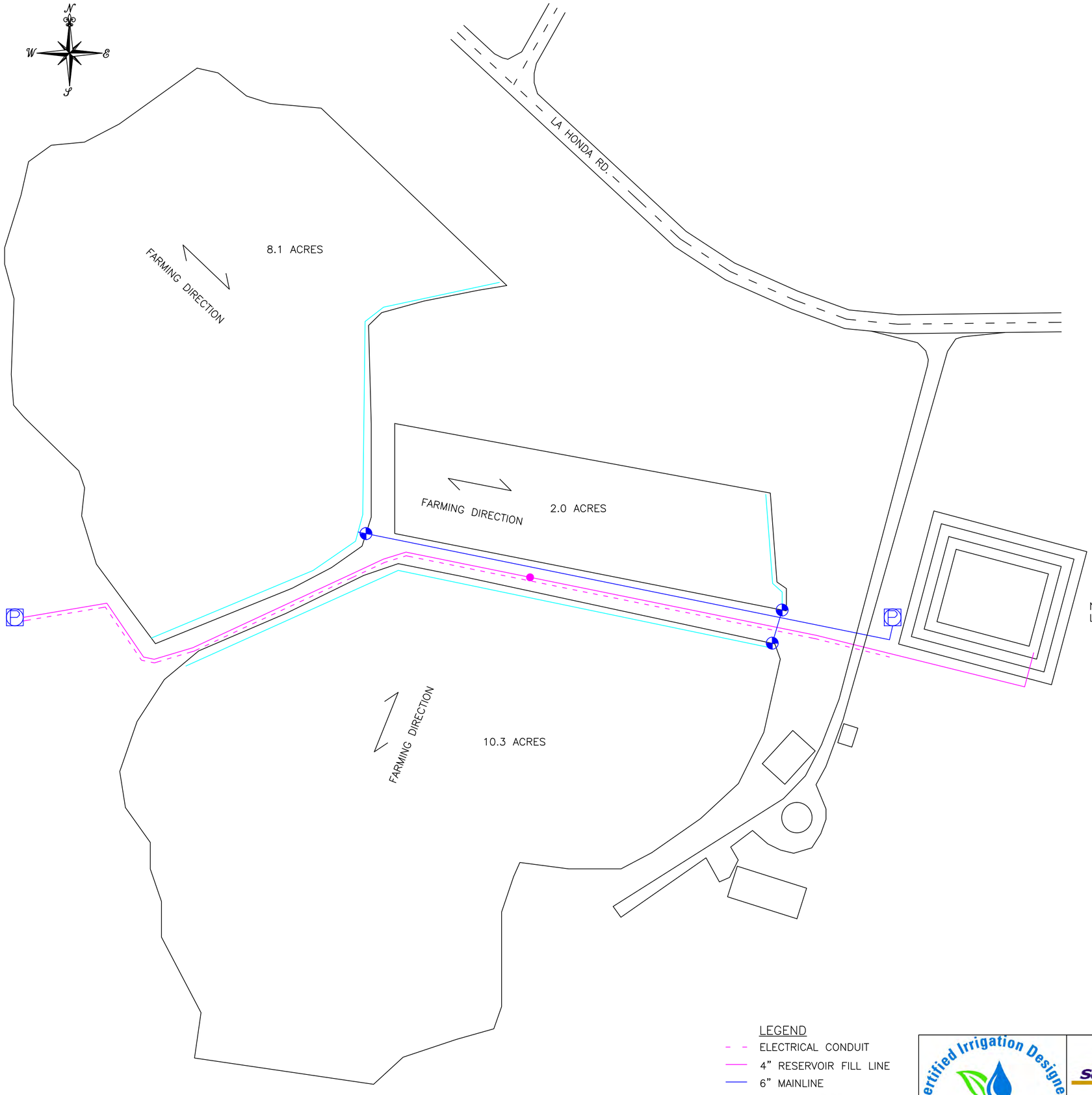
Pacific Southwest Irrigation

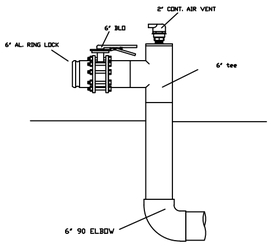
8372 S. Jack Tone Road

Stockton, CA 95215

Phone: (209) 460-0450

Fax: (209) 982-1832





6" BUTTERFLY VALVE

Know what's **below.**
Call before you dig.
811 / 800-227-2600

MIN. COVER REQUIREMENT FOR PVC PIPE

2" AND SMALLER	18"
2" – 5"	24"
6" AND LARGER	30"

PVC CEMENT AND PRIMER REQUIREMENTS

3" AND SMALLER	705
4" AND LARGER	717
SADDLES	719
FLEX PVC	795
PRIMER	P70

LEGEND

- ELECTRICAL CONDUIT
- 4" RESERVOIR FILL LINE
- 6" MAINLINE
- ALUMINUM PIPE
- LATERAL
- PUMP
- 6" VALVE X 6" ALUMINUM

Certified Irrigation Designer CID IRRIGATION ASSOCIATION

PACIFIC SOUTHWEST IRRIGATION

8372 S. JACK TONE RD.
STOCKTON, CA 95215

MOTY

20 JAN 2017

2017011

DESIGNED BY: WTH

SCALE: 1" = 100'

Electrical Photos

Moty-Klingman Property

3030 La Honda Road

San Gregorio, CA 94074

SERVICE DISCONNECT

KD 35k

SERVICE DISCONNECT

KD 35k

SAN MATEO COUNTY
BUILDING INSPECTION DEPARTMENT
Telephone: 599-7311

PERMISSION TO CONNECT CURRENT

PERMIT NO. 218 95 *1401 DATE 6/9/95
LOCATION 3030 La Rinconada Rd Woodside
OWNER Karen Matty
CONTRACTOR D. FALK Construction
BY Bill Williamson

PH. HI-LEG

BARNS

PG&E

		DATE	REMARKS
MTR-OUT			
MTR-SET	3SR5R3		
RATE	A1		
MAINT.			
	1T	6/3	1000

Silver Spring Networks
00135D100CD0E18
CONTAINS MODEL No: NIC 314
FCC ID: OMS-NIC314 IC: 8975A-NIC314

Mult by 80 VTR :1 CTR :5

I-210+
CL 20 240V 3W FM4S
USA 0411
727X480084 60HZ TA 2.5 Kh 1.0 Kt 0.10
50 507 349
1009480029
PG&E SmartMeter
3RG10094800290411

Underwriters Laboratories Inc.®

DEAD FRONT SWITCHBOARD SECTION

No. D178271

OF

Cutler-Hammer
Westinghouse

POW-R-LINE C
Switchboard

Volts	240/120V_D	G. O. No.	SF56800
Phase	3	Item No.	01
Wire	4	Sect. No.	2 Of 4
Mfd. AT	41	Date	11/22/96

Current Ratings-Amperes

Supply	1000	Neut.	1000
Section	400	Neut.	400

Enclosure Type NEMA-1

SUITABLE ONLY FOR USE AS SERVICE EQUIP
MAXIMUM OF SIX (6) MAIN DISCONNECTS

This Section Is Rated For Use On A Circuit Capable Of Delivering

Not More Than 65KA RMS Sym. Amperes, 240 Volts Maximum.

When Protected By A Current Limiting Main Device, A N/A Ampere

Maximum Class N/A Fuse Or A Type N/A Circuit Breaker Rated

Not More Than N/A Amperes Must Be Used.

The Short Circuit Rating Of This Switchboard Section Is Equal To The Lowest Rating Of (1) Any Section Electrically Connected In Series Or (2) Any Installed Panelboard Having A Marked Short Circuit Rating Or (3) Any Device Installed Except As Noted In The Series Rating Information Manual Attached.

If This Section Contains A Control Transformer, The Secondary Voltage Is 120V.

If This Section Contains A Bonded Neutral, The Bonding Means Shall Only Be Removed For Test Purposes.

Cutler-Hammer Made in USA 900P025H01 R1

NOTICE

NEUTRAL DISCONNECT LOCATED IN THIS SECTION.

267P968H01 R1


WARNING
DANGER

HOUSE

Eaton Cutler-Hammer
Westinghouse
Series C
Industrial
Circuit Breaker Frame

KD 35k

600 Amp Max. 2 Pole
600 VAC ~ 250 VDC
Cat. KD3400F
Style 14B2001G02

Terminal Cat. No.	Wire Size	Torque Lb. In.
KD-AL		
T4350K	3 - 350	275
T4350K	250 - 600	375
T4400K	3/0 - 350 (2)	275
T4401K	250 (2) or 600 (1)	275 & 375
KD-CU-Y		
T3500	3 - 350	275
T3500	250 - 500	375
T4002K	3/0 - 250 (2)	275

60, 75° C Wire -
175 Amp & Lower Only

Eaton Cutler-Hammer

Modification Cable

Off

Magnetic or
Multiples Of In

400 Amps (In) 40 %G Cat. No. KT2400T

Underwriters Laboratories Inc.®
LISTED
DEAD FRONT SWITCHBOARD SECTION
No. D178270
1 OF 4

Cutler-Hammer
Westinghouse

POW-R-LINE C™
Switchboard

Volts	240/120V D	G. O. No.	SF56800
Phase	3	Item No.	01
Wire	4	Sect. No.	1 Of 4
Mfd. AT	41	Date	11/22/96

Current Ratings-Amperes

Supply	1000	Neut.	1000
Section	N/A	Neut.	600

Enclosure Type NEMA-1

SUITABLE ONLY FOR USE AS SERVICE EQUIP
MAXIMUM OF SIX (6) MAIN DISCONNECTS

This Section Is Rated For Use On A Circuit Capable Of Delivering Not More Than 65KA RMS Sym. Amperes, 240 Volts Maximum. When Protected By A Current Limiting Main Device, A N/A Ampere Maximum Class N/A Fuse Or A Type N/A Circuit Breaker Rated Not More Than N/A Amperes Must Be Used.

The Short Circuit Rating Of This Switchboard Section Is Equal To The Lowest Rating Of (1) Any Section Electrically Connected In Series Or (2) Any Installed Panelboard Having A Marked Short Circuit Rating Or (3) Any Device Installed Except As Noted In The Series Rating Information Manual Attached.

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If This Section Contains A Bonded Neutral, The Bonding Means Shall Only Be Removed For Test Purposes.

Cutler-Hammer Made in USA 900P025H01 R1

Cutler-Hammer

Westinghouse
Series C
Industrial
Circuit Breaker

ED 65k

200 AMPS 3 POLE
240VAC-125VDC 40°C
CAT [illegible] D3200
STYLE 66[illegible]5604

960930

Suitable For Use On
Single Phase AC Circuits.
Use Two 100% Protected
Poles For DC

Terminal Information

Cat. No.	Wire Size	Torque Lb. In.
[illegible]	#4 – 4/0	120
	100-125A Cu/Al Wire	
	200-225A Cu Wire	
[illegible]	#6 – 300	275
	Cu/Al Wire	
[illegible]	#4 – 1/0	50
	100 A Cu/Al Wire	

On
Off

200

Cir.
No.

6610

Modification Code

ED Interrupting Capa
RMS Sym. Amps

Volts	Amps
240 ~	65k
125 DC	10k

IEC 157-1

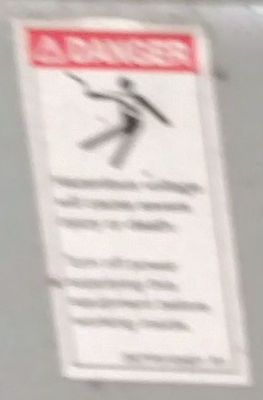
Volts	Amps
240 ~	65k
125 DC	10k

~ = 50/60 Hz

Uimp 8 kV

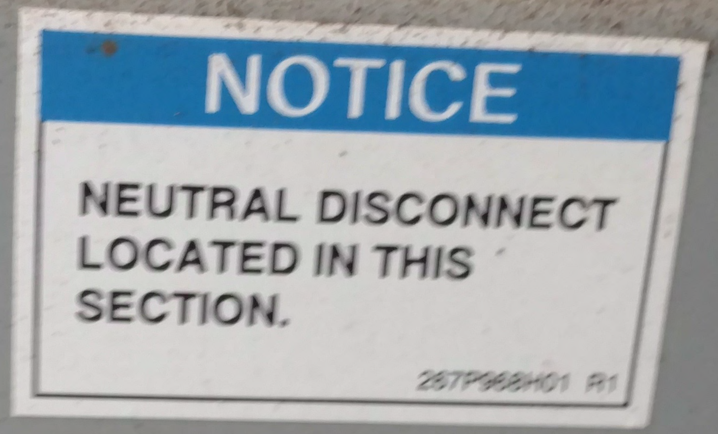
Cutler-Hammer
Made in U.S.A.

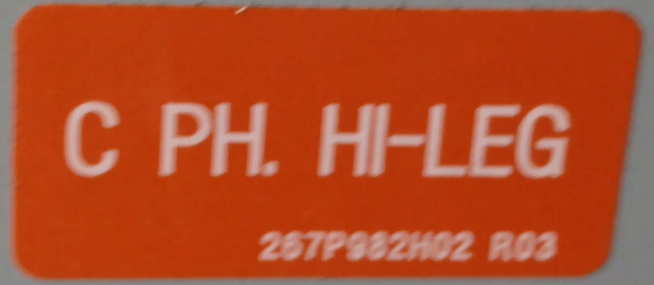
3


DANGER


GE
Cutler-Hammer
Westinghouse
Series C
Industrial
Circuit Breaker
ED 65k
ON
OFF
200
1
2
3

DANGER
267P982H02 R03


NOTICE
NEUTRAL DISCONNECT
LOCATED IN THIS
SECTION.
267P668H01 R1


C PH. HI-LEG
267P682H02 R03

Cutler-Hammer

Westinghouse
Series C
Industrial
Circuit Breaker

ED 65k

200 AMPS 3 POLE
240 VAC ~ 125 VDC 40° C
CAT. ED3200
STYLE 6610C75G04

360930 1

Suitable For Use On
Single Phase AC Circuits,
Use Two 100% Protected
Poles For DC.

Terminal Information

Terminal Cat. No.	Wire Size	Torque (Lb. In.)
1A22549	#4 – 4/0 100-175A Cu/Al Wire, 200-225A Cu Wire	120
1A22549-01	#6 – 300 Cu/Al Wire	275
110018	#14-1/0 100 A Cu/Al Wire	50

On
Off

200

Cir. No.

6610 C61 H12

Modification Code

ED Interrupting Capacity
RMS Sym. Amps

Volts	Amps
240 ~	65k
125 DC	10k

IEC 157-1

Volts	Amps
240 ~	65k
125 DC	10k

Uimp 8 kV

~ = 50/60 Hz

Cutler Hammer
Made in U.S.A.

Cutler-Hammer

Westinghouse
Series C
Industrial
Circuit Breaker

ED 65k

200 AMPS 3 POLE
240VAC • 125VDC 40°C
CAT. ED3200
STYLE 6610C75G04

960930

Suitable For Use On
Single Phase AC Circuits

Use Two 100% Protected
Poles For DC

Terminal Information

Terminal Cat. No	Wire Size	Torque Lb. In.
TA225FD	#4 – 4/0 100-175A Cu/Al Wire 200. 225A Cu Wire	120
TA225FD1	#6 – 300 Cu/Al Wire	275
T100FB	#14-1/0 100 A Cu/Al Wire	50

On
Off

200

Cat No

Modification Code

ED Interrupting Capacity
RMS Sym. Amps

Volts	Amps
240 ~	65k
125 DC	10k

IEC 157-1

Volts	Amps
240 ~	65k
125 DC	10k

~ 50/60 Hz

Cutler-Hammer
Made in U.S.A.

3

3


3
2
1

Underwriters Laboratories Inc.®

DEAD FRONT SWITCHBOARD SECTION

No. D178270

OF

Cutler-Hammer
Westinghouse

POW-R-LINE C Switchboard

Volts	240/120V_D	G. O. No.	SF56800
Phase	3	Item No.	01
Wire	4	Sect. No.	1 Of 4
Mfd. AT	41	Date	11/22/96

Current Ratings-Amperes

Supply	1000	Neut.	1000
Section	N/A	Neut.	600

Enclosure Type NEMA-1

SUITABLE ONLY FOR USE AS SERVICE EQUIP
MAXIMUM OF SIX (6) MAIN DISCONNECTS

This Section Is Rated For Use On A Circuit Capable Of Delivering Not More Than 65KA RMS Sym. Amperes, 240 Volts Maximum.

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If This Section Contains A Bonded Neutral, The Bonding Means Shall Only Be Removed For Test Purposes.

Cutler-Hammer Made in USA 900P025H01 R1


Cutler-Hammer
Westinghouse
Series C
Industrial
Circuit Breaker
ED 65k
On
Off
200
3Φ PUMP
1
2
3

Master Drawing Index Form
Low Voltage Assemblies
GRAND PRAIRIE, TX

Date Cont...: 11/22/96
P.O. #:
Customer:
Equip...
G. O. #: SF566511
Item: 01
Designation: BELL ELEC SPLY/SANTA CLARA CA
KLING...
Material Type: CONSTRUCTION

Bill SWBD	Drawing Number	Shts	Rev	*	X
Cha...	SF566509-1A01	1	1		X

PLAY IT SAFE
READ THIS MANUAL!

SERIES RATING
INFORMATION MANUAL

⚠CAUTION

Rev. 1

Sheet 1 of 1


25
SS

Reservoir Pump

Moty-Klingman Property

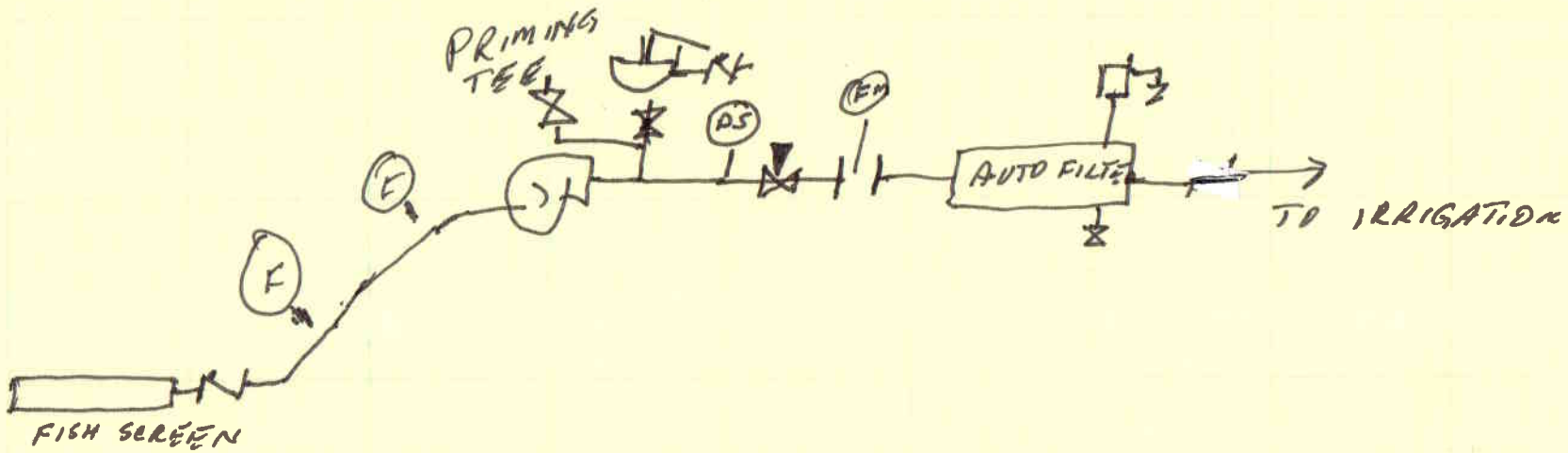
3030 La Honda Road

San Gregorio, CA 94074

MOTY IRRIGATION PUMP FLOW DIAGRAM

AARON NEWMAN

5/12/17



FISH SCREEN

FOOT VALVE

SUCTION PIPE FLOATS

CENTRIFUGAL PUMP

PRIMING PUMP

CHECK VALVE

BALL VALVE

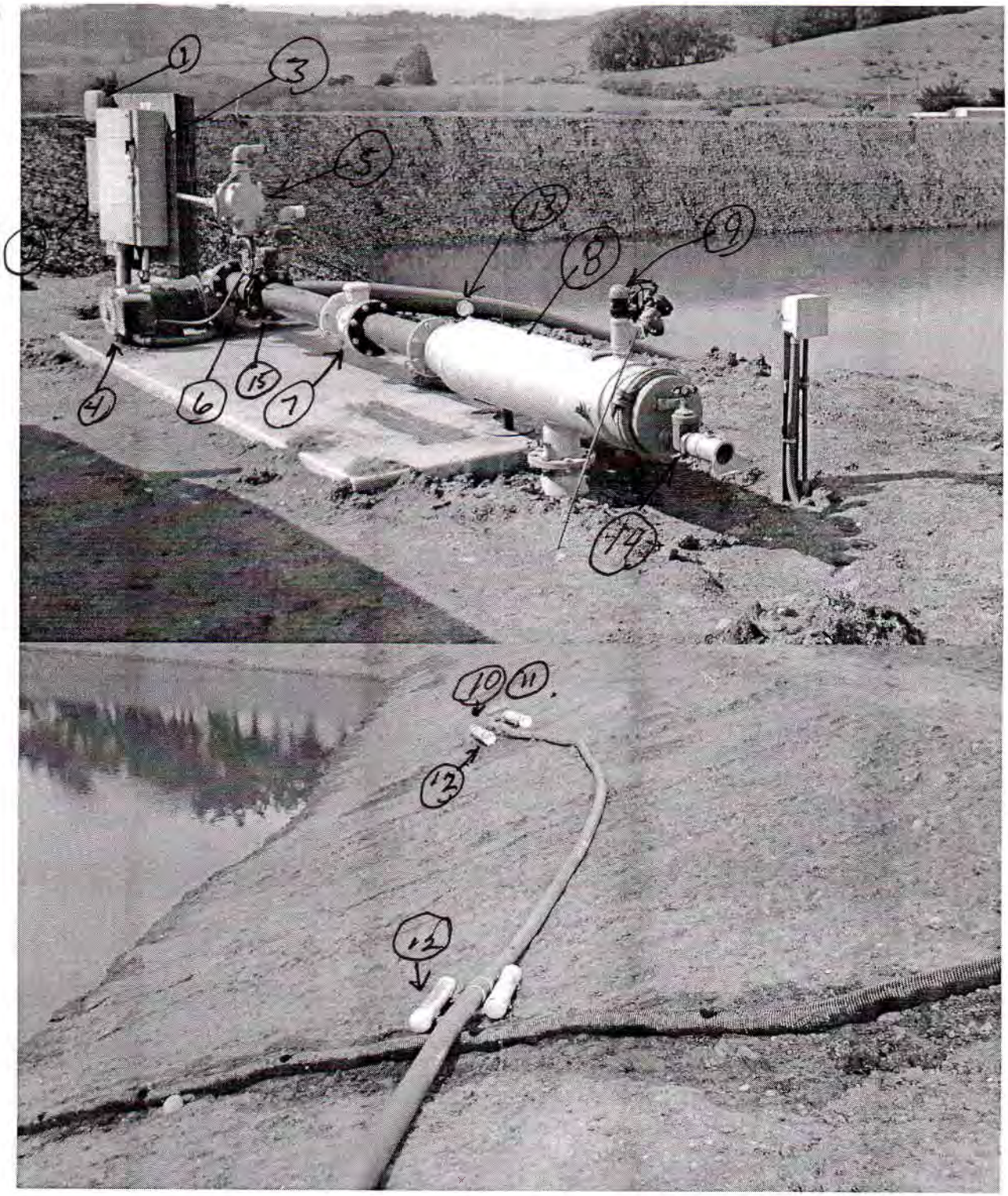
PRESSURE SWITCH

FLOW METER

AUTO FILTER — AUTOMATIC FILTER

AUTOMATIC VENT/VACUUM BREAKER

BUTTERFLY VALVE


1
3
5
13
8
9
4
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15
7
14
10
11
12
12

List of equipment observed in pictures

1. Electrical time clock
2. Electrical distribution panel
3. Motor Control (including variable frequency drive)
4. Irrigation pump (possibly 3 X 4)
5. Priming pump with isolation valve and discharge check valve on pump discharge (a tee and valve are also included for manual priming of pump)
6. Pressure switch with low pressure cut-off
7. Magmeter flow meter
8. Automatic filter
9. Air Vent/Vacuum Release
10. Fish Screen
11. Foot valve
12. Suction Pipe Floats
13. 0-100 psi pressure gauge
14. Drain valve
15. 6” Butterfly valve

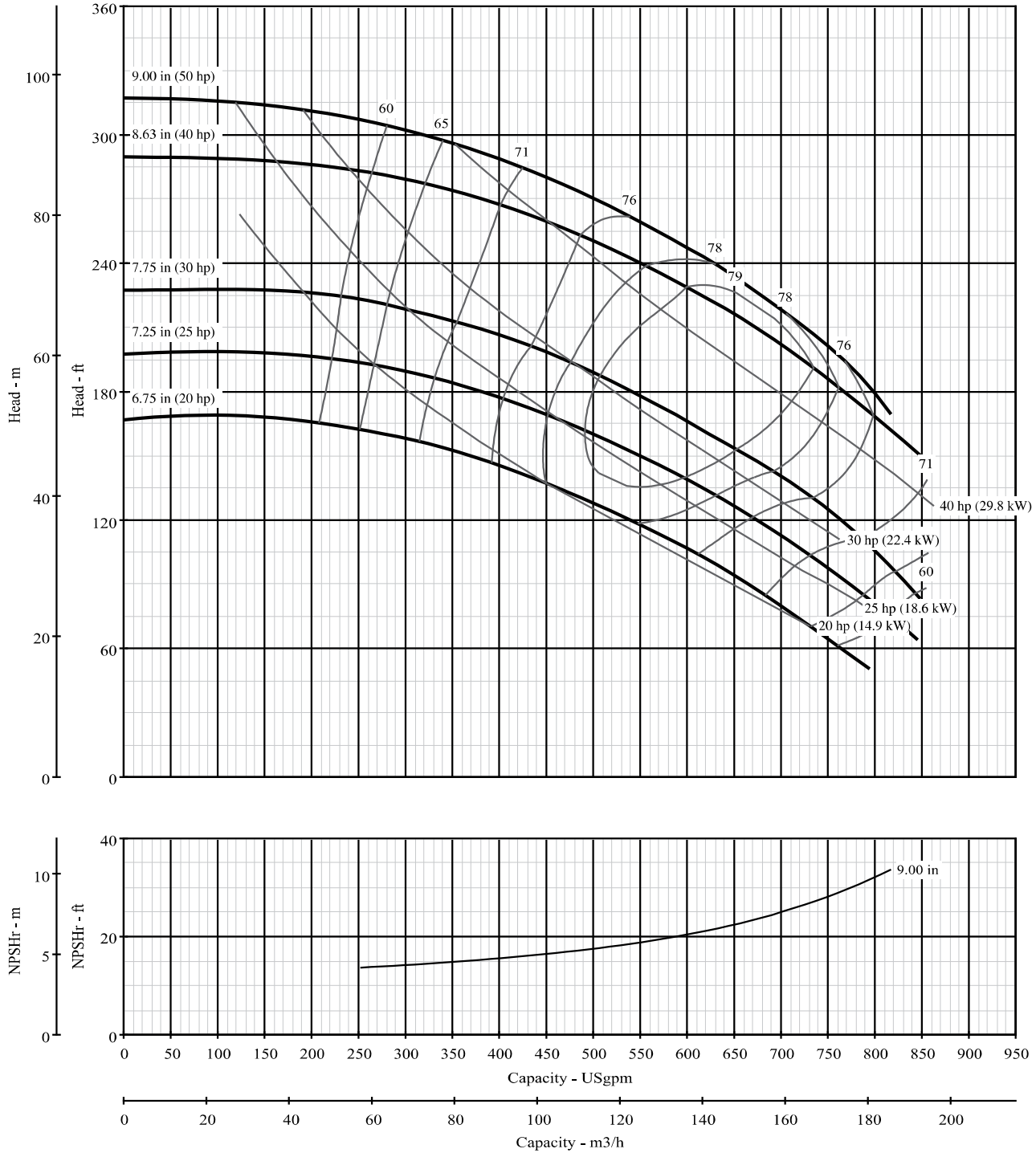
Pump Size: 3 x 4 x 9 L

Model: B3Z_L

Curve No. 5006

Type	CCMD	FM CPLG	FM BELT	SAE	Hydraulic	AC Engine
Model	B3ZPL					

Nominal RPM: **3550**
Based on Fresh Water @ 68˚F (20˚C)
Maximum Working Pressure:266 PSI (18 BAR)

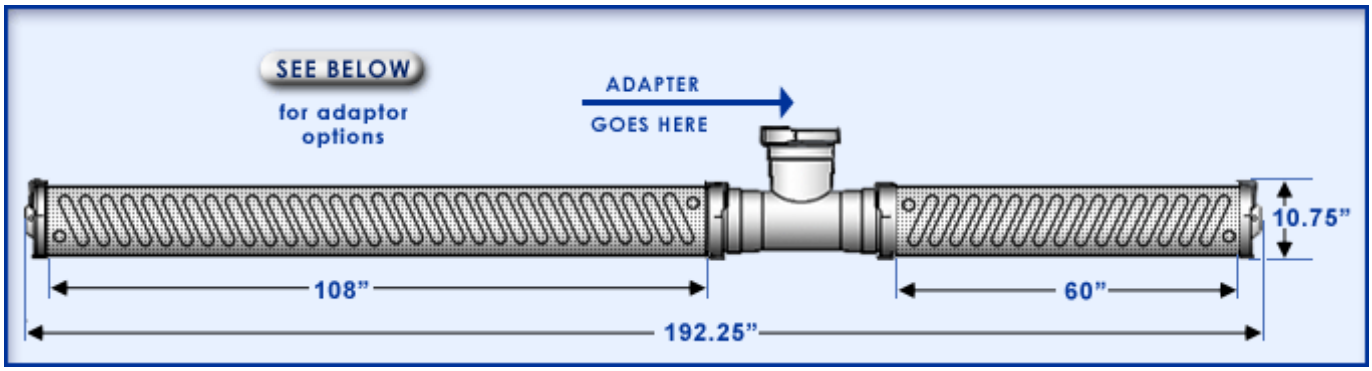


T750

PART #SUPR304000

Rated Capacity: 750 GPM

Weight: 115 lbs. (without adapter)



Assembly includes the following:

PART NUMBER	DESCRIPTION	QTY.
SUPR996000	500 Body Assembly (10"diameter x 108"long, 500GPM capacity)	1
SUPR995000	250 Body Assembly (10"diameter x 60"long, 250GPM capactiy)	1
SULV002450	10" Clamp with Mounting Tab	4
CLBL660008	8" Clamp without Mounting Tab	1
SULV002465	10" O-Ring Set	2
SULV002495	8" O-Ring (Single)	1
SULV001020	10" Tee with 8" Outlet and Lift Strap	1

ADAPTER OPTIONS: Select the adapter below to accommodate your existing line.


Compression Adapter


Companion Flange Adapter

PART NUMBER	COMPRESSION ADAPTER	QTY.
SULV000990	5" Compression Adapter	1
SULV001000	6" Compression Adapter	1
SULV001005	8" Compression Adapter	1
PART NUMBER	**150 lb. COMPANION FLANGE ADAPTER**	**QTY.**
SULV001850	5" Companion Flange Adapter	1
SULV001900	6" Companion Flange Adapter	1
SULV001950	8" Companion Flange Adapter	1
PART NUMBER	**FOOTVALVE ADAPTER** (with & without Footvalve)	**QTY.**
SULV001300	5" Footvalve Adapter (without the Footvalve)	1
SULV001400	6" Footvalve Adapter (without the Footvalve)	1
SULV001500	8" Footvalve Adapter (without the Footvalve)	1
SULV001510	5" Footvalve Adapter WITH a SFV3, 45º Footvalve	1
SULV001520	6" Footvalve Adapter WITH a SFV4, 45º Footvalve	1
SULV001530	8" Footvalve Adapter WITH a SFV5, 45º Footvalve	1

Footvalve Adapter

Other special order adapters are available. Call for a quote.

AUTOMATIC SELF CLEANING HDF HORIZONTAL FILTERS

SKU: HDF-AUTO
DELIVERY DATE: 3 TO 10 BUSINESS DAYS
MANUFACTURER: AYTOK FILTERS

Body Material	:	St-37 – AISI 316L
Screen Material	:	AISI 304L – CAGEPRGF
Maximum Working Pressure	:	10 bar
Minimum Output Pressure	:	2.5 bar
Maximum Working Temperature	:	60°
Back Wash Time	:	Timing and Pressure Setup
Control System	:	Electronic and Hydraulic Control
The Filtration Sensitivity	:	20-400 micron
Paint Material	:	Epoxi poliester

US$2731.74

Metal Filter Sizes *

- 4" (90 mm)
- 5" (125 mm) [+US$442.98]
- 6" (150 mm) [+US$885.97]
- 8" (200 mm) [+US$2288.75]
- 10" (250 mm) [+US$2584.07]

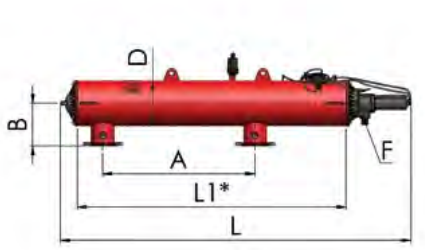
QTY: 1 BUY NOW

0

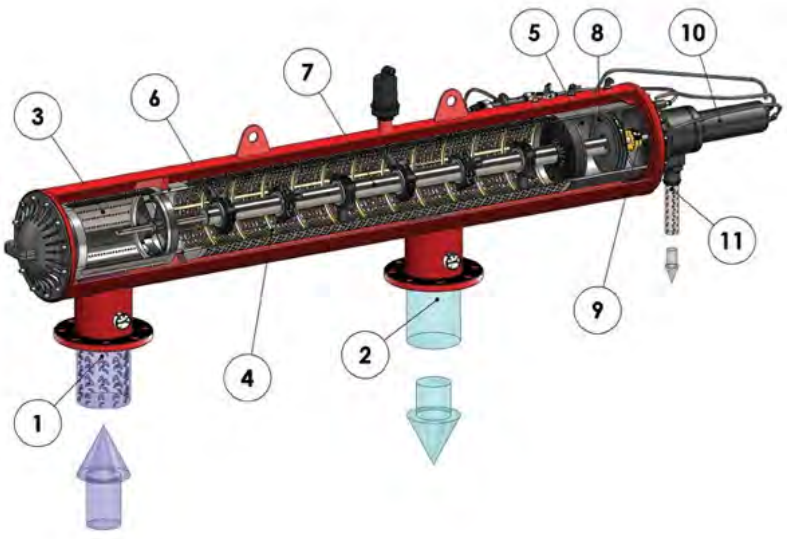
OVERVIEW / REVIEWS / CONTACT US

- The filter body is St-37 or stainless-steel optionality
- The filtering in pressured lines
- High performance during the back washing
- Extensive Filtering Surface
- Easy-to assembly and fitler components, not required to change
- 100% back washing performance
- The back washing time for 50-30 sec.
- Working opportunity, not required additional energy
- The minimum head and water loss

Technical Specifications



Product Code	Input/Output		A	B	L1	L	D	Flow Rate	Filter Surface	Weight
	inch	mm	mm	mm	mm	mm	inch	m^3/h	cm^2	kg
HDF-104	4"	100	500	287	1040	1550	10"	120	2634	87
HDF-104S	4"	100	600	287	1240	1750	10"	140	3951	92
HDF-105	5"	125	600	287	1240	1750	10"	150	3951	94
VDF-105S	5"	125	900	287	1550	2060	10"	160	5268	127
HDF-106	6"	150	900	287	1550	2060	10"	180	5268	131
VDF-126S	6"	150	1100	312	1942	2442	12"	220	7902	147
HDF-128	8"	200	1100	312	1942	2442	12"	320	7902	151
VDF-1210	10"	250	1100	312	1942	2442	12"	380	7902	161



Working Principle

Water, entered from input collector, puts particules, contained by itself, in rough screen (3) and passes to part which include multiplex filter (3). It is protected with a rough material with screen over of multiplex screen. The thin filter goes to output collector side (4). Particles, collected on multiplex screen, constitute a pollution layer over of the filter and a pressure

cleans the particle layyer, collected on filter by creating a vacuum from holes over of nozzle (6).

The dirty water, absorbed on multiplex filter, creates real volution by passing from water cleaning nozzle pipe (7) and hydrolic turbine (8). The pressure loss, consisted of turbine container (4) and plunger dreinage (9) constitutes an axial movement. The spiral headway, constituted by this axial and volution together, obtains the absorbing whole filter surface by vacuum nozzles.

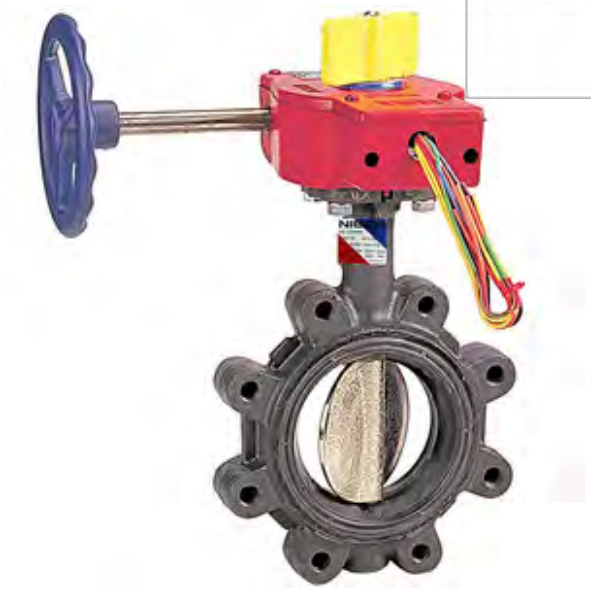
When this process is done, the cleaning collector makes a second back flushing with warns with its warning switches and turns its first position. Transaction is completed.

During the back washing, the filtration process contiunes and after the back washing process, the filter stands by until next pressure difference signal.

FERGUSON

Nibco 6 in. 250 psi Ductile Iron Lug Gear Operator Butterfly Valve

NLD35104U



DESCRIPTION

- Geometric drive
- Molded-in seat liner eliminates leakage between body and liner as in cartridge or boot type liners

	Flanged
	Flanged
	Yes
	MSS SP-25, MSS SP-67
	Ductile Iron
	250 psi
NSF Certified	No
Pressure Class	250#
UL Listed	Yes
Valve Body Style	Lug
Valve Operator	Gear Operator Handle
Valve Seat Material	Rubber
Valve Size	6 in
Valve Stem	Non-rising Valve Stem
Valve Type	Butterfly Valves

Overhead Irrigation

Drip/Micro Irrigation

Plasticulture

Transplanters

Slurry Equipment

Controls & Automation

Pumps

Valves

Gate Valves
Diaphragm Operated Valves
Ball Valves
Pressure Regulators
Butterfly Valves
Air / Vacuum Relief Vents
Knife Valves
Pressure Relief
Backflow Prevention
Valve Enclosures

Pipes & Fittings

Hoses & Fittings

Galvanized & Fabrication Fittings

Used Equipment

HOME > PRODUCTS > AGRICULTURAL IRRIGATION PRODUCTS > VALVES > AIR / VACUUM RELIEF VENTS > COMBINATION AIR VENTS

Combination Air Vents

Overview:
Specifications:
Sizes:
Brochure:

Combination Air Vents provide more air release capacity than other air vents of similar sizes. With a combination of air and vacuum release and continuous action, these air vents ensure maximum protection of your irrigation system when properly sized and placed.

What is this?

Combination Air/Vacuum and Continuous Acting Air Vents proven design provides more air release capacity than other vents of similar size.

Product Advantages

Ensures maximum protection of the irrigation system with proper sizing and placement.

Aeordynamic float design ensures vent closure as water fills the system, remains open when air pressure reaches 12 psi.

Large capacity vents dampen water hammer preventing pipes and fittings from cracking or bursting.

Unique rolling seal feature allows gradual opening, closing and self-cleaning.

Made of corrosion-resistant UV protected nylon - no metal parts to rust or corrode, no need for spare parts.

Applications

1" and 2" Combination Air/Vacuum and Continuous Acting Air Vents

For discharge and intake of large volumes of air at pump and filtration stations, along mains and at the end of mainlines.

For continuous air release at high points in pipe network or upstream of manifolds.

Every 1,500 feet along mainlines.

2" Combination Air Release/Vacuum Guard and Continuous Acting Air Vent

Releases air at pump priming and maintains the prime by not allowing air intake in long and/or undulating suction lines to pump stations.

Releases entrapped air while ensuring continuous prime at centrifugal pumps.

Builds up siphons with air release, maintains the siphon by continuously releasing air and not allowing air intake.

3/4" and 1" Automatic Continuous Acting Air Vents

For high spots where air accumulates.

1" Continuous Acting/Vacuum Guard Air Vent

For release of entrapped air while ensuring continuous pump prime with no air intake in centrifugal pumps and pump suction lines.

Protects mechanical seals in vertical pumps by not allowing air to accumulate in the stuffing boxes.

Maintain siphons with continuous air release while not a

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OMEGA

Your Source for Process Measurement & Control

Flanged Magmeter

FMG-2000

NEW

Flanged Magmeter

$2,700.00 **FMG-2004**

★★★★★

Be the first to review this product

1 YEAR WARRANTY CE

- Easy Setup
- Minimal Straight Pipe
- Mounted or Remote Rate and Total
- Tamper-Evident Seal
- IP68 Rated
- Touch Screen Programming
- 200:1 Turndown

Electromagnetic Flow Meters - View related products

Description

The FMG-2000 Series is the most economical flanged electromagnetic flowmeter on the market. It is used in 3 to 12" pipe in municipal or industrial water, wastewater, pump stations and packaged plant applications.

The FMG-2000 has no moving parts and electrodes are designed to discourage fouling. This magmeter requires no maintenance in applications where debris would impede mechanical meters. There are no parts to wear out. Minimal straight pipe requirements allow FMG-2000 Series meters to be used in piping configurations where there is little space between the meter and an elbow. FMG-2000 Series meters are rated IP68 for applications where the meter may be under water up to a depth of 3 m (10') for prolonged periods of time. Rate and total indication are standard. Rate and total units and pulse output are settable via the front panel touch key pad by the user.

The FMG-2000 can be externally powered with 9 to 36 Vdc at 30 mA. The standard 6 m (20') cable also provides outputs for use with a variety of OMEGA® displays and controls for remote reading, data logging and control applications. 4 to 20 mA passive current loop (-I) and high frequency outputs are optional. The FMG-2100 remote display meter can be supplied with an optional internal AC power supply (-120 Vac).

Specifications
Pipe Sizes: 3, 4, 6, 8, 10, and 12"
Flanges: 150 lb. ANSI pattern
Pressure: 150 psi (10.3 bar) working pressure
Temperature
Operating: -12 to 54°C (10 to 130°F)
Storage: -40 to 70°C (-40 to 158°F)
Accuracy: ±1% of reading ±0.04% of full-scale flow from low flow cutoff to maximum flow rate of 10 m/sec
Low Flow Cutoff: 0.5% of maximum flow rate
Maximum Velocity: 10m/s
Materials
Body: 3" only ductile cast iron, powder-coated with epoxy powder 4 to 10" welded steel, epoxy-coated
Liner: 3" only Noryl® 4 to 12" Santoprene/Polypropylene electronics

Housing: Ductile cast iron, powder-coated
Electrodes: 316 stainless steel
O-ring: 3" only EPDM
Display Type: 128 x 64 dot-matrix LCD
Digits: 5 digit rate, 8 digit total
Power:
DC power: 9 to 36 Vdc at 250 mA maximum, 30 mA average
AC Power: Option 85 to 264 Vac, 50/60Hz, 0.12 A
Pulse Frequency Output Signal: Current sinking pulse, isolated, 36 Vdc at 10 mA maximum
Pulse Rates: User-settable volume units/pulse. Pulse width is one-half of pulse period, 200 pulses/sec maximum
Options:
4 to 20 mA Current Loop (-I): Isolated, passive, 6 to 36 Vdc, ±0.1% of pulse/frequency output HART® compliant
Digital Output: (-D): Isolated, open collector, 36 Vdc at 10 mA maximum, frequency output up to 10 kHz
Relay Output (-R): Solid state relay, normally open, non-polarized, 28 Vac/40 Vdc at 0.5A maximum, 33 Hz maximum
Cable:
Control Cable: Six-conductor water-blocked cable, polyurethane jacket, 6 m (20') standard length for power, pulse frequency or optional outputs; optional lengths up to 30.5 m (100') available
Remote Display Cable (FMG2100): 9 m (30') standard length may be shortened (by user in the field). Additional cable can be ordered and attached with the use of a junction box (purchased from a standard supplier) up to 30.5 m (100') total
Conductivity: >20 microSiemens/cm
Empty Pipe Detection: Hardware/ software, conductivity-based
Environmental: IP68 to 3 m (10') depth

Place Order

(Specify Model Number)

Show Only Stocked Items

Part Number		Description	Qty
FMG-2003 Consult Sales		*Magmeter with local display, flange Size 7.6 cm (3"), flow Range 3.62 to 723 GPM (0.23 to 46 LPS)*	
FMG-2003-I Consult Sales		*Magmeter with local display, flange Size 7.6 cm (3"), flow Range 3.62 to 723 GPM (0.23 to 46 LPS) With 4 to 20 mA output*	
FMG-2004 Consult Sales		*Magmeter with local display, flange size 10 cm (4"), flow range 6.43 to 1285 GPM (0.41 to 81 LPS)*	
FMG-2004-I Consult Sales		*Magmeter with local display, flange size 10 cm (4"), flow range 6.43 to 1285 GPM (0.41 to 81 LPS) With 4 to 20 mA output*	
FMG-2006 $2,985.00	*3 In Stock*	*Magmeter with local display, flange Size 15 cm (6"), flow range 14.5 to 2891 GPM (0.91 to 182 LPS)*	0
FMG-2006-I Consult Sales		*Magmeter with local display, flange Size 15 cm (6"), flow range 14.5 to 2891 GPM (0.91 to 182 LPS) With 4 to 20 mA output*	
FMG-2008 $3,245.00	*1 In Stock*	*Magmeter with local display, flange size 20 cm (8"), flow range 25.7 to 5140 GPM (1.62 to 324 LPS)*	0
FMG-2008-I Consult Sales		*Magmeter with local display, flange size 20 cm (8"), flow range 25.7 to 5140 GPM (1.62 to 324 LPS) With 4 to 20 mA output*	
FMG-2010 $3,670.00	*1 In Stock*	*Magmeter with local display, flange size 25 cm (10"), flow range 40.15 to 8031 GPM (2.54 to 507 LPS)*	0

FMG-2010-I Consult Sales		*Magmeter with local display, flange size 25 cm (10"), flow range 40.15 to 8031 GPM (2.54 to 507 LPS) With 4 to 20 mA output*	
FMG-2012 Consult Sales		*Magmeter with local display, flange Size 30 cm (12"), flow range 57.82 to 11,565 GPM (3.65 to 730 LPS)*	
FMG-2103 Consult Sales		*Magmeter with remote display, flange size 7.6 cm (3"), flow range flow range 3.62 to 723 GPM (0.23 to 46 LPS)*	
FMG-2103-I Consult Sales		*Magmeter with remote display, flange size 7.6 cm (3"), flow range flow range 3.62 to 723 GPM (0.23 to 46 LPS) With 4 to 20 Ma output*	
FMG-2104 $3,945.00	*2 In Stock*	*Magmeter with remote display, flange size 10 cm (4"), flow range 6.43 to 1285 GPM (0.41 to 81 LPS)*	0
FMG-2104-I Consult Sales		*Magmeter with remote display, flange size 10 cm (4"), flow range 6.43 to 1285 GPM (0.41 to 81 LPS) With 4 to 20 mA output*	
FMG-2106 $4,040.00	*2 In Stock*	*Magmeter with remote display, flange size 15 cm (6"), flow range 14.5 to 2891 GPM (0.91 to 182 LPS)*	0
FMG-2106-I Consult Sales		*Magmeter with remote display, flange size 15 cm (6"), flow range 14.5 to 2891 GPM (0.91 to 182 LPS) With 4 to 20 mA output*	
FMG-2108 $4,305.00	*2 In Stock*	*Magmeter with remote display, flange size 20 cm (8"), flow range 25.7 to 5140 GPM (1.62 to 324 LPS)*	0
FMG-2108-I Consult Sales		*Magmeter with remote display, flange size 20 cm (8"), flow range 25.7 to 5140 GPM (1.62 to 324 LPS) With 4 to 20 mA output*	
FMG-2110 $4,695.00	*1 In Stock*	*Magmeter with remote display, flange size 25 cm (10"), flow range 40.15 to 8031 GPM (2.54 to 507 LPS)*	0
FMG-2110-I Consult Sales		*Magmeter with remote display, flange size 25 cm (10"), flow range 40.15 to 8031 GPM (2.54 to 507 LPS) With 4 to 20 mA output*	
FMG-2112 Consult Sales		*Magmeter with remote display, flange size 30 cm (12"), flow range 57.82 to 11565 GPM (3.65 to 730 LPS)*	

† ***All amounts shown in USD***

Note: For models with a digital output add "-D" to the model number, for an additional charge.

For models with a relay output add "-R" to the model number, for an additional charge.

For models powered by 85 to 265 Vac, add "-VAC" to the model number, for an additional charge (Vac option is only available on the FMG-2100 remote display models).

For models with RS485 Modbus RTU protocol communications, add "-M) to the model number, for an additional charge.

Reviews

★★★★★

Be the first to review this product

DP SERIES
HAND DIAPHRAGM PRIMER

PROTEK SPECIALTY CO
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Houston, TX 77081
P.O. Box 478
Bellaire, TX 77402
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(713) 667-6691
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sales@protekspecialty.com
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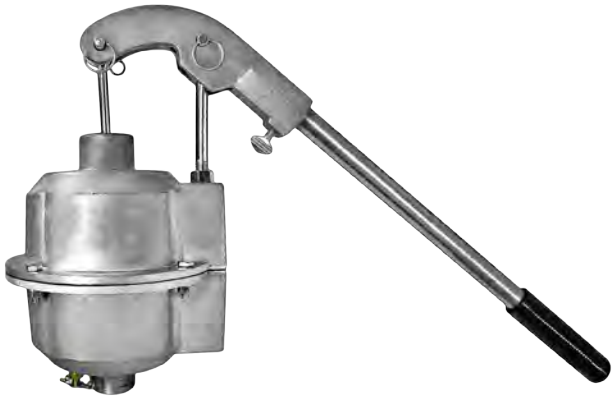
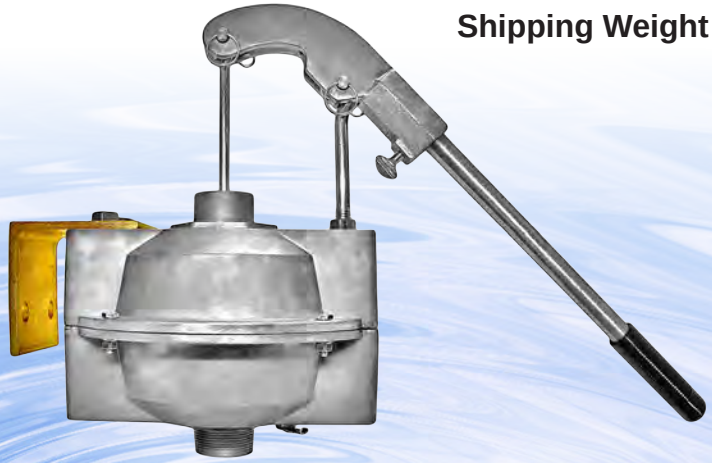
DP5



Shipping Weight - Approx. 13 lbs

DP7



Shipping Weight - Approx. 21 lbs

DP9

Shipping Weight - Approx. 19 lbs

5116 Elm Street
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PROTEK SPECIALTY CO

DP SERIES
HAND DIAPHRAGM PRIMER

The **HAND DIAPHRAGM PRIMER** (DP) is an air pump that creates vacuum in a centrifugal pump priming line and pulls water up into the pump to prime it. DP has a flapper check valve in the diaphragm and a disk check valve at the bottom of the unit. Air flows through the bottom check valve on the diaphragm up stroke then through the diaphragm valve on the down stroke. Diaphragm is actuated through a connecting rod eyebolt attached to a fulcrum handle bracket.

FEATURES:

- Lightweight aluminum alloy body.
- Easily mounted on most centrifugal pumps.
- Tough and durable rubber diaphragm.
- Units have a drain valve.

INSTALLATION & OPERATION:

1. Attach mounting bracket to centrifugal pump or skid.
2. Use non-collapsible hose or flexible tubing to connect primer suction inlet to pump.
3. Install cut-off valve between the primer suction inlet and pump.
4. Close cut-off valve immediately after priming.
5. Make sure primer drain valve is closed.
6. A cut-off valve should be used at the pump discharge to prevent air from being drawn through the discharge line while priming.

MAINTENANCE:

- Remove any debris under the diaphragm after each use.
- Clear all fluids from inside the unit after each use.

TROUBLESHOOTING:

If DP is not priming the pump, check the following:

- Make sure drain cock is closed.
- Inspect check valve for blockage and free movement.
- Connecting hoses should be straight and clear of debris.
- Check suction side for air leaks.
- Call Protek Technical Support for additional help.

5116 Elm Street
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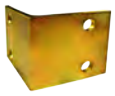
DP SERIES
HAND DIAPHRAGM PRIMER

	DP5		DP7		DP9		PARTS
1	D0055		D0087		D0062		Lower Housing
2	D0056		D0088		D0063		Upper Housing
3	D0054 old part#: ***B183***		D0058 old part#: ***C-106***		D0061 old part#: ***B61***		Diaphragm
4					D0003		1-½" Locknut
5	D0004		D0004		D0004		Check Valve
6	D0050		D0050		D0051		Fulcrum Eyebolt
7	D0093		D0093		D0093		Handle Bracket
8	D0095	(See Chart on Next Page.)	D0095	(See Chart on Next Page.)	D0095	(See Chart on Next Page.)	Handle with Grip Assembly
9			D0107		D0104		Mounting Bracket
10	D0127-A		D0127-A		D0127-A		Connecting Rod Assembly
11	D0303						Diaphragm Plate (2 Req.)
12	D0340		D0340		D0340		Drain Valve
13	D0347A		D0347A		D0347A		Clevis Pin Assembly (2 Req.)
14	X0D01		X0D01		X0D01		Thumb Screw

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DP SERIES
HAND DIAPHRAGM PRIMER

HANDLE w/ BRACKET ASSEMBLY - #D0047		
PART#	**DESCRIPTION**	
D0093	Handle Bracket (Includes 2 Fast Pins & Thumb Screw)	
D0095	Handle w/ Grip Assembly (See Right)	

HANDLE w/ GRIP ASSEMBLY - #D0095		
PART#	**DESCRIPTION**	
D0094	Grip	
D0094-5	Handle Pipe	

PRIMER SELECTION CHART	
PRIMER	**PIPE SIZE**
DP5	2”, 3”, 4”
DP7	4”, 5”, 6”
DP9	6”, 8”, or Larger

REPAIR KITS - D05RK, D07RK, & D09RK	
PART#	**DESCRIPTION**
D0004	Check Valve (Disk)
D0054, D0058, D0061	Diaphragm
D0303 (DP5 Only)	Diaphragm Plate (2 Req.)
D0340	Drain Valve
X0D04	¼-20 x 1” Bolt (4 Req.)
X0D10	⅜” Flat Washer (2 Req.)
X0D11	Jam Nut (2 Req.)
X0D12	¼ Self Locking Nut (4 Req.)

PRIMER CAPACITY CHART

	# of Strokes to Prime Through 25’ of 4” Suction			# of Strokes to Prime Through 25’ of 6” Suction			# of Strokes to Prime Through 25’ of 8” Suction		
PRIMER	**5” HG**	**10” HG**	**15” HG**	**5” HG**	**10” HG**	**15” HG**	**5” HG**	**10” HG**	**15” HG**
DP5	10	27	55						
DP7	6	15	32	12	33	65			
DP9	4	9	20	10	23	45	17	37	77

*** Hg = Inches of Mercury**

Irritrol®

EPA WaterSense® Certified
when used with Irritrol® Climate Logic®

Certified by ICC-ES

MC-E (BLUE) SERIES

CONTROLLER

CLIMATE LOGIC® COMPATIBLE
On-site wireless weather sensing option

SMRT LOGIC™ READY
Provides remote control from any internet connected device

FLOW MONITORING WITH DIAGNOSTICS AND 3 TYPES OF ALARMS (requires station #1 for a N/O master valve circuit)
Protects the system and saves water by detecting, reporting and handling high flow and unscheduled flow events

MODELS WITH STATION COUNTS FROM 4 UP TO 48
Provides irrigation control for any size project

COMMERCIAL-GRADE, HEAVY-DUTY, LOCKABLE, WEATHER RESISTANT CABINETS AND PEDESTALS
For long service life in demanding commercial and "heavy turf" applications

BACKWARD COMPATIBLE FACE PANEL TO EXISTING MC PLUS-B CABINETS ON SITE
Allows field upgrades to the new MC-E while leaving cabinet/pedestal

We've taken the industry standard for commercial irrigation control and made it better. The Irritrol® MC-E now boasts a modernized feature set to compliment it's rugged do-everything reputation. Experience scheduling versatility of 8 independent programs, state-of-the-art flow monitoring, program looping, and new blue face panels. The MC-E blue model is compatible with Irritrol's CLIMATE LOGIC® Wireless Weather Sensing System to automatically adjust the controller's program based on current weather conditions, and SMRT Logic™ for mobile app control. From small to large landscapes, the new MC-E has got what it takes to meet the growing demands of today's commercial irrigation applications.

EASY UPGRADE TO MC-E (blue)

Includes a lower access panel with each MC-E-PAN

5-YEAR WARRANTY

4, 6, 8, 12, 18, 24, 30, 36, 42 AND 48 STATION OUTDOOR AND INDOOR

IRRITROL.COM

ADDED FEATURES

- Backlit, 2-line, 32 character, dot matrix LCD display
- Terminals for flow sensor, stop sensor and start sensor
- Password protection option for programming schedules
- Optional remote alarm to warn of an undesirable flow event
- "Super Cap" to maintain time/date up to 48 hours (no battery required) during a power outage
- Looping option per program (Start Time, Stop Time & Delay between loops) - Pump/MV option of ON or OFF during delay
- Flow sensing based on Irritrol® or Data Industrial PVC-TEE mounted flow sensor models & sizes
- Quick disconnect face panel
- Five-year warranty

OPERATING SPECIFICATIONS

- Watering day cycles per program:
  - Any days of the week
  - Odd or Even date watering
  - Day intervals from 1- 60 days
- Station run times:
  - 0-59 seconds in 1-second increments
  - 1 minute to 10 hours in 1-minute increments
- Global water budget:
  - 0% to 255% in 1% increments

ELECTRICAL SPECIFICATIONS

- Transformer input: 120V ac, 60 Hz
- Transformer output: 24V ac, 2.08 amps (50 VA)
- Maximum output per station: 24V ac, 1.24 amps
- Maximum output to valves: 24V ac, 1.68 amps (including master valve)

DIMENSIONS

- **4-12 Station:** H: 9 3/4", W: 10 1/2", D: 4 1/4"
- **18-48 Station:** H: 12", W: 14 1/4", D: 4 3/4"

MODELS

Model	Description
MC-4E	4 -Station, wall mount, fits P-2B Pedestal
MC-6E	6 -Station, wall mount, fits P-2B Pedestal
MC-8E	8 -Station, wall mount, fits P-2B Pedestal
MC-12E	12 -Station, wall mount, fits P-2B Pedestal
MC-18E	18 -Station, wall mount, fits P-6B Pedestal
MC-24E	24 -Station, wall mount, fits P-6B Pedestal
MC-30E	30 -Station, wall mount, fits P-6B Pedestal
MC-36E	36-Station, wall mount, fits P-6B Pedestal
MC-42E	42 -Station, wall mount, fits P-6B Pedestal
MC-48E	48 -Station, wall mount, fits P-6B Pedestal

SPECIFYING INFORMATION

MC – XX – E

MODEL	NUMBER OF STATIONS
MC - MC Series	**4** - 4 Station **6** - 6 Station **8** - 8 Station **12** - 12 Station **18** - 18 Station **24** - 24 Station **30** - 30 Station **36** - 36 Station **42** - 42 Station **48** - 48 Station
Example: A 24 station MC-E controller = **MC-24E**	

OPTIONAL ACCESSORIES

- (A) SMRT Logic™ Wireless Gateway
- (B) RS1000 wireless RainSensor™
- (C) RFS1000 wireless rain/freeze sensor
- (D) RS500 wired RainSensor™
- (E) CRR remote series (R-100-KIT)
- (F) R102-5476 (16x20 pin adapter) cable
- (G) Climate Logic® Weather Sensing System (CL-100-Wireless)
- (H) SR-1 pump start relay *(Not Pictured)*
- (I) P-2B standard pedestal
- PVC-TEE flow sensors

5825 Jasmine Street, Riverside, CA 92504-1183 • Tel 800-634-TURF (8873) • Fax 800-862-8676

 Form No 17-TL11616

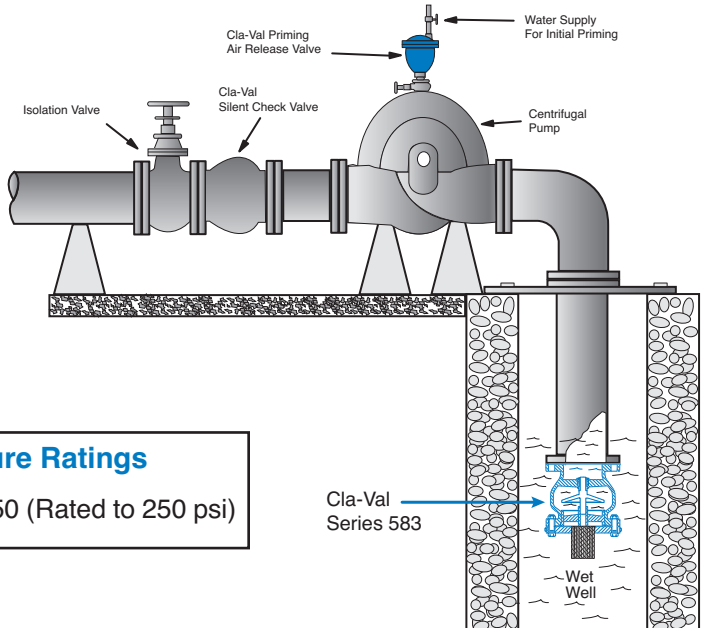
Irritrol®

Series 583
3 through 36-inches
"Tite Seal" Foot Valve

- **Full Pipe Size Flow Area**
- **Lowest Head Loss**
- **360° Stainless Steel Strainer**
- **Buna-N® "Tite Seal" Zero Leakage Means No Loss of Prime**

Cla-Val "Tite Seal" foot valves provide years of trouble free operation at low or high pressures. The special Buna-N® seal allows initial contact to the metal plug, for zero leakage, then as pressure builds, the Buna-N® seal is compressed only slightly until the plug fully contacts the metal seat preventing further compression of the Buna-N® seal. In this manner the seal cannot be damaged from compression and pump prime is always assured. A 360 degree stainless steel strainer (not plated steel) is provided standard with at least, three times flow-thru area of the foot valve size. This greatly enlarged flow thru area strainer means full flow can be maintained even should some small particles collect against the strainer. Cla-Val "Tite Seal" Foot Valves provide non-shock and silent shut-off.

Series 583 Valves meet Federal Mandate for Lead Content Limits



Pressure Ratings

• 125/150 (Rated to 250 psi)

Cla-Val "Tite Seal" Foot Valve Specifications

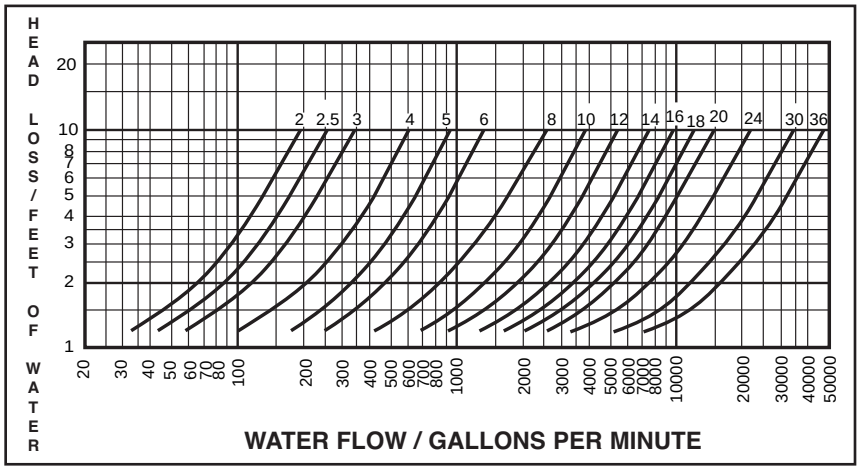
The foot valve shall be globe style, flanged with resilient seal against metal; provide full flow equal to valve size and shut-off silently. Foot valve internals shall include a plug, double guided that allows full pipe flow when open. A guide bushing and all internals shall be field replaceable. The metal seat with Buna-N® seal shall provide zero leakage at low and high pressures without seal damage.
A heavy gauge 360 degree, stainless steel strainer (not plated steel) having a flow-thru area of at least three times that of the foot valve flow area shall be connected to the outside diameter of the inlet flange.

Materials:

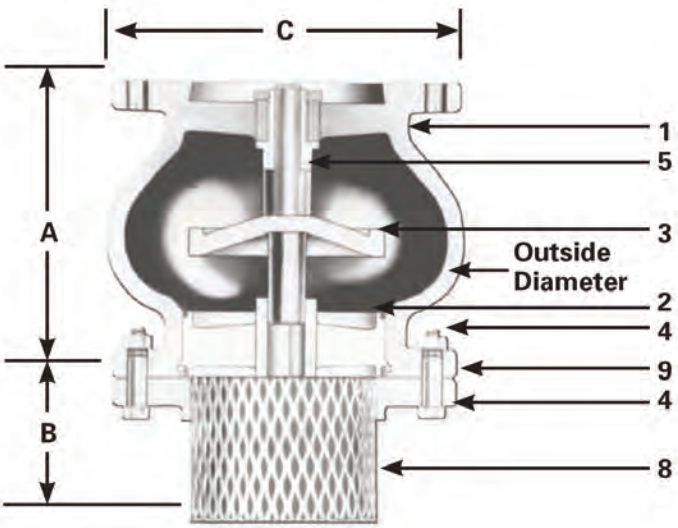
Valve Body: Ductile Iron ASTM 586 GR 65-45-12
Seat and Plug: Bronze ASTM B584 Alloy C83600
Strainer Heavy Gauge 1/16": Thick Stainless Steel

Test Certificate, Drawings, Parts List and O&M Manual Provided upon Request.

"Tite Seal" Foot Valves as provided by Cla-Val Newport Beach, CA U.S.A.



Series 583 “Tite Seal” Foot Valves



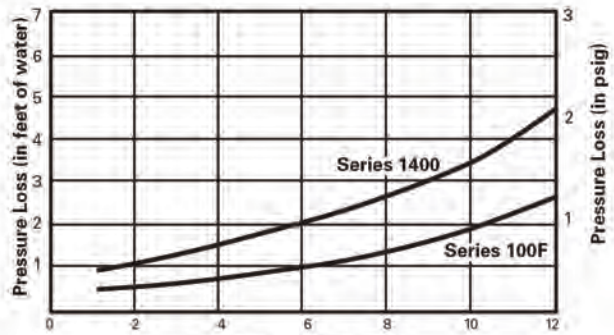
125# Class						
Size	**Model**	**A**	**B**	**C**	**O.D.**	**Weight**
3" / 80	1403	6" / 152	4.875" / 124	7.5" / 191	5.625" / 143	38 / 17
4" / 100	1404	7.25" / 184	4.875" / 124	9" / 229	7.375" / 187	51 / 23
5" / 125	1405	8.5" / 216	5" / 127	10" / 254	9.25" / 235	72 / 33
6" / 150	1406	9" / 229	5" / 127	11" / 279	10" / 254	95 / 43
8" / 200	1408	10.125" / 257	5.125" / 130	13.5" / 343	13.125" / 333	146 / 66
10" / 250	1410	12" / 305	5.125" / 130	16" / 406	16.75" / 425	218 / 99
12" / 300	1412	14.375" / 365	5" / 127	19" / 483	20.125" / 511	335 / 152
14" / 350	1414	15.75" / 400	5.375" / 137	21" / 533	22.375" / 568	450 / 204
16" / 400	1416	17.625" / 448	5.375" / 137	23.5" / 597	25.375" / 645	570 / 259
18" / 450	1418	18.75" / 476	5" / 127	25" / 635	27.75" / 705	700 / 318
20" / 500	1420	20.625" / 524	5.5" / 140	27.5" / 699	31.125" / 791	845 / 383
24" / 600	1424	24" / 610	7" / 178	32" / 813	37" / 940	1595 / 723
30" / 750	1430	29.25" / 743	7" / 178	38.75" / 984	45.25" / 1149	2020 / 916
36" / 900	1436	45" / 1143	8" / 203	40" / 1016	53.25" / 1353	4185 / 1898

Inch / Millimeter lbs / kg

Item	Description	Material
1	Body	Ductile Iron ASTM 536 65-45-12
2	Seat	Bronze ASTM B584 with BUNA-N Seal
3	Plug	Bronze ASTM B584
4	Bolts & Nuts	Steel ASTM A307 GR. B
5	Bushing	Bronze ASTM B584
8	Strainer	Stainless Steel T302
9	Gasket	Lexida

Series 583 Valves meet Federal Mandate for Lead Content Limits

Typical Friction Loss Chart



1701 Placentia Ave • Costa Mesa CA 92627 • Phone: 949-722-4800 • Fax: 949-548-5441 • E-mail: info@cla-val.com • www.cla-val.com

Type F—Pumptrol™ Water Pump Pressure Switches

Class 9013 / Refer to Catalog 9013CT9701 (http://www.schneider-electric.com/downloads/us/en/document/9013CT9701)

Type F Pressure Switch Selection and Features

PUMPTROL™

Pressure Switch

(/portals/ui/digest/viewer/561d5d65e4b0c5c41a243bf2/nocontext/Master%20Bookmap%20Content/pumptrol%20logo_93_0000062840.eps)

- Designed for the control of electrically driven water pumps. Diaphragm actuated.
- Type FSG is the standard water pump switch, suitable for all types of pumps: jets, submersible, reciprocating, etc.
- Type FYG is designed to meet higher horsepower and pressure requirements.
- Type FRG is reverse acting: contacts open on falling pressure.

Pressure Codes [1]

Standard Action Devices		Reverse Action Devices	
Settings	**Code**	**Settings**	**Code**
5–21 psi	J15	10–5 psi	J36
8–20 psi	J16	22–12 psi	J22
20–40 psi	J20	22–16 psi	J19
20–50 psi	J18	35–20 psi	J70
30–50 psi	J21	40–20 psi	J23
40–60 psi	J24	50–30 psi	J35
50–70 psi	J33	150–120 psi	J64[2]
60–80 psi	J25		
Specify other pressure	J99[2]	Specify other pressure	J99[2]

Standard Action: Contacts Open On Rising Pressure

Cut-out Range (psig)	Approximate Adjustable Differential (psig)	Cut-in Range (psig)	Pressure Connection	2 Pole NEMA 1 Type	2 Pole NEMA 3R[3] Type
20–65	15–30	5–45	1/4" NPSF internal	FSG2 (http://www.schneider-electric.com/products/US/en/products/9013FSG2)	FSW2 (http://www.schneider-electric.com/products/US/en/products/9013FSW2)
			1/4" NPT external	FSG9 (http://www.schneider-electric.com/products/US/en/products/9013FSG9)	FSW9 (http://www.schneider-electric.com/products/US/en/products/9013FSW9)
			1/4" bayonet (barbed)	FSG10 (http://www.schneider-electric.com/products/US/en/products/9013FSG10)	FSW10 (http://www.schneider-electric.com/products/US/en/products/9013FSW10)
			90° elbow 1/4" bayonet	FSG20 (http://www.schneider-electric.com/products/US/en/products/9013FSG20)	FSW20 (http://www.schneider-electric.com/products/US/en/products/9013FSW20)
20–50	10–30	10–30	1/4" NPSF internal	FSG22 (http://www.schneider-electric.com/products/US/en/products/9013FSG22)	FSW22 (http://www.schneider-electric.com/products/US/en/products/9013FSW22)
20–60	10–30	10–45	1/4" NPT external	FSG29 (http://www.schneider-electric.com/products/US/en/products/9013FSG29)	FSW29 (http://www.schneider-electric.com/products/US/en/products/9013FSW29)
9–30	6–20	3–10	1/4" NPSF internal	FSG42 (http://www.schneider-electric.com/products/US/en/products/9013FSG42)	FSW42 (http://www.schneider-electric.com/products/US/en/products/9013FSW42)
9–30	6–20	3–10	1/4" NPT external	FSG49 (http://www.schneider-electric.com/products/US/en/products/9013FSG49)	FSW49 (http://www.schneider-electric.com/products/US/en/products/9013FSW49)
25–80	20–30	5–60	1/4" NPSF internal	FSG52	—
			1/4" NPT external	FSG59	—
34–65	15–30	19–45	(FSG1 through 20 with Form M4 is only available in this range)		
25–80	20–30	5–60	1/4" NPSF internal	FYG2 (http://www.schneider-electric.com/products/US/en/products/9013FYG2)	FYW2 (http://www.schneider-electric.com/products/US/en/products/9013FYW2)
			1/4" NPT external	FYG9 (http://www.schneider-electric.com/products/US/en/products/9013FYG9)	FYW9 (http://www.schneider-electric.com/products/US/en/products/9013FYW9)

Cut-out Range (psig)	Approximate Adjustable Differential (psig)	Cut-in Range (psig)	Pressure Connection	2 Pole NEMA 1 Type	2 Pole NEMA 3R Type
			1/4" bayonet (barbed)	FYG10 (http://www.schneider-electric.com/products/US/en/products/9013FYG10)	FYW10 (http://www.schneider-electric.com/products/US/en/products/9013FYW10)
			90° elbow 1/4" bayonet	FYG20 (http://www.schneider-electric.com/products/US/en/products/9013FYG20)	FYW20 (http://www.schneider-electric.com/products/US/en/products/9013FYW20)
39–80	20–30	19–60	(FYG1 through 20 with Form M4 is only available in this range)		
20–50	10–30	10–30	1/4" NPSF internal	FYG22 (http://www.schneider-electric.com/products/US/en/products/9013FYG22)	FYW22 (http://www.schneider-electric.com/products/US/en/products/9013FYW22)
20–60	10–30	10–45	1/4" NPT external	FYG29 (http://www.schneider-electric.com/products/US/en/products/9013FYG29)	FYW29 (http://www.schneider-electric.com/products/US/en/products/9013FYW29)
9–40	6–30	3–10	1/4" NPSF internal	FYG42 (http://www.schneider-electric.com/products/US/en/products/9013FYG42)	FYW42 (http://www.schneider-electric.com/products/US/en/products/9013FYW42)
9–40	6–30	3–10	1/4" NPT external	FYG49 (http://www.schneider-electric.com/products/US/en/products/9013FYG49)	FYW49 (http://www.schneider-electric.com/products/US/en/products/9013FYW49)

Maximum Allowable Pressure for All 9013 Switches

Type	Pressure
FHG, FSG, FYG, FSW, FYW, FRG	220 psig
GHB, GHG, GSB, GSG	300 psig
GMG, GSR, GSW	100 psig
GHR, GHW	250 psig

Temperature Limitations for All 9013 Switches

Operation (Media)	Storage
Min. -36 °C (-33 °F) Max. +125 °C (+257 °F)	Min. -36 °C (-33 °F) Max. +125 °C (+257 °F)

Reverse Action: Contacts Open On Falling Pressure

Cut-in Range (psig)	Approximate Adjustable Differential (psig)	Cut-out Range (psig)	Pressure Connection	1-Pole Type	2-Pole Type
23–65	15–30	8–45	1/4" NPSF internal	FRG12 (http://www.schneider-electric.com/products/US/en/products/9013FRG12)	FRG2 (http://www.schneider-electric.com/products/US/en/products/9013FRG2)
			3/8" NPSF internal	FRG13 (http://www.schneider-electric.com/products/US/en/products/9013FRG13)	FRG3 (http://www.schneider-electric.com/products/US/en/products/9013FRG3)
			1/4" NPT external	FRG19 (http://www.schneider-electric.com/products/US/en/products/9013FRG19)	FRG9 (http://www.schneider-electric.com/products/US/en/products/9013FRG9)
10–45	6–20	4–25	1/4" NPSF internal	FRG32 (http://www.schneider-electric.com/products/US/en/products/9013FRG32)	FRG22 (http://www.schneider-electric.com/products/US/en/products/9013FRG22)
			3/8" NPSF internal	FRG33 (http://www.schneider-electric.com/products/US/en/products/9013FRG33)	FRG23 (http://www.schneider-electric.com/products/US/en/products/9013FRG23)
			1/4" NPT external	FRG39 (http://www.schneider-electric.com/products/US/en/products/9013FRG39)	FRG29 (http://www.schneider-electric.com/products/US/en/products/9013FRG29)
6–14	5, Fixed	1–9	1/4" NPSF internal	FRG52 (http://www.schneider-electric.com/products/US/en/products/9013FRG52)	FRG42 (http://www.schneider-electric.com/products/US/en/products/9013FRG42)
			3/8" NPSF internal	FRG53 (http://www.schneider-electric.com/products/US/en/products/9013FRG53)	FRG43 (http://www.schneider-electric.com/products/US/en/products/9013FRG43)
			1/4" NPT external	FRG59 (http://www.schneider-electric.com/products/US/en/products/9013FRG59)	FRG49 (http://www.schneider-electric.com/products/US/en/products/9013FRG49)
40–100	20–30	20–80	1/4" NPSF internal	FRG72 (http://www.schneider-electric.com/products/US/en/products/9013FRG72)	FRG62 (http://www.schneider-electric.com/products/US/en/products/9013FRG62)
			3/8" NPSF internal	FRG73 (http://www.schneider-electric.com/products/US/en/products/9013FRG73)	FRG63 (http://www.schneider-electric.com/products/US/en/products/9013FRG63)
65–150	30–45	35–120	1/4" NPSF internal	FRG92 (http://www.schneider-electric.com/products/US/en/products/9013FRG92)	FRG82 (http://www.schneider-electric.com/products/US/en/products/9013FRG82)
			3/8" NPSF internal	FRG93 (http://www.schneider-electric.com/products/US/en/products/9013FRG93)	FRG83 (http://www.schneider-electric.com/products/US/en/products/9013FRG83)
			1/4" NPT external	FRG99 (http://www.schneider-electric.com/products/US/en/products/9013FRG99)	FRG89 (http://www.schneider-electric.com/products/US/en/products/9013FRG89)

Ordering Information

- Specify Class 9013 Type F.
- Select the pressure code from the Pressure Code table above, and add the code designation to the end of the Type number. Ensure that the pressure rating of the code falls within the limits of the device as shown in Standard Action: Contacts Open On Rising Pressure (/portals/ui/digest/viewer/561d5d65e4b0c5c41a243bf2/561d5f9ae4b0c5c41a244844/r/_17722021_85944#_17722021_41544) and Reverse Action: Contacts Open On Falling Pressure (/portals/ui/digest/viewer/561d5d65e4b0c5c41a243bf2/561d5f9ae4b0c5c41a244844/r/_17722021_85944#_17722021_85760).
- To order special features from Special Features and Modifications for Type FSG, FYG & FRG Devices (/portals/ui/digest/viewer/561d5d65e4b0c5c41a243bf2/561d5f9ae4b0c5c41a244844/r/_17722021_85944#_17722021_90083)[4], add the appropriate Form letter to the Class and Type. Arrange the Form letters in alphabetical order when ordering more than one special feature.

Electrical Ratings: see Electrical Ratings For All 9013 Switches (/portals/ui/digest/viewer/561d5d65e4b0c5c41a243bf2/561d5f9ae4b0c5c41a244844/r/_17722020_63667#FHGPressureSwitchSelectionAndFeatur-231F30062)
Dimensions: see FHG Pressure Switch Selection and Features (/portals/ui/digest/viewer/561d5d65e4b0c5c41a243bf2/561d5f9ae4b0c5c41a244844/r/_17722020_63667#FHGPressureSwitchSelectionAndFeatur-231F30062)
Renewal Parts Kits Renewal Parts for Class 9012–9038 Devices (/portals/ui/digest/viewer/561d5d65e4b0c5c41a243bf2/561d5f9ae4b0c5c41a244844/r/_17722028_63559#_17722028_Heading5_1082)

(/portals/ui/digest/viewer/561d5d65e4b0c5c41a243bf2/nocontext/Master%20Bookmap%20Content/ullogo_0000062679.eps)

File E12158 CCN NKPZ

(/portals/ui/digest/viewer/561d5d65e4b0c5c41a243bf2/nocontext/Master%20Bookmap%20Content/csalogo_0000062678.eps)

File LR25490

Note

Products on this page are UL Listed, however type numbers ending in 8, 10 or 20 (non rigid pressure lines) must have Form T or TI—otherwise these are UL component recognized.

Special Features and Modifications for Type FSG, FYG & FRG Devices [4]

Description	Applies to Types	Form
Bulk package	All Type F	[5]
One normally open—one normally closed contact	FRG 2-Pole only	H
Maintained manual cut-out lever (Auto-Off)	FSG, FYG	M1
Momentary manual cut-in lever (Auto-Start)	FRG2-59 only	M3
Low pressure cut-off (Auto-Start-Off) – Operates at approximately 10 psig below cut-in and will turn off the pump	FSG, FYG	M4
Maintained manual cut-in lever (Auto-On)	FRG2-59 only	M5
Pulsation plug (Type 2 & 9 only)	FRG, FSG, FYG	P[6]
Plastic flange (max. temp. 120 °F) (max. pressure 80 psi)	FSG•, FYG•, FRG•	Q8
Available only on Types FSG2, FYG2, FRG2, FSG•2, FYG•2, FRG•2	1/4" NPSF internal only	
1/2" conduit bushing, 1/2" long thread—on left	All Type F	T
Slip-on connectors (load side terminals *only*)	FSG, FYG	U
Slip-on connectors (line *and* load terminals)	FSG, FYG	U2
Black cover	FSG, FYG	Z22

Bulk Package Form Numbers for 9013F Pressure Switches

	Description	Bulk Package Quantity					
		16	20	40	50	400	500
Product without Forms M1, M3, M4, M5, T, X1	9013FHG (without 1/4" four-way)	—	C20		C50	—	—
	9013FHG4, 14, 24, 34, 44, 54 (with 1/4" four-way)	—	C20	—	C50	C400	—
	9013FRG	—	C20	—	C50	—	—
	9013FSG	—	C20	—	C50	—	—
	9013FYG	—	C20	—	C50	—	—
Product with Forms M1, M3, M4, M5	9013FHG (without 1/4" four-way)	—	C20	C40	—	—	—
	9013FHG4, 14, 24, 34, 44, 54 (with 1/4" four-way)	—	C20	C40	—	—	—
	9013FRG	—	C20	C40	—	—	—
	9013FSG	—	C20	C40	—	—	—
	9013FYG	—	C20	C40	—	—	—
Product with Forms T, X1	9013FHG (without 1/4" four-way)	C16	—	C40	—	—	—
	9013FHG4, 14, 24, 34, 44, 54 (with 1/4" four-way)	C16	—	C40	—	—	—
	9013FRG	C16	—	C40	—	—	—
	9013FSG	C16	—	C40	—	—	—
	9013FYG	C16	—	C40	—	—	—
9013FHG9 Special with Extended Flange		C16	—	—	—	—	C500

Footnotes

1. Existence of a code does not imply that the code is available for any or all devices.
2. Minimum order quantity is 4 pieces.
3. Must be mounted in vertical position to maintain enclosure rating.
4. Some product configurations are not available—contact your Schneider Electric representative for details.
5. For bulk package quantities and Form numbers, see Bulk Package Form Numbers for 9013F Pressure Switches (/portals/ui/digest/viewer/561d5d65e4b0c5c41a243bf2/561d5f9ae4b0c5c41a244844/r/_17722021_85944#_17722021_44115) on Type F Pressure Switch Selection and Features (/portals/ui/digest/viewer/561d5d65e4b0c5c41a243bf2/561d5f9ae4b0c5c41a244844/r/_17722021_85944#TypeFPressureSwitchSelectionAndFeat-2320F5122). If a Form is not specified, devices will be shipped individually packaged.
6. Nylon pulsation plug can be field installed on types having 1/4" NPSF internal connector.
   Part number 1530S6G1 is one bag of 50 plugs.

A.6 IRWM Moty Bid Contract Sample

SAN MATEO COUNTY RESOURCE CONSERVATION DISTRICT
PROFESSIONAL SERVICES AGREEMENT WITH
NAME OF CONTRACTOR

THIS AGREEMENT ("Agreement"), made and entered into this ____ day of _____, 2017 is by and between the **SAN MATEO COUNTY RESOURCE CONSERVATION DISTRICT,** a subdivision of the State of California, hereinafter referred to as "**RCD**," and **CONTRACTOR NAME**, hereinafter referred to as "**CONTRACTOR**."

WITNESSETH:

WHEREAS, RCD entered into Agreement No. 4600011486 with the California Department of Water Resources for the Coastal San Mateo County Drought Relief Phase II; and

WHEREAS, RCD desires to use the professional services of CONTRACTOR; and

WHEREAS, CONTRACTOR has the professional and administrative ability to implement such services; and

WHEREAS, RCD and CONTRACTOR desire to set forth in writing the obligations and responsibilities of each party relating to the services;

NOW, THEREFORE, in consideration of the promises and mutual benefits which will accrue to the parties hereto in carrying out the terms of this Agreement, the parties agree as follows:

1. **Scope of Services**
   a. CONTRACTOR will, in accordance with the terms of this Agreement, perform the services set forth in Exhibit A, ***Subcontractor – Drought Relief Phase II Scope of Work***, hereinafter referred to as **"PROJECT**", which is attached hereto and incorporated herein by reference.
   b. This Agreement is limited both in scope and duration, as herein specified.

2. **Term of Agreement**. The term of this Agreement shall commence on _____ and terminate on _____, but shall not become effective until executed by the parties.

3. **Performance Responsibilities.** Contractor shall complete the herein described services by no later than _____ unless a later date is agreed upon by the parties in writing. Time is and shall be of the essence in the performance of the specified services by CONTRACTOR.

4. **Compensation.**
   a. RCD agrees to pay CONTRACTOR an amount not to exceed amount as text**,** ($xxxxx.xx) for the successful and timely completion of the specified services.

b. In the event that the funding on which the above described contract services relies is materially reduced or made unavailable, despite the parties understandings and expectations that no such disruptions will occur, this Agreement will terminate immediately upon notice of such funding disruption by RCD to CONTRACTOR.

5. **Billing and Payment Procedure.** CONTRACTOR will submit requests for payment along with documentation acceptable to the RCD no more frequently than monthly and no less frequently than quarterly. RCD will issue payment to CONTRACTOR within 30 days of payment to the RCD by the project funder.

6. **Cooperation.** RCD and CONTRACTOR agree to cooperate in any way and every way or manner on the PROJECT. RCD will immediately transmit to CONTRACTOR any new information which becomes available or any change in plans. CONTRACTOR will likewise bring any new information, issues or concerns to the RCD's attention as soon as practicable.

7. **Assignment**. Without the written consent of RCD, this Agreement is not assignable by CONTRACTOR in whole or in part.

8. **Conflict of Interest**. The CONTRACTOR shall comply with all applicable State laws and rules pertaining to conflicts of interest, including but not limited to, Government Code Section 1090 and Public Contract Code 10410 and 10411.

9. **Applicable Laws.** All work performed on behalf of the RCD, as set forth in this Agreement shall be performed in accordance with all applicable state and federal laws, regulations, policies, procedures, and standards.

10. **Standard Conditions.** All work performed on behalf of the RCD, as set forth in this Agreement, shall be performed in accordance with the Standard Conditions (Exhibit C) of the funding agency.

11. **Wages**. All work implemented by the RCD, a public agency, is considered a public work or public improvement project. As public projects, they are subject to prevailing wage and other requirements included in California Labor Code §1720 -1861. Contractors, and any subcontractor under them, shall pay not less than the specified prevailing rates of wages to all workers employed in the execution of the Contract. Prevailing wage determinations can be found at Department of Industrial Relations website.

12. **No Benefit To Arise For Local Employees.** Except as provided by State law, no member, officer, or employee of RCD or its designees or agents, and no public official who exercises authority over or has responsibilities with respect to the Project during their tenure or for one (1) year thereafter, shall have any interest, direct or indirect, in any agreement or sub-agreement or the proceeds thereof, for work to be performed in connection with the services performed under this Agreement.

13. **Independent Contractor Status.** The CONTRACTOR, and the officers, the agents and employees of the CONTRACTOR, in the performance of the Agreement, shall act in an independent capacity and not as officers, employees or agents of the RCD. Nothing in this Agreement is intended nor shall be construed to create an employer-employee relationship, a joint venture relationship.

14. **Standard of Professionalism.** CONTRACTOR shall conduct all work consistent with professional standards for the industry and type of work being performed under this Agreement.

15. **Ownership of Materials.** Except as otherwise expressly stated in Exhibit A, all materials and work products, including data collected for the Work produced as a result of this Agreement are the property of the RCD. Any final products distributed or produced will acknowledge the CONTRACTOR, RCD, and other Funding Agencies as reasonably requested by the RCD. The RCD shall be entitled to use and publish the work product and deliverables under this Agreement.

16. **Indemnification.** To the fullest extent permitted by applicable law, CONTRACTOR agrees to defend, at CONTRACTOR's expense and with counsel acceptable to DISTRICT, indemnify, and save and hold harmless DISTRICT and all of its officers, directors, employees and agents, from and against any and all claims, suits, losses, causes of action, damages, liabilities, and expenses of any kind whatsoever arising out of the performance or nonperformance of the CONTRACTOR's work, including without limitation, all expenses of litigation and/or arbitration, court costs, and attorneys' fees, arising on account of or in connection with injuries to or the death of any person whomsoever, or any and all damages to property, regardless of possession or ownership, which injuries, death or damages arise from, or are in any manner connected with, the work performed by or for the CONTRACTOR under this Agreement, or are caused in whole or part by reason of the acts or omissions or presence of the person or property of the CONTRACTOR or any of its employees, agents, representatives and or suppliers.

17. **Insurance.** CONTRACTOR shall obtain and maintain for the duration of this Agreement, comprehensive general liability insurance and/or other insurance necessary to protect the parties hereto, and shall provide RCD with evidence thereof. CONTRACTOR shall have RCD named as an additional insured on its insurance policy, which shall have minimum coverage limits as specified on Exhibit B hereto, as is incorporated herein by reference. CONTRACTOR's above described insurance shall serve as the primary insurance coverage for any claim arising from or relating to the services to be performed hereunder.

18. **Non-discrimination.** CONTRACTOR will not discriminate in employment practices or in the delivery of services on the basis of race, color, creed, national origin, sex, age, marital status or physical or mental handicap.

19. Notices. Any notice required to be given pursuant to the terms and provisions of this Agreement shall be in writing and shall be sent first-class mail. Notice shall be deemed to be effective two (2) days after mailing to the following addresses:

To RCD:
Kellyx Nelson, Executive Director
San Mateo County Resource Conservation District
625 Miramontes Street, Suite 103
Half Moon Bay, CA 94019

To CONTRACTOR:
Name, title
Organization/Agency
Address 1
Address 2

20. Amendments and Integration. This Agreement supercedes all previous agreements or understandings, and constitutes the entire understanding between the parties with respect to the above referenced services, terms of compensation, and otherwise. This Agreement shall not be amended, except in a writing that is executed by authorized representatives of both parties.

21. Termination. This Agreement may be terminated for any of the following reasons:

a. If CONTRACTOR fails to perform the services hereunder agreed to the satisfaction of RCD, or otherwise fails to fulfill its obligations under this Agreement, immediately upon written notice from RCD; and
b. Upon notice from RCD to CONTRACTOR that the funding on which this Agreement is based has been materially disrupted or discontinued.

IN WITNESS WHEREFORE, the parties agree to the foregoing terms and conditions and hereby enter into this Agreement.

Date: _____By:_____
Name, Title
Organization/Agency Name

Date: _____By:_____
Kellyx Nelson, Executive Director
San Mateo County Resource Conservation District

EXHIBIT A
CONTRACTOR NAME – Drought Relief Phase II
Scope of Work

EXHIBIT B
INSURANCE

CONTRACTOR shall procure and maintain for the duration of this Agreement insurance against claims and injuries to persons or damages to property which may arise from or in connection with the work hereunder by CONTRACTOR, its agents, representatives, employees or subcontractors. The cost of such insurance shall be the sole responsibility of CONTRACTOR.

1. Minimum Scope of Coverage and Limits of Insurance:
    a. Comprehensive General Liability: $1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage.
    b. Automobile Liability: $500,000 combined single limit per accident for bodily injury and property damage.
    c. Worker's Compensation: Limits as set forth in the Labor Code of the State of California.

2. Contractors Liability Insurance Policy shall contain the following clauses:
    a. RCD is added as an additional insured as respects operation of the named insured formed under contract with RCD.
    b. It is agreed that any insurance maintained by RCD shall apply in excess of, and not contribute with, insurance provided by this policy.
    c. The insurer agrees to waive all rights of subrogation against RCD, its officers and employees for losses arising from work performed by CONTRACTOR for RCD.

3. Each insurance policy required herein shall be endorsed to state that coverage shall not be cancelled, limited, or non-renewed except after thirty (30) days written notice has been given to RCD. Certificates of insurance evidencing the coverage required by the clauses set forth above shall be filed with RCD within 10 working days to the effective date of this Agreement.

EXHIBIT C
STANDARD CONDITIONS

1: DRUG FREE WORKPLACE CERTIFICATION: Certification of Compliance: By signing this Agreement, the contractor or subcontractors hereby certify, under perjury under the laws of State of California, compliance with the requirements of the Drug-Free Workplace Act of 1990 and have or will provide a drug-free workplace by taking the following actions:

a. Public a statement notifying employees, contractors and subcontractors that unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited and specifying actions to be taken against employees, contractors, or subcontractors for violations, as required by Government Code §8355(a)(1).
b. Establish a Drug-Free Awareness Program, as required by Government Code §8355(a)(2) to inform employees, or subcontractors about all of the following:
    I. The dangers of drug abuse in the workplace,
    II. Grantee's policy of maintaining a drug-free workplace,
    III. Any available counseling, rehabilitation, and employee assistance programs, and,
    IV. Penalties that may be imposed upon employees and subcontractors for drug abuse violations.
c. Provide, as required by Government Code §8355(a)(3), that every employee and/or subcontractor who works under this Agreement:
    I. Will receive a copy of Grantee's drug-free policy statement, and
    II. Will agree to abide by terms of Grantee's condition of employment, contract, or subcontract.

2: INSPECTIONS OF PROJECT BY STATE: State shall have the right to inspect the work being performed at any and all reasonable times during the term of the Agreement. This right shall extend to any subcontracts, and CONTRACTOR shall include provisions ensuring such access in all contracts entered into pursuant to its Grant Agreement with State.

3: LABOR COMPLIANCE: The CONTRACTOR will be required to keep informed of and take all measures necessary to ensure compliance with applicable Labor Code requirements, including, but not limited to §1720 et seq. of the Labor Code regarding public works, limitations on use of volunteer labor (Labor Code §1720.4), labor compliance programs (Labor Code §1171.5) and payment of prevailing wages for work done and funded pursuant to these guidelines, including any payments to the Department of Industrial Relations under Labor Code §1771.3.

4: NONDISCRIMINATION: During the performance of this Agreement, CONTRACTOR or subcontractors shall not unlawfully discriminate, harass, or allow harassment against any employee or applicant for employment because of sex (gender), sexual orientation, race, color, ancestry, religion, creed, national origin (including language use restriction), pregnancy, physical disability (including HIB and AIDS), mental disability, medical condition (cancer/genetic characteristics), age (over 40), marital status, and denial of medical and family care leave or

pregnancy disability leave. CONTRACTOR and its subcontractors shall ensure that the evaluation and treatment of their employees and applicants for employment are free from such discrimination and harassment. CONTRACTOR and its subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Government Code §12990 (a-f) et seq.) and the applicable regulations promulgated there under (California Code of Regulations, Title 2, §7285 et seq.). The applicable regulations of the Fair Employment and Housing Commission Implementing Government Code §12990 (a-f), set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations, and are incorporated into this Agreement by reference and made a part hereof as if set forth in full. CONTRACTOR and its subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement.

5: TRAVEL: Travel and per diem costs shall NOT be eligible for reimbursement with State funds. Travel includes the costs of transportation, subsistence, and other associated costs incurred by personnel during the term of this Agreement.

6: WORKERS' COMPENSATION: CONTRACTOR affirms that it is aware of the provisions of §3700 of the Labor Code, which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and CONTRACTOR affirms that it will comply with such provisions before commencing the performance of the work under this Agreement.

7: ENVIRONMENTAL QUALITY: CONTRACTOR shall comply with all applicable standards, orders, or requirements issued under Section 306 of the Clean Air Act, Title 42 U.S.C. 1857 (H), Section 508 of the Clean Air Act, Title 33 U.S.C. 1368 Executive Order 11738, and Title 40 CFR Part 15. CONTRACTOR will comply with mandatory standards and policies related to energy efficiency which are contained in the State Energy Conservation Plan issued in compliance with the Conservation Act (Publ L. 94-163). CONTRACTOR will also comply with any special permit conditions prescribed by regulatory agencies for the Project.

i. The CONTRACTOR shall not be (1) in violation of any order or resolution not subject to review promulgated by the State Air Resources Board; (2) subject to cease and desist order not subject to review issued pursuant to Section 13301 of the Water Code for violation of waste discharge requirements or discharge prohibitions; or (3) finally determined to be in violation of provisions of and federal or State of California law relating to air or water pollution.
ii. All activities covered by this contract must be in compliance with the California Environmental Quality Act (CEQA). (Public Resources Code §21000 et seq.)

8: AMERICANS WITH DISABILTIY ACT: By signing this Agreement, CONTRACTOR assures that it is in compliance with the Americans with Disabilities Act (ADA) of 1990, (42 U.S.C., 12101 et seq.), which prohibits discrimination of the basis of disability, as well as all applicable regulations and guidelines issued pursuant to the ADA.

9: RIGHTS IN DATA: CONTRACTOR agrees that all data including notes and other written and graphic work produced in performance of this Agreement are subject to the rights of the State of California. The State shall have the right to reproduce, publish and use all such work, or any part thereof, in any manner and for any purpose whatsoever and to authorize others to do so.

10: **RECORDS:** CONTRACTOR is hereby notified of the rights of the auditors of the State of California to examine records of the CONTRACTOR and any subcontractors relative to the services and materials provided under this Agreement. The CONTRACTOR agrees to expeditiously provide throughout the term of this Agreement, such reports, data, information, and certifications as may be reasonably required by the RCD or by the State.

11: STANDARDS IN FINANCIAL MANAGEMENT SYSTEM: CONTRACTOR shall maintain fiscal control and accounting procedures which are sufficient to:

i. Permit preparation of reports required by Title 48 CFR Part 31 (including those required by Title 48 CFR Part 31.40 and 31.41) and statutes authorizing the grant to the RCD;
ii. Permit tracing of funds to a level of expenditures adequate to establish that such funds have not be used in violation of the restrictions and prohibitions of applicable statutes;

A requirement to this effect shall be placed in all subcontractors related to performance of work under this Agreement.

EXHIBIT C
Local Project Sponsor Agreement between ABAG/SFEP and
San Mateo County Resource Conservation District- Agreement 4600011486

GRANT AGREEMENT BETWEEN THE STATE OF CALIFORNIA (DEPARTMENT OF WATER RESOURCES) AND ASSOCIATION OF BAY AREA GOVERNMENTS
AGREEMENT NUMBER 4600011486
2015 PROPOSITION 84 INTEGRATED REGIONAL WATER MANAGEMENT (IRWM) IMPLEMENTATION GRANT
CALIFORNIA PUBLIC RESOURCES CODE § 75026 ET SEQ.

THIS GRANT AGREEMENT is entered into by and between the Department of Water Resources of the State of California, herein referred to as the "State" or "DWR" and the Association of Bay Area Governments, a public agency in the State of California, duly organized, existing, and acting pursuant to the laws thereof, herein referred to as the "Grantee", which parties do hereby agree as follows:

1. PURPOSE. State shall provide funding from the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 to Grantee to assist in financing projects associated with the San Francisco Bay Area IRWM Region Plan pursuant to Chapter 8 (commencing with §79560) of Division 26.5 of the California Water Code (CWC), hereinafter collectively referred to as "IRWM Program."

2. TERM OF GRANT AGREEMENT. The term of this Grant Agreement begins on the date this Grant Agreement is executed by State, and terminates on December 31, 2020, or when all of the Parties' obligations under this Grant Agreement are fully satisfied, whichever occurs earlier. Execution date is the date the State signs this Grant Agreement.

3. GRANT AMOUNT. The maximum amount payable by the State under this Grant Agreement shall not exceed $21,469,025.

4. GRANTEE COST SHARE. Grantee agrees to fund the difference between the Total Project Cost and the Grant Amount (amount specified in Paragraph 3). Grantee Cost Share consists of Funding Match and Additional Cost Share, as documented in Exhibit B (Budget). Additional Cost Share will not be reviewed by the State for invoicing purposes; however, the Grantee is required to maintain all financial records associated with the project in accordance with Exhibit I (State Audit Document Requirements and Funding Match Guidelines for Grantees).

5. FUNDING MATCH. Grantee is required to provide a Funding Match (non-State funds) of not less than 25 percent of the Grand Total of all the total project costs unless a Disadvantaged Community project waiver is granted. Grantee agrees to provide Funding Match for the amount as documented in Exhibit B (Budget), and may include expenses directly related to Exhibit A (Work Plan) after January 1, 2011.

6. GRANTEE'S RESPONSIBILITY. Grantee and its representatives shall:
   a) Faithfully and expeditiously perform or cause to be performed all project work as described in Exhibit A (Work Plan) and in accordance with Exhibit B (Budget) and Exhibit C (Schedule).
   b) Accept and agree to comply with all terms, provisions, conditions, and written commitments of this Grant Agreement, including all incorporated documents, and to fulfill all assurances, declarations, representations, and statements made by Grantee in the application, documents, amendments, and communications filed in support of its request for Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 financing.
   c) Comply with all applicable California laws and regulations.
   d) Implement the Projects in accordance with applicable provisions of the law.
   e) Fulfill its obligations under the Grant Agreement, and be responsible for the performance of the projects.

7. LOCAL PROJECT SPONSOR'S RESPONSIBILITY. Grantee shall assign Local Project Sponsors to act on behalf of Grantee for the purposes of individual project management, oversight, compliance, and operations and maintenance. Local Project Sponsors shall be assigned in accordance with the participating agencies identified in the Bay Area Regional Climate Change Preparedness grant application. Exhibit F identifies Local Project Sponsors. Local Project Sponsors shall also act on behalf of Grantee in the fulfillment of Grantee responsibilities where specifically specified in this Grant Agreement.

8. BASIC CONDITIONS. State shall have no obligation to disburse money for projects under this Grant Agreement until Grantee has satisfied the following conditions (if applicable):

a) Grantee and Local Project Sponsors demonstrate the availability of sufficient funds to complete each project by submitting the most recent 3 years of audited financial statements and submitting an Audited Financial Statement Summary for each Local Project Sponsor.
b) Grantee must demonstrate compliance with the groundwater compliance options set forth on pages 14 and 15 of the IRWM Program Guidelines, dated May 2015.
c) Grantee submits deliverables as specified in Paragraph 19 of this Grant Agreement and in Exhibit A.
d) Prior to the commencement of construction or implementation activities, Grantee shall submit the following to the State for each project:

1) Final plans and specifications certified by a California Registered Professional (Civil Engineer or Geologist, as appropriate) for the approved projects as listed in Exhibit A of this Grant Agreement.
2) Environmental Documentation:

i) Grantee submits to the State all applicable environmental permits,
ii) Documents that satisfy the CEQA process are received by the State,
iii) State has completed its CEQA compliance review as a Responsible Agency, and
iv) Grantee receives written concurrence from the State of Lead Agency's CEQA documents and State notice of verification of environmental permit submittal.

State's concurrence of Lead Agency's CEQA documents is fully discretionary and shall constitute a condition precedent to any work (i.e., construction or implementation activities) for which it is required. Once CEQA documentation has been completed, State will consider the environmental documents and decide whether to continue to fund the projects or to require changes, alterations or other mitigation. Grantee must also demonstrate that it has complied with all applicable requirements of the National Environmental Policy Act by submitting copies of any environmental documents, including environmental impact statements, Finding of No Significant Impact, and mitigation monitoring programs as may be required prior to beginning construction/implementation.

3) A monitoring plan as required by Paragraph 21, "Project Monitoring Plan Requirements."

9. DISBURSEMENT OF FUNDS. State will disburse to Grantee the amount approved, subject to the availability of funds through normal State processes. Notwithstanding any other provision of this Grant Agreement, no disbursement shall be required at any time or in any manner which is in violation of, or in conflict with, federal or state laws, rules, or regulations, or which may require any rebates to the federal government, or any loss of tax-free status on state bonds, pursuant to any federal statute or regulation.

10. ELIGIBLE PROJECT COST. Grantee shall apply State funds received only to Eligible Project Costs in accordance with applicable provisions of the law and Exhibit B. Eligible project costs include the reasonable costs of studies, engineering, design, land and easement acquisition, legal fees, preparation of environmental documentation, environmental mitigations, monitoring, and project construction. Reasonable administrative expenses may be included as Total Project Costs and will depend on the complexity of the project preparation, planning, coordination, construction, acquisitions, and implementation. Reimbursable administrative expenses are the necessary costs incidentally but directly related to the projects including the portion of overhead and administrative expenses that are directly related to the projects included in this Grant Agreement in accordance with the standard accounting practices of the Grantee. Work performed on the projects after January 17, 2014, shall be eligible for reimbursement.

Costs that are not eligible for reimbursement with State funds cannot be counted as Funding Match. Costs that are not eligible for reimbursement include, but are not limited to the following items:

a) Costs, other than those noted above, incurred prior to the award date of the Grant.
b) Operation and maintenance costs, including post construction performance and monitoring costs.
c) Purchase of equipment that is not an integral part of a project.
d) Establishing a reserve fund.
e) Purchase of water supply.
f) Monitoring and assessment costs for efforts required after project construction is complete.

g) Replacement of existing funding sources for ongoing programs.
h) Travel and per diem costs (per diem includes subsistence and other related costs).
i) Support of existing agency requirements and mandates (e.g., punitive regulatory agency requirement).
j) Purchase of land in excess of the minimum required acreage necessary to operate as an integral part of a project, as set forth and detailed by engineering and feasibility studies.
k) Payment of principal or interest of existing indebtedness or any interest payments unless the debt is incurred after execution of this Grant Agreement, the State agrees in writing to the eligibility of the costs for reimbursement before the debt is incurred, and the purposes for which the debt is incurred are otherwise eligible costs. However, this will only be allowed as Grantee Cost Share (i.e., Funding Match).
l) Overhead not directly related to project costs.

11. METHOD OF PAYMENT.

a) **Reimbursement** – Submit a copy of invoice for costs incurred and supporting documentation to the DWR Project Manager via Grant Review and Tracking System (GRanTS). Additionally, the original invoice form with signature and date (in ink) of Grantee's Project Representative, as indicated on page 10 of this Grant Agreement, must be sent to the DWR Project Manager for approval. Invoices submitted via GRanTS shall include the following information:
   1) Costs incurred for work performed in implementing the project(s) during the period identified in the particular invoice.
   2) Costs incurred for any interests in real property (land or easements) that have been necessarily acquired for the project(s) during the period identified in the particular invoice for the implementation of a project.
   3) Invoices shall be submitted on forms provided by State and shall meet the following format requirements:
      i) Invoices must contain the date of the invoice, the time period covered by the invoice, and the total amount due.
      ii) Invoices must be itemized based on the categories (i.e., tasks) specified in Exhibit B. The amount claimed for salaries/wages/consultant fees must include a calculation formula (i.e., hours or days worked times the hourly or daily rate = the total amount claimed).
      iii) Sufficient evidence (e.g. receipts, copies of checks, time sheets) as determined by the State must be provided for all costs included in the invoice. Additional Cost Share shall be accounted for separately in the progress reports.
      iv) DWR Project Manager will notify Grantee, in a timely manner, when, upon review of an invoice, the State determines that any portion or portions of the costs claimed are not eligible costs or are not supported by documentation or receipts acceptable to State. Grantee may, within thirty (30) calendar days of the date of receipt of such notice, submit additional documentation to State to cure such deficiency(ies). After the disbursement requirements in Paragraph 8 "Basic Conditions" are met, State will disburse the whole or portions of State funding to Grantee, following receipt from Grantee via U.S. mail or Express mail delivery of a "wet signature" invoice for costs incurred, including Cost Share, and timely Quarterly Progress Reports as required by Paragraph 19 "Submission of Reports." Payment will be made no more frequently than monthly, in arrears, upon receipt of an invoice bearing the Grant Agreement number.

b) **Advanced Payment** – Water Code §10551 authorizes advance payment by State for projects which are sponsored by a nonprofit organization; a disadvantaged community (DAC); or, the proponent of a project that benefits a DAC. If these projects are awarded less than $1,000,000 in grant funds, the project proponent may receive an advanced payment of 50% of the grant award; the remaining 50% of the grant award will be reimbursed in arrears. Within 90 calendar days of execution of the Grant Agreement, the Grantee shall provide DWR an Advanced Payment Request. The Advanced Payment Request must contain the following:
   1) Documentation demonstrating that each Local Project Sponsor was notified about their eligibility to receive an advanced payment and a response from the Local Project Sponsor stating whether it wishes to receive the advanced payment or not.

2) If the Local Project Sponsor is requesting the advanced payment, the request must also include:
   i) A funding plan which shows how the advanced funds will be expended within 18 months of this Grant Agreement's execution. (i.e., for what, how much, and when)
   ii) A discussion of the Local Project Sponsor's financial capacity to complete the project once the advance funds have been expended.
3) If a Local Project Sponsor is requesting advanced payment, Grantee shall also submit a single Advance Payment invoice, containing the request for each qualified project, to the DWR Project Manager with signature and date (in ink) of Grantee's Project Representative, as indicated on page 10 of this Agreement. The Grantee shall be responsible for the timely distribution of the advanced funds to the individual Local Project Sponsors. Within 60 calendar days of receiving the Advanced Payment invoice and subject to the availability of funds, State will authorize payment of the advanced funds sought of 50% of the grant award for the qualified project(s).

The Advance Payment Invoice shall be submitted on forms provided by State and shall meet the following format requirements:

1) Invoice must contain the date of the invoice, the time period covered by the invoice, and the total amount due.
2) Invoice must be itemized based on the categories (i.e., tasks) specified in Exhibit B.
3) DWR Project Manager will notify Grantee, in a timely manner, when, upon review of an Advance Payment Invoice, the State determines that any portion or portions of the costs claimed are not eligible costs. Grantee may, within thirty (30) calendar days of the date of receipt of such notice, submit additional documentation to cure such deficiency(ies). After the disbursement requirements in Paragraph 8 "Basic Conditions" (8a) and 8b) only) are met, State will disburse the whole or portions of State funding to Grantee, following receipt from Grantee via US mail or Express mail delivery of a "wet signature" invoice for costs incurred, including Cost Share, and timely Progress Reports as required by Paragraph 19 "Submission of Reports."

On a quarterly basis, the Grantee will submit an Accountability Report to DWR that demonstrates how actual expenditures compare with the scheduled budget. The Accountability Report shall include the following information:

1) An itemization of how advanced funds have been expended to date (Expenditure Summary), including documentation that supports the expenditures (e.g. contractor invoices, receipts, personnel hours, etc.). Invoices must be itemized based on the categories (i.e., tasks) specified in Exhibit B.
2) A funding plan which shows how the remaining advanced funds will be expended.
3) Documentation that the funds were placed in a non-interest bearing account, including the dates of deposits and withdrawals from that account.

DWR Project Manager will notify Grantee, in a timely manner, when, upon review of the Expenditure Summary, the State determines that any portion or portions of the expenditures claimed are not eligible costs. Grantee may, within thirty (30) calendar days of the date of receipt of such notice, submit additional documentation to cure such deficiency(ies). If costs are not consistent with the tasks in Exhibit B, the State will reject the claim and remove them from the Expenditure Summary.

Once Grantee has expended all advanced funds, then the method of payment will revert to the reimbursement process specified in Paragraph 11a) and any remaining requirements of Paragraph 8.

12. REPAYMENT OF ADVANCES. State may demand repayment from Grantee of all or any portion of the advanced State funding along with interest at the California general obligation bond interest rate at the time the State notifies the Grantee, as directed by State, and take any other action that it deems necessary to protect its interests for the following conditions:
    a) A project is not being implemented in accordance with the provisions of this Grant Agreement.
    b) Grantee has failed in any other respect to comply with the provisions of this Grant Agreement, and if Grantee does not remedy any such failure to State's satisfaction.

Repayment amounts may also include:

c) Advance funds which have not been expended within 18 months of the Grant Agreement's execution by the Local Project Sponsor.
d) Actual costs incurred are not consistent with the Exhibit A (Work Plan) activities, not supported, or are ineligible.
e) At the completion of the project, the funds have not been expended.

For conditions 12c) and 12d), repayment may consist of deducting the amount from future reimbursement invoices.

State may consider Grantee's refusal to repay the requested advanced amount a substantial breach of this Grant Agreement subject to the default provisions in Paragraph 14, "Default Provisions." If State notifies Grantee of its decision to demand repayment or withhold the entire funding amount from Grantee pursuant to this paragraph, this Grant Agreement shall terminate upon receipt of such notice by Grantee and the State shall no longer be required to provide funds under this Grant Agreement and the Grant Agreement shall no longer be binding on either party.

13. WITHHOLDING OF DISBURSEMENTS BY STATE. If State determines that a project is not being implemented in accordance with the provisions of this Grant Agreement, or that Grantee has failed in any other respect to comply with the provisions of this Grant Agreement, and if Grantee does not remedy any such failure to State's satisfaction, State may withhold from Grantee all or any portion of the State funding and take any other action that it deems necessary to protect its interests. Where a portion of the State funding has been disbursed to the Grantee and State notifies Grantee of its decision not to release funds that have been withheld pursuant to Paragraph 14, the portion that has been disbursed shall thereafter be repaid immediately with interest at the California general obligation bond interest rate at the time the State notifies the Grantee, as directed by State. State may consider Grantee's refusal to repay the requested disbursed amount a contract breach subject to the default provisions in Paragraph 14, "Default Provisions." If State notifies Grantee of its decision to withhold the entire funding amount from Grantee pursuant to this paragraph, this Grant Agreement shall terminate upon receipt of such notice by Grantee and the State shall no longer be required to provide funds under this Grant Agreement and the Grant Agreement shall no longer be binding on either party.

14. DEFAULT PROVISIONS. Grantee (and a Local Project Sponsor receiving grant funding through this Grant Agreement) will be in default under this Grant Agreement if any of the following occur:

a) Substantial breaches of this Grant Agreement, or any supplement or amendment to it, or any other agreement between Grantee and State evidencing or securing Grantee's obligations.
b) Making any false warranty, representation, or statement with respect to this Grant Agreement or the application filed to obtain this Grant Agreement.
c) Failure to maintain an adopted IRWM Plan that meets the requirements contained in Part 2.2 of Division 6 of the CWC, commencing with §10530.
d) Failure to operate or maintain project(s) in accordance with this Grant Agreement (Paragraph 20).
e) Failure to make any remittance required by this Grant Agreement.
f) Failure to comply with Labor Compliance Program requirements (Paragraph 18).
g) Failure to submit timely progress reports.
h) Failure to routinely invoice State.
i) Failure to meet any of the requirements set forth in Paragraph 15, "Continuing Eligibility."

Should an event of default occur, State shall provide a notice of default to the Grantee and shall give Grantee at least ten (10) calendar days to cure the default from the date the notice is sent via first-class mail to the Grantee. If the Grantee fails to cure the default within the time prescribed by the State, State may do any of the following:

a) Declare the funding be immediately repaid, with interest, at the California general obligation bond interest rate at the time the State notifies the Grantee of the default.
b) Terminate any obligation to make future payments to Grantee.

c) Terminate the Grant Agreement.
d) Take any other action that it deems necessary to protect its interests.

In the event State finds it necessary to enforce this provision of this Grant Agreement in the manner provided by law, Grantee agrees to pay all costs incurred by State including, but not limited to, reasonable attorneys' fees, legal expenses, and costs.

15. CONTINUING ELIGIBILITY. Grantee must meet the following ongoing requirement(s) to remain eligible to receive State funds:

a) An urban water supplier that receives grant funds governed by this Grant Agreement shall:

1) Maintain compliance with the Urban Water Management Planning (UWMP) Act (Water Code §10610 *et. seq.*) and Sustainable Water Use and Demand Reduction, Part 2.55 of Division 6 (Water Code §10608 *et. Seq.*). Urban water suppliers that submitted AB 1420 compliance Table 2 in the 2015 Implementation Grant Application must submit, until June 30, 2016, either:

i) List of tasks to implement the best management practices listed in AB 1420 compliance Table 2 and a corresponding schedule and budget or;

ii) The progress toward the 2015 interim Gallons per Capita per Day (GPCD) target. If not meeting the interim target also include a schedule, financing plan, and budget for achieving the GPCD, as required pursuant to Water Code §10608.24.

By July 1, 2016 all urban water suppliers must submit documentation that demonstrates they are meeting the 2015 interim GPCD target. If not meeting the interim target, also include a schedule, financing plan, and budget for achieving the GPCD, as required pursuant to Water Code §10608.24. Starting June 30, 2017, those urban water suppliers that did not meet their 2015 GPCD target must also submit, by June 30, annual reports that include a schedule, financing plan, and budget for achieving the GPCD (Water Code §10608.24).

2) Have their 2010 UWMP deemed consistent by DWR. The 2015 UWMP update must be submitted to DWR by July 1, 2016. If the 2015 UWMP is not submitted to DWR by July 1, 2016, funding disbursements to the urban water supplier will cease until the 2015 UWMP is submitted. If the 2015 UWMP is deemed inconsistent by DWR, the urban water supplier will be ineligible to receive funding disbursements until the inconsistencies are addressed and DWR deems the UWMP consistent. For more information, visit the following website: http://www.water.ca.gov/urbanwatermanagement.

b) An agricultural water supplier receiving grant funding must:

1) Comply with Sustainable Water Use and Demand Reduction requirements outlined in Part 2.55 (commencing with §10608) of Division 6 of the Water Code. Before July 1, 2016, submit a schedule, financing plan, and budget for implementation of the efficient water management practices, required pursuant to Water Code §10608.48.

2) Have their Agricultural Water Management Plan (AWMP) deemed consistent by DWR. The most recent AWMP update must have been submitted to DWR by December 31, 2015. To maintain eligibility and continue funding disbursements, an agricultural water supply must have their 2015 AWMP deemed consistent by DWR on or before October 1, 2016. For more information, visit the following website: http://www.water.ca.gov/wateruseefficiency/agricultural/agmgmt.cfm.

c) Grantees diverting surface water must maintain compliance with diversion reporting requirements as outlined in Part 5.1 of Division 2 of the Water Code.
d) Projects with potential groundwater impacts must demonstrate compliance with the groundwater compliance options set forth on pages 14 and 15 of the IRWM Program Guidelines, dated May 2015.
e) Project Proponents that have been designated as monitoring entities under the California Statewide Groundwater Elevation Monitoring (CASGEM) Program must maintain reporting compliance, as required by Water Code §10920 and the CASGEM Program.

16. PERMITS, LICENSES, APPROVALS, AND LEGAL OBLIGATIONS. Grantee shall be responsible for obtaining any and all permits, licenses, and approvals required for performing any work under this Grant Agreement, including those necessary to perform design, construction, or operation and maintenance of the Projects. Grantee shall be responsible for observing and complying with any applicable federal, state, and local laws, rules or regulations affecting any such work, specifically those including, but not limited to, environmental, procurement, and safety laws, rules, regulations, and ordinances. Grantee shall provide copies of permits and approvals to State.

17. RELATIONSHIP OF PARTIES. Grantee is solely responsible for design, construction, and operation and maintenance of projects within the work plan. Review or approval of plans, specifications, bid documents, or other construction documents by State is solely for the purpose of proper administration of funds by State and shall not be deemed to relieve or restrict responsibilities of Grantee under this Grant Agreement.

18. LABOR COMPLIANCE. Grantee agrees to comply with all applicable California Labor Code requirements and Standard Condition D.28 in Exhibit D. Grantee must, independently or through a third party, adopt and enforce a Department of Industrial Relations-certified Labor Compliance Program (LCP) meeting the requirements of Labor Code §1771.5 for projects funded by:
    a) Proposition 84 (Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006; Public Resources Code §75075 *et seq.*) or
    b) Any other funding source requiring an LCP.

    At the State's request, Grantee must promptly submit written evidence of Grantee's compliance with the LCP requirements.

19. SUBMISSION OF REPORTS. The submittal and approval of all reports is a requirement for the successful completion of this Grant Agreement. Reports shall meet generally accepted professional standards for technical reporting and shall be proofread for content, numerical accuracy, spelling, and grammar prior to submittal to State. If requested, Grantee shall promptly provide any additional information deemed necessary by State for the approval of reports. Reports shall be presented in the formats described in the applicable portion of Exhibit G. The timely submittal of reports is a requirement for initial and continued disbursement of State funds. Submittal and subsequent approval by the State of a Project Completion Report is a requirement for the release of any funds retained for such projects.
    a) Progress Reports: Grantee shall submit progress reports on a regular and consistent basis to meet the State's requirement for disbursement of funds. The reporting period shall not exceed one quarter in length. The progress reports shall be sent via e-mail to the State's Project Manager and shall be uploaded into GRanTS at the frequency specified in Exhibit C (Schedule). The progress reports shall provide a brief description of the work performed during the reporting period including: Grantee's activities, milestones achieved, any accomplishments, and any problems encountered in the performance of the work under this Agreement.

    b) Accountability Report: Grantee shall submit, on a quarterly basis, an Accountability Report by individual Local Project Sponsor that at a minimum:
        1) An itemization of how advanced funds have been expended to date (Expenditure Summary), including documentation that supports the expenditures (e.g. contractor invoices, receipts, personnel hours, etc.). Invoices must be itemized based on the categories (i.e., tasks) specified in Exhibit B.
        2) A funding plan which shows how the remaining advanced funds will be expended.
        3) Provides an accounting of distributing the advanced funds to the appropriate Local Project Sponsor.
        4) Documents that the funds were spent on eligible reimbursable costs.
        5) Documentation that the funds were placed in a non-interest bearing account, including the dates of deposits and withdrawals from that account.

    c) Water Management Status Report: Until June 30, 2016, Grantees shall submit status report s on implementation of either AB 1420 status or SBx7-7 water conservation status for the urban water suppliers that submitted an AB 1420 compliance Table 2 in the 2015 Implementation Grant Application. AB 1420

status reports shall be uploaded into GRanTS no later than 30 calendar days after execution of this agreement. SBx7-7 GPCD status reports shall be uploaded via GRanTS no later than June 30, 2016. By July 1, 2016 all urban water suppliers must submit an UWMP that demonstrates they are meeting the 2015 interim SBx7-7 GPCD target. If the urban water supplier is not meeting the interim target, then the urban water suppliers must also submit with its UWMP, a schedule, financing plan, and budget for achieving the GPCD (Water Code §10608.24). Starting June 30, 2017, those urban water suppliers that did not meet their 2015 GPCD target must also submit, by June 30, annual reports that include a schedule, financing plan, and budget for achieving the GPCD (Water Code §10608.24). Failure to progress on implementation may result in continuing grant eligibility actions under Paragraph 15. Before July 1, 2016, all agricultural water suppliers must submit a schedule, financing plan, and budget for implementation of the efficient water management practices, required pursuant to Water Code §10608.48 to comply with Sustainable Water Use and Demand Reduction requirements outlined in Part 2.55 (commencing with §10608) of Division 6 of the Water Code.

d) Project Completion Report: Grantee shall prepare and submit to State a separate Project Completion Report for each project included in Exhibit A. Grantee shall submit a Project Completion Report within ninety (90) calendar days of project completion. Project Completion Report(s) shall include, in part, a description of actual work done, any changes or amendments to each project, and a final schedule showing actual progress versus planned progress, copies of any final documents or reports generated or utilized during a project. The Project Completion Report shall also include, if applicable, certification of final project by a California Registered Professional (Civil Engineer or Geologist, as appropriate), consistent with Standard Condition D.19 in Exhibit D. A DWR "Certification of Project Completion" form will be provided by the State.

e) Grant Completion Report: Upon completion of all projects included in Exhibit A, Grantee shall submit to State a Grant Completion Report. The Grant Completion Report shall be submitted within ninety (90) calendar days of submitting the Project Completion Report for the final project to be completed under this Grant Agreement. The Grant Completion Report shall include reimbursement status, a brief description of each project completed, and how those projects will further the goals of the IRWM Plan and identify any changes to the IRWM Plan, as a result of project implementation. Retention for the last project to be completed as part of this Grant Agreement will not be disbursed until the Grant Completion Report is submitted to and approved by the State.

f) Post-Performance Reports: Grantee shall submit Post-Performance Reports. Post-Performance Reports shall be submitted to State within ninety (90) calendar days after the first operational year of a project has elapsed. This record keeping and reporting process shall be repeated annually for a total of 10 years after the completed project(s) begins operation.

20. OPERATION AND MAINTENANCE OF PROJECT. For the useful life of construction and implementation projects and in consideration of the funding made by State, Grantee agrees to ensure or cause to be performed the commencement and continued operation of each project, and shall ensure or cause each project to be operated in an efficient and economical manner; shall ensure all repairs, renewals, and replacements necessary to the efficient operation of the same are provided; and shall ensure or cause the same to be maintained in as good and efficient condition as upon its construction, ordinary and reasonable wear and depreciation excepted. The State shall not be liable for any cost of such maintenance, management, or operation. Grantee or their successors may, with the written approval of State, transfer this responsibility to use, manage, and maintain the property. For purposes of this Grant Agreement, "useful life" means period during which an asset, property, or activity is expected to be usable for the purpose it was acquired or implemented; "operation costs" include direct costs incurred for material and labor needed for operations, utilities, insurance, and similar expenses, and "maintenance costs" include ordinary repairs and replacements of a recurring nature necessary for capital assets and basic structures and the expenditure of funds necessary to replace or reconstruct capital assets or basic structures. Refusal of Grantee to ensure operation and maintenance of the projects in accordance with this provision may, at the option of State, be considered a breach of this Grant Agreement and may be treated as default under Paragraph 14, "Default Provisions."

21. PROJECT MONITORING PLAN REQUIREMENTS. Grantee shall develop and submit to State a Project Monitoring Plan that incorporates: (1) the Project Performance Monitoring Table requirements outlined in the Proposition 84 2015 IRWM Implementation Grant Proposal Solicitation Package (pages 20 and 21), and (2) the guidance provided in Exhibit J, "Project Monitoring Plan Guidance."

22. STATEWIDE MONITORING REQUIREMENTS. Grantee shall ensure that all groundwater projects and projects that include groundwater monitoring requirements are consistent with the Groundwater Quality Monitoring Act of 2001 (Part 2.76 (commencing with §10780) of Division 6 of California Water Code) and, where applicable, that projects that affect water quality shall include a monitoring component that allows the integration of data into statewide monitoring efforts, including where applicable, the Surface Water Ambient Monitoring Program carried out by the State Water Resources Control Board. See Exhibit H (Requirements for Statewide Monitoring and Data Submittal), for web links and information regarding other State monitoring and data reporting requirements.

23. NOTIFICATION OF STATE. Grantee shall promptly notify State, in writing, of the following items:

    a) Events or proposed changes that could affect the scope, budget, or work performed under this Grant Agreement. Grantee agrees that no substantial change in the scope of the projects will be undertaken until written notice of the proposed change has been provided to State and State has given written approval for such change. Substantial changes generally include changes to the work plan, schedule or term, and budget.
    b) Any public or media event publicizing the accomplishments and/or results of this Grant Agreement and provide the opportunity for attendance and participation by State's representatives. Grantee shall make such notification at least 14 calendar days prior to the event.
    c) Final inspection of the completed work on a project by a California Registered Professional (Civil Engineer or Geologist, as appropriate), in accordance with Standard Condition D.19 in Exhibit D. Grantee shall notify the State's Project Manager of the inspection date at least 14 calendar days prior to the inspection in order to provide State the opportunity to participate in the inspection.

24. NOTICES. Any notice, demand, request, consent, or approval that either party desires or is required to give to the other party under this Grant Agreement shall be in writing. Notices may be transmitted by any of the following means:

    a) By delivery in person.
    b) By certified U.S. mail, return receipt requested, postage prepaid.
    c) By "overnight" delivery service; provided that next-business-day delivery is requested by the sender.
    d) By electronic means.

    Notices delivered in person will be deemed effective immediately on receipt (or refusal of delivery or receipt). Notices sent by certified mail will be deemed effective given ten (10) calendar days after the date deposited with the U. S. Postal Service. Notices sent by overnight delivery service will be deemed effective one business day after the date deposited with the delivery service. Notices sent electronically will be effective on the date of transmission, which is documented in writing. Notices shall be sent to the addresses set forth in Paragraph 26. Either party may, by written notice to the other, designate a different address that shall be substituted for the one below.

25. PERFORMANCE EVALUATION. Upon completion of this Grant Agreement, Grantee's performance will be evaluated by the State and a copy of the evaluation will be placed in the State file and a copy sent to the Grantee.

26. PROJECT REPRESENTATIVES. The Project Representatives during the term of this Grant Agreement are as follows:

Department of Water Resources
Arthur Hinojosa
Chief, Division of IRWM
P.O. Box 942836
Sacramento CA 94236-0001
Phone: (916) 653-4736
e-mail: Arthur.Hinojosa@water.ca.gov

Association of Bay Area Governments
Ezra Rapport
Executive Director
375 Beale Street, Suite 700
San Francisco, CA 94105
Phone: (415) 820-7900
e-mail: Ezrar@abag.ca.gov

Direct all inquiries to the Project Manager:

Department of Water Resources
Mehdi Mizani
Division of Integrated Regional Water Management
901 P Street, Room 213-A
Sacramento, CA 94236-0001
Phone: (916) 651-9250
e-mail: Mehdi.Mizani@water.ca.gov

Association of Bay Area Governments
Caitlin Sweeney
Director, San Francisco Estuary Partnership
1515 Clay Street, Suite 1400
Oakland, CA 94612
Phone: (510) 622-2362
e-mail: Caitlin.Sweeney@sfestuary.org

Either party may change its Project Representative or Project Manager upon written notice to the other party.

27. STANDARD PROVISIONS. The following Exhibits are attached and made a part of this Grant Agreement by this reference:

Exhibit A – Work Plan
Exhibit B – Budget
Exhibit C – Schedule
Exhibit D – Standard Conditions
Exhibit E – Authorizing Resolution
Exhibit F – Local Project Sponsors
Exhibit G – Report Formats and Requirements
Exhibit H – Requirements for Statewide Monitoring and Data Submittal
Exhibit I – State Audit Document Requirements and Funding Match Guidelines for Grantees
Exhibit J – Project Monitoring Plan Guidance

IN WITNESS WHEREOF, the parties hereto have executed this Grant Agreement.

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

Arthur Hinojosa, P.E., Chief
Division of Integrated Regional Water Management

Date 8/15/16

Approved as to Legal Form and Sufficiency

James Herink for
Robin Brewer, Assistant Chief Counsel
Office of Chief Counsel

Date 8-15-16

ASSOCIATION OF BAY AREA GOVERNMENTS

Ezra Rapport
Executive Director

Date 8/8/16

Approved as to form:

Kenneth K. Moy
Legal Counsel, ABAG

Date: 8/8/16.

PROJECT 5: Coastal San Mateo County Drought Relief Phase II

IMPLEMENTING AGENCY: San Mateo County RCD

PROJECT DESCRIPTION: This project is divided into two elements described below.

Element A: Approximately 1,550 linear feet of 40 to 50 year old steel water pipelines located under surface streets currently has 2 known leaks and is wasting approximately 2 AF of water per year. This project will include the replacement of the existing steel water pipelines with high-density polyethylene or polyvinyl chloride pipes in the upper San Gregorio watershed. A major leak that developed in one of the pipelines planned for replacement lost 1.2 AF of water over a week while emergency repairs were being done. The replacement of these pipelines will conserve approximately 3 AF of water per year.

Element B: 1) In the Pilarcitos watershed, an existing pond will be refurbished to store approximately 5 additional acre feet of water. 2) In the San Gregorio watershed, a new pond will be constructed to store approximately 18 acre feet of additional water storage. When complete, this element will result in approximately 18 acre feet per year of storage for use during summer months and drought conditions, and reduce agricultural water use by an estimated 10 AF per year. 3) In the Pescadero watershed, a new pond will be constructed to store approximately 5-15 AF under drought conditions.

Budget Category (a): Direct Project Administration

Task 1 Project Management

Manage grant agreement including compliance with grant requirements, and preparation and submission of supporting grant documents and coordination with the Grantee. Prepare invoices including relevant supporting documentation for submittal to DWR via the Grantee. This task also includes administrative responsibilities associated with the project such as coordinating with partnering agencies and managing consultants/contractors.

Deliverables:

- ☐ Environmental Information Form (EIF)
- ☐ Financial Statements
- ☐ Invoices
- ☐ Other Applicable Project Deliverables

Task 2 Labor Compliance Program

Take all measures necessary to ensure compliance with applicable California Labor Code requirements, including, preparation and implementation of a labor compliance program or including any payments to the Department of Industrial Relations under Labor Code Section 1771.3.

Deliverables:

- ☐ Proof of labor compliance upon request

Task 3 Reporting

Prepare progress reports detailing work completed during reporting period as outlined in Exhibit (G) of this agreement. Submit reports to the Grantee for review and inclusion in a progress report to be submitted to DWR.

Prepare Draft Project Completion Report and submit to DWR via the Grantee for DWR Project Manager's comment and review no later than 90 days after project completion. Prepare Final Report addressing Grantee/DWRs comments. The report shall be prepared and presented in accordance with the provision of Exhibit G.

Deliverables:

- ☐ Project Progress Reports
- ☐ Draft and Final Project Completion Report

Budget Category (b): Land Purchase/Easement

Task 4 Land Purchase/Easement

Not applicable. This Project occurs on privately owned lands which are participating with the RCD voluntarily and does not require purchase or easements.

Budget Category (c): Planning/Design/Engineering and Environmental Documentation

Task 5 Feasibility Studies

Element A–Domestic Water Use Efficiency: Feasibility analysis for replacing pipeline sections is conducted as part of Cuesta La Honda Guild's effort to monitor potential leaks.

Element B–Agricultural Water Supply Storage and Efficiency: Feasibility analysis for Element B includes irrigation audits to understand water demands throughout the growing season, as well as the level of efficiency of the irrigation system. In addition, initial engineering investigations into the construction of irrigation water supply ponds are used to determine the appropriate size and location for a pond.

Deliverables:

- ☐ Relevant Feasibility Studies

Task 6 CEQA Documentation

Element A: Prepare and circulate a Notice of Preparation (including tribal notification to the California Native Heritage Commission). File Notice of Exemption with State Clearinghouse. Prepare letter stating no legal challenges (or addressing legal challenges).

Element B: All projects included in Element B fall within categorical exemptions for small restoration projects. Prepare and circulate a Notice of Preparation (including tribal notification to the California Native Heritage Commission). Categorical exemption documentation (Notice of Exemption) will be prepared by the RCD after completion of 60% designs for Element B projects and will be filed with ABAG/SFEP for submittal to DWR for each project. Prepare letter stating no legal challenges (or addressing legal challenges).

Deliverables:

- ☐ Copies of Notice of Exemptions for each site
- ☐ No Legal Challenges letter(s)
- ☐ Tribal Notification Letter for each Element

Task 7 Permitting

It is anticipated that the following federal, state, and local permits and approvals will need to be acquired:

- San Mateo County Access Permit
- California Department of Fish and Wildlife (CDFW) Section 1602 Lake and Streambed Alteration Agreement

- U.S. Fish and Wildlife Service and/or National Marine Fisheries Service Section 7 Informal or Formal Consultations
- Appropriate Water Rights – State Water Resources Control Board

Additional permits may be required and will be obtained as necessary.

Deliverables:

- ☐ Copy of all required permits

Task 8 Design

Element A: Complete preliminary design including a topographic survey. The plans and specifications will include: pipe layout and quantities of fill. No deliverables needed for Element A.

Element B: Complete preliminary design including the following supporting work: geotechnical investigation, topographic survey, and basis of design report (BOD). The BOD will provide the overall project concept for use in development of final design, plans and specifications including: preliminary earthwork calculations to produce 100% (Final) design, plans, and specifications.

Deliverables:

- ☐ Geotechnical Report
- ☐ Topographic Survey
- ☐ BOD Report
- ☐ Updated Project Cost Estimate
- ☐ 100% Design Documents

Task 9 Project Monitoring Plan

Develop and submit a Project Monitoring Plan. Along with the Project Performance Measures Table provided by DWR project manager, the Project Monitoring Plan (as described in Exhibit J) will include baseline conditions, a brief discussion of monitoring systems to be used, methodology of monitoring, frequency of monitoring, and location of monitoring points.

Deliverables:

- ☐ Project Monitoring Plan

Budget Category (d): Construction/Implementation

Task 10 Construction Contracting

Activities necessary to secure a contractor and award the contract include: develop bid documents, prepare advertisement and contract documents for construction contract bidding, conduct pre-bid meeting, bid opening and evaluation, selection of the contractor, award of contract, and issuance of notice to proceed.

Deliverables:

- ☐ Bid documents
- ☐ Proof of Advertisement
- ☐ Award of contract
- ☐ Notice to proceed

Task 11 Construction Administration

Review contractor submittals, answer requests for information, and issue work directives. A full time engineering construction observer will be on site for the duration of the project. Construction observer duties include: documenting of pre-construction conditions, daily construction diary, preparing change orders, addressing questions of contractors on site, reviewing/ updating project schedule, reviewing contractor log submittals and pay requests, forecasting cash flow, notifying contractor if work is not acceptable.

Deliverables:

- ☐ Notice of Completion

Task 12 Construction/Implementation Activities

This task includes all activities related to project construction and implementation. Work through this task would adhere to construction standards, health and safety standards, laboratory analysis protocols, and acceptable standard methods.

Element A construction includes mobilization of equipment, site preparation of water pipeline route (mainly under streets), excavation and removal of old pipeline, instillation of new pipeline, infill and repaving.

Element B construction includes mobilization of equipment, site preparation of existing or proposed pond location (new ponds located within agricultural operations), excavation of pond location and stockpiling of materials, grading and compaction of fill (and/or instillation of synthetic liner), winter weatherization of construction site, installation of irrigation efficiency improvements (new pumps, sprinkler heads, installation and replacement of leaking pipelines).

Deliverables:

- ☐ Photographic documentation
- ☐ Engineer's Certification
- ☐ Final As-built drawings

EXHIBIT B
BUDGET

ABAG 2015 Implementation Agreement Summary Budget

	Project Name	Grant Amount	Cost Share: Non-State Fund Source (Funding Match)	Additional Cost Share	Total Cost	% Funding Match
1	Project 1: Grant Administration	$1,022,335	-	-	$1,022,335	-
2	Project 2: Anderson Dam Seismic Retrofit Project	$4,090,000	$54,000,000	$130,472,000	$188,562,000	-
3	Project 3: Marin 2020 Turf Replacement Project	$781,563	-	$261,000	$1,042,563	-
4	Project 4: East Palo Alto Groundwater Supply Project*	$1,506,050	-	$2,274,024	$3,780,074	-
5	Project 5: Coastal San Mateo County Drought Relief Phase II	$1,400,000	-	$549,573	$1,949,573	-
6	Project 6: San Francisquito Creek Flood Protection and Ecosystem Restoration Project	$1,044,351	$12,747,949	$15,000,000	$28,792,300	-
7	Project 7: Mountain View Shoreline Portion of SBSPR Project	$4,807,998	$5,867,760	$5,812,937	$16,488,695	-
8	Project 8: Eden Landing Portion of SBSPR Project	$3,265,121	$2,000,000	$7,955,651	$13,220,772	-
9	Project 9: Novato Creek Flood Protection and Habitat Enhancement Project	$3,551,607	$1,780,000	$10,933,393	$16,265,000	-
Total		$21,469,025	$76,395,709	$173,258,578	$271,123,312	
DAC Funding Match Waiver Total (Project 4)		-	-	-	$3,780,074	-
Grand Total		**$21,469,025**	**$76,395,709**	**$173,258,578**	**$267,343,238**	**28.6%**

*Received Funding Match Waiver

Project 1: Grant Administration

	Budget Category	Grant Amount	Cost Share: Non-State Fund Source (Funding Match)	Additional Cost Share	Total Cost
(a)	**Direct Project Administration**	**$1,022,335**	-	-	**$1,022,335**
(b)	**Land Purchase/ Easements**	-	-	-	-
(c)	**Planning/ Design/ Engineering/ Environmental Documentation**	-	-	-	-
(d)	**Construction/ Implementation**	-	-	-	-
	TOTAL	**$1,022,335**	-	-	**$1,022,335**

Project 5: Coastal San Mateo County Drought Relief Phase II

Budget Category		Grant Amount	Cost Share: Non-State Fund Source (Funding Match)	Additional Cost Share	Total Cost
(a)	Direct Project Administration	$177,430	-	-	$177,430
(b)	Land Purchase/ Easements	-	-	-	-
(c)	Planning/ Design/ Engineering/ Environmental Documentation	$215,405	-	$75,755	$291,160
(d)	Construction/ Implementation	$1,007,165	-	$473,818	$1,480,983
	TOTAL	$1,400,000	-	$549,573	$1,949,573

Project 6: San Francisquito Creek Flood Protection and Ecosystem Restoration Project

Budget Category		Grant Amount	Cost Share: Non-State Fund Source (Funding Match)	Additional Cost Share	Total Cost
(a)	Direct Project Administration	$41,000	-	-	$41,000
(b)	Land Purchase/ Easements	-	-	-	-
(c)	Planning/ Design/ Engineering/ Environmental Documentation	-	-	-	-
(d)	Construction/ Implementation	$1,003,351	$12,747,949	$15,000,000	$28,751,300
	TOTAL	$1,044,351	$12,747,949	$15,000,000	$28,792,300

Project 7: Mountain View Shoreline Portion of SBSPR Project

Budget Category		Grant Amount	Cost Share: Non-State Fund Source (Funding Match)	Additional Cost Share	Total Cost
(a)	Direct Project Administration	$126,680	-	-	$126,680
(b)	Land Purchase/ Easements	-	-	-	-
(c)	Planning/ Design/ Engineering/ Environmental Documentation	-	$190,500	$148,600	$339,100
(d)	Construction/ Implementation	$4,681,318	$5,677,260	$5,664,337	$16,022,915
	TOTAL	$4,807,998	$5,867,760	$5,812,937	$16,488,695

EXHIBIT C
SCHEDULE

Project 1: Grant Administration			
Category		**Start Date**	**End Date**
Task (a)	**Direct Project Administration**	**April-15**	**October-20**
Task 1	Agreement Administration	April-15	October-20
Task 2	Invoicing	March-16	October-20
Task 3	Progress Reports and Project Completion Reports	March-16	October-20

Project 2: Anderson Dam Seismic Retrofit Project			
Category		**Start Date**	**End Date**
Task (a)	**Direct Project Administration**	**May-17**	**October-20**
Task 1	Project Management	May-17	October-20
Task 2	Labor Compliance	May-17	August-20
Task 3	Reporting	May-17	October-20
Task (b)	**Land Purchase/Easement**	**September-13**	**October-16**
Task 4	Land Purchase/Easement	September-13	October-16
Task (c)	**Planning/Design/Engineering and Environmental Documentation**	**January-12**	**January-17**
Task 5	Feasibility Studies	January-12	June-13
Task 6	CEQA Documentation	January-13	July-16
Task 7	Permitting	January-16	January-17
Task 8	Design	September-13	November-16
Task 9	Project Monitoring Plan	February-14	June-16
Task (d)	**Construction/Implementation**	**December-16**	**June-20**
Task 10	Construction Contracting	December-16	April-17
Task 11	Construction Administration	May-17	June-20
Task 12	Construction/Implementation Activities	May-17	June-20

Project 5: Coastal San Mateo County Drought Relief Phase II			
	Category	**Start Date**	**End Date**
Task (a)	**Direct Project Administration**	**January-16**	**February-20**
Task 1	Project Management	January-16	February-20
Task 2	Labor Compliance	January-16	October-18
Task 3	Reporting	January-16	February-20
Task (b)	**Land Purchase/Easement**	**n/a**	**n/a**
Task 4	Not Applicable	n/a	n/a
Task (c)	**Planning/Design/Engineering and Environmental Documentation**	**December-14**	**November-18**
Task 5	Feasibility Studies	April-15	January-16
Task 6	CEQA Documentation	April-17	June-18
Task 7	Permitting	April-16	June-17
Task 8	Design	May-15	November-16
Task 9	Project Monitoring Plan	March-16	January-17
Task (d)	**Construction/Implementation**	**March-16**	**November-19**
Task 10	Construction Contracting	March-16	October-19
Task 11	Construction Administration	March-16	November-19
Task 12	Construction/Implementation Activities	March-16	October-19

Project 6: San Francisquito Creek Flood Protection and Ecosystem Restoration Project			
	Category	**Start Date**	**End Date**
Task (a)	**Direct Project Administration**	**March-16**	**March-19**
Task 1	Project Management	March-16	March-18
Task 2	Labor Compliance	March-16	December-17
Task 3	Reporting	March-16	March-19
Task (b)	**Land Purchase/Easement**	**January-12**	**September-15**
Task 4	Land Purchase/Easement	January-12	September-15
Task (c)	**Planning/Design/Engineering and Environmental Documentation**	**February-09**	**February-16**
Task 5	Feasibility Studies	February-09	July-09
Task 6	CEQA Documentation	June-11	July-13
Task 7	Permitting	January-14	February-16
Task 8	Design	January-13	July-15
Task 9	Project Monitoring Plan	January-16	February-16
Task (d)	**Construction/Implementation**	**January-16**	**December-18**
Task 10	Construction Contracting	January-16	May-16
Task 11	Construction Administration	March-16	December-18
Task 12	Construction/Implementation Activities	March-16	December-18

EXHIBIT D
STANDARD CONDITIONS

D.1) ACCOUNTING AND DEPOSIT OF FUNDING DISBURSEMENT:

a) Separate Accounting of Funding Disbursements and Interest Records: Grantee shall account for the money disbursed pursuant to this Grant Agreement separately from all other Grantee funds. Grantee shall maintain audit and accounting procedures that are in accordance with generally accepted accounting principles and practices, consistently applied. Grantee shall keep complete and accurate records of all receipts, disbursements, and interest earned on expenditures of such funds. Grantee shall require its contractors or subcontractors to maintain books, records, and other documents pertinent to their work in accordance with generally accepted accounting principles and practices. Records are subject to inspection by State at any and all reasonable times.

b) Fiscal Management Systems and Accounting Standards: The Grantee agrees that, at a minimum, its fiscal control and accounting procedures will be sufficient to permit tracing of grant funds to a level of expenditure adequate to establish that such funds have not been used in violation of state law or this Grant Agreement.

c) Disposition of Money Disbursed: All money disbursed pursuant to this Grant Agreement shall be deposited, administered, and accounted for pursuant to the provisions of applicable law.

d) Remittance of Unexpended Funds: Grantee shall remit to State any unexpended funds that were disbursed to Grantee under this Grant Agreement and were not used to pay Eligible Project Costs within a period of sixty (60) calendar days from the final disbursement from State to Grantee of funds or, within thirty (30) calendar days of the expiration of the Grant Agreement, whichever comes first.

D.2) ACKNOWLEDGEMENT OF CREDIT: Grantee shall include appropriate acknowledgement of credit to the State and to all cost-sharing partners for their support when promoting the Projects or using any data and/or information developed under this Grant Agreement. During construction of each project, Grantee shall install a sign at a prominent location, which shall include a statement that the project is financed under the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006, administered by State of California, Department of Water Resources. Grantee shall notify State that the sign has been erected by providing them with a site map with the sign location noted and a photograph of the sign.

D.3) AIR OR WATER POLLUTION VIOLATION: Under State laws, the Grantee shall not be: (1) in violation of any order or resolution not subject to review promulgated by the State Air Resources Board or an air pollution control district; (2) subject to cease and desist order not subject to review issued pursuant to §13301 of the Water Code for violation of waste discharge requirements or discharge prohibitions; or (3) finally determined to be in violation of provisions of federal law relating to air or water pollution.

D.4) AMENDMENT: This Grant Agreement may be amended at any time by mutual agreement of the Parties, except insofar as any proposed amendments are in any way contrary to applicable law. Requests by the Grantee for amendments must be in writing stating the amendment request and the reason for the request. State shall have no obligation to agree to an amendment.

D.5) AMERICANS WITH DISABILITIES ACT: By signing this Grant Agreement, Grantee assures State that it complies with the Americans with Disabilities Act (ADA) of 1990, (42 U.S.C., 12101 et seq.), which prohibits discrimination on the basis of disability, as well as all applicable regulations and guidelines issued pursuant to the ADA.

D.6) APPROVAL: This Agreement is of no force or effect until signed by all parties to the agreement. Grantee may not submit invoices or receive payment until all required signatures have been obtained.

D.7) AUDITS: State reserves the right to conduct an audit at any time between the execution of this Grant Agreement and the completion of the Projects, with the costs of such audit borne by State. After completion of the Projects, State may require Grantee to conduct a final audit to State's specifications, at Grantee's expense, such audit to be conducted by and a report prepared by an independent

Certified Public Accountant. Failure or refusal by Grantee to comply with this provision shall be considered a breach of this Grant Agreement, and State may elect to pursue any remedies provided in Paragraph 14 or take any other action it deems necessary to protect its interests.

Pursuant to Government Code §8546.7, the Grantee shall be subject to the examination and audit by the State for a period of three years after final payment under this Grant Agreement with respect to all matters connected with this Grant Agreement, including but not limited to, the cost of administering this Grant Agreement. All records of Grantee or its contractor or subcontractors shall be preserved for this purpose for at least three (3) years after project completion or final billing, whichever comes later.

D.8) **BUDGET CONTINGENCY:** If the Budget Act of the current year covered under this Grant Agreement does not appropriate sufficient funds for the Proposition 84 Implementation Grant Program, this Grant Agreement shall be of no force and effect. This provision shall be construed as a condition precedent to the obligation of State to make any payments under this Grant Agreement. In this event, State shall have no liability to pay any funds whatsoever to Grantee or to furnish any other considerations under this Grant Agreement and Grantee shall not be obligated to perform any provisions of this Grant Agreement. Nothing in this Grant Agreement shall be construed to provide Grantee with a right of priority for payment over any other Grantee. If funding for any fiscal year after the current year covered by this Grant Agreement is reduced or deleted by the Budget Act for purposes of this program, State shall have the option to either cancel this Grant Agreement with no liability occurring to State, or offer a Grant Agreement amendment to Grantee to reflect the reduced amount.

D.9) **CALIFORNIA CONSERVATION CORPS:** As required in Water Code §79038(b), Grantee shall examine the feasibility of using the California Conservation Corps or community conservation corps to accomplish the habitat restoration, enhancement and protection activities listed in the Exhibit A, Work Plan, and shall use the services of one of these organizations whenever feasible.

D.10) **CEQA:** Activities funded under this Grant Agreement, regardless of funding source, must be in compliance with the California Environmental Quality Act (CEQA) (Public Resources Code §21000 *et seq.*). Information on CEQA may be found at the following links:

Environmental Information: http://resources.ca.gov/ceqa/

California State Clearinghouse Handbook:
https://www.opr.ca.gov/docs/SCH_Handbook_2012.pdf

D.11) **CHILD SUPPORT COMPLIANCE ACT:** For any Grant Agreement in excess of $100,000, the Grantee acknowledges in accordance with Public Contract Code §7110, that:

a) The Grantee recognizes the importance of child and family support obligations and shall fully comply with all applicable state and federal laws relating to child and family support enforcement, including, but not limited to, disclosure of information and compliance with earnings assignment orders, as provided in Chapter 8 (commencing with §5200) of Part 5 of Division 9 of the Family Code; and

b) The Grantee, to the best of its knowledge is fully complying with the earnings assignment orders of all employees and is providing the names of all new employees to the New Hire Registry maintained by the California Employment Development Department.

D.12) **CLAIMS DISPUTE:** Any claim that the Grantee may have regarding performance of this agreement including, but not limited to, claims for additional compensation or extension of time, shall be submitted to the State's Project Manager, within thirty (30) calendar days of the Grantee's knowledge of the claim. State and Grantee shall then attempt to negotiate a resolution of such claim and process an amendment to this Agreement to implement the terms of any such resolution.

D.13) **COMPETITIVE BIDDING AND PROCUREMENTS:** Grantee shall comply with all applicable laws and regulations regarding securing competitive bids and undertaking competitive negotiations in Grantee's contracts with other entities for acquisition of goods and services and construction of public works with funds provided by State under this Grant Agreement.

D.14) **COMPUTER SOFTWARE:** Grantee certifies that it has appropriate systems and controls in place to ensure that state funds will not be used in the performance of this Grant Agreement for the acquisition, operation, or maintenance of computer software in violation of copyright laws.

D.15) **CONFLICT OF INTEREST:** All participants are subject to State and Federal conflict of interest laws. Failure to comply with these laws, including business and financial disclosure provisions, will result in the application being rejected and any subsequent contract being declared void. Other legal action may also be taken. Applicable statutes include, but are not limited to, Government Code, §1090 and Public Contract Code, §10410 and §10411, for State conflict of interest requirements.

a) Current State Employees: No State officer or employee shall engage in any employment, activity, or enterprise from which the officer or employee receives compensation or has a financial interest and which is sponsored or funded by any State agency, unless the employment, activity, or enterprise is required as a condition of regular State employment. No State officer or employee shall contract on his or her own behalf as an independent contractor with any State agency to provide goods or services.

b) Former State Employees: For the two-year period from the date he or she left State employment, no former State officer or employee may enter into a contract in which he or she engaged in any of the negotiations, transactions, planning, arrangements, or any part of the decision-making process relevant to the contract while employed in any capacity by any State agency. For the twelve-month period from the date he or she left State employment, no former State officer or employee may enter into a contract with any State agency if he or she was employed by that State agency in a policy-making position in the same general subject area as the proposed contract within the twelve-month period prior to his or her leaving State service.

c) Employees of the Grantee: Employees of the Grantee shall comply with all applicable provisions of law pertaining to conflicts of interest, including but not limited to any applicable conflict of interest provisions of the California Political Reform Act, Government Code §87100 *et seq.*

d) Employees and Consultants to the Grantee: Individuals working on behalf of a Grantee may be required by the Department to file a Statement of Economic Interests (Fair Political Practices Commission Form 700) if it is determined that an individual is a consultant for Political Reform Act purposes.

D.16) **DELIVERY OF INFORMATION, REPORTS, AND DATA:** Grantee agrees to expeditiously provide throughout the term of this Grant Agreement, such reports, data, information, and certifications as may be reasonably required by State.

D.17) **DISPOSITION OF EQUIPMENT:** Grantee shall provide to State, not less than 30 calendar days prior to submission of the final invoice, an itemized inventory of equipment purchased with funds provided by State. The inventory shall include all items with a current estimated fair market value of more than $5,000.00 per item. Within 60 calendar days of receipt of such inventory State shall provide Grantee with a list of the items on the inventory that State will take title to. All other items shall become the property of Grantee. State shall arrange for delivery from Grantee of items that it takes title to. Cost of transportation, if any, shall be borne by State.

D.18) **DRUG-FREE WORKPLACE CERTIFICATION:** Certification of Compliance: By signing this Grant Agreement, Grantee, its contractors or subcontractors hereby certify, under penalty of perjury under the laws of State of California, compliance with the requirements of the Drug-Free Workplace Act of 1990 (Government Code §8350 *et seq.*) and have or will provide a drug-free workplace by taking the following actions:

a) Publish a statement notifying employees, contractors, and subcontractors that unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited and specifying actions to be taken against employees, contractors, or subcontractors for violations, as required by Government Code §8355(a)(1).

b) Establish a Drug-Free Awareness Program, as required by Government Code §8355(a)(2) to inform employees, contractors, or subcontractors about all of the following:
   i) The dangers of drug abuse in the workplace,
   ii) Grantee's policy of maintaining a drug-free workplace,
   iii) Any available counseling, rehabilitation, and employee assistance programs, and
   iv) Penalties that may be imposed upon employees, contractors, and subcontractors for drug abuse violations.

c) Provide, as required by Government Code §8355(a)(3), that every employee, contractor, and/or subcontractor who works under this Grant Agreement:
   i) Will receive a copy of Grantee's drug-free policy statement, and
   ii) Will agree to abide by terms of Grantee's condition of employment, contract or subcontract.

D.19) **FINAL INSPECTIONS AND CERTIFICATION OF REGISTERED PROFESSIONAL:** Upon completion of the Project, Grantee shall provide for a final inspection and certification by the appropriate registered professional (California Registered Civil Engineer or Geologist) that the Project has been completed in accordance with submitted final plans and specifications and any modifications thereto and in accordance with this Grant Agreement. Grantee shall notify the State's Project Manager of the inspection date at least 14 calendar days prior to the inspection in order to provide State the opportunity to participate in the inspection.

D.20) **GRANTEE COMMITMENTS:** Grantee accepts and agrees to comply with all terms, provisions, conditions and commitments of this Grant Agreement, including all incorporated documents, and to fulfill all assurances, declarations, representations, and statements made by the Grantee in the application, documents, amendments, and communications filed in support of its request for funding.

D.21) **GRANTEE NAME CHANGE:** Approval of the State's Program Manager is required to change the Grantee's name as listed on this Grant Agreement. Upon receipt of legal documentation of the name change the State will process an amendment. Payment of invoices presented with a new name cannot be paid prior to approval of said amendment.

D.22) **GOVERNING LAW:** This Grant Agreement is governed by and shall be interpreted in accordance with the laws of the State of California.

D.23) **INDEMNIFICATION:** Grantee shall indemnify and hold and save the State, its officers, agents, and employees, free and harmless from any and all liabilities for any claims and damages (including inverse condemnation) that may arise out of the Projects and this Agreement, including, but not limited to any claims or damages arising from planning, design, construction, maintenance and/or operation of levee rehabilitation measures for this Project and any breach of this Agreement. Grantee shall require its contractors or subcontractors to name the State, its officers, agents and employees as additional insured on their liability insurance for activities undertaken pursuant to this Agreement.

D.24) **INDEPENDENT CAPACITY:** Grantee, and the agents and employees of Grantees, in the performance of the Grant Agreement, shall act in an independent capacity and not as officers, employees, or agents of the State.

D.25) **INSPECTION OF BOOKS, RECORDS, AND REPORTS:** During regular office hours, each of the parties hereto and their duly authorized representatives shall have the right to inspect and to make copies of any books, records, or reports of either party pertaining to this Grant Agreement or matters related hereto. Each of the parties hereto shall maintain and shall make available at all times for such inspection accurate records of all its costs, disbursements, and receipts with respect to its activities under this Grant Agreement. Failure or refusal by Grantee to comply with this provision shall be considered a breach of this Grant Agreement, and State may withhold disbursements to Grantee or take any other action it deems necessary to protect its interests.

D.26) **INSPECTIONS OF PROJECT BY STATE:** State shall have the right to inspect the work being performed at any and all reasonable times during the term of the Grant Agreement. This right shall extend to any subcontracts, and Grantee shall include provisions ensuring such access in all its contracts or subcontracts entered into pursuant to its Grant Agreement with State.

D.27) **INVOICE DISPUTES:** In the event of an invoice dispute, payment will not be made until the dispute is resolved and a corrected invoice submitted. Failure to use the address exactly as provided may result in return of the invoice to the Grantee. Payment shall be deemed complete upon deposit of the payment, properly addressed, postage prepaid, in the United States mail. Any claim that Grantee may have regarding the performance of this Grant Agreement including, but not limited to claims for additional compensation or extension of time, shall be submitted to the DWR Project Manager within thirty (30) calendar days of Grantee's knowledge of the claim. State and Grantee shall then attempt to negotiate a resolution of such claim and process an amendment to the Grant Agreement to implement the terms of any such resolution.

D.28) **LABOR CODE COMPLIANCE:** The Grantee will be required to keep informed of and take all measures necessary to ensure compliance with applicable Labor Code requirements, including, but not limited to, §1720 *et seq.* of the Labor Code regarding public works, limitations on use of volunteer labor (Labor Code §1720.4), labor compliance programs (Labor Code §1771.5) and payment of prevailing wages for work done and funded pursuant to these Guidelines, including any payments to the Department of Industrial Relations under Labor Code §1771.3.

D.29) **NONDISCRIMINATION:** During the performance of this Grant Agreement, Grantee and its contractors or subcontractors shall not unlawfully discriminate, harass, or allow harassment against any employee or applicant for employment because of sex (gender), sexual orientation, race, color, ancestry, religion, creed, national origin (including language use restriction), pregnancy, physical disability (including HIV and AIDS), mental disability, medical condition (cancer/genetic characteristics), age (over 40), marital status, and denial of medial and family care leave or pregnancy disability leave. Grantee and its contractors or subcontractors shall ensure that the evaluation and treatment of their employees and applicants for employment are free from such discrimination and harassment. Grantee and its contractors or subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Government Code §12990 (a-f) *et seq.*) and the applicable regulations promulgated there under (California Code of Regulations, Title 2, §7285 *et seq.*). The applicable regulations of the Fair Employment and Housing Commission implementing Government Code §12990 (a-f), set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations, are incorporated into this Agreement by reference and made a part hereof as if set forth in full. Grantee and its contractors or subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement.

Grantee shall include the nondiscrimination and compliance provisions of this clause in all subcontracts to perform work under the Grant Agreement.

D.30) **NO DISCRIMINATION AGAINST DOMESTIC PARTNERS:** For contracts over $100,000 executed or amended after January 1, 2007, the Grantee certifies by signing this Grant Agreement, under penalty of perjury under the laws of State of California that Grantee is in compliance with Public Contract Code §10295.3.

D.31) **OPINIONS AND DETERMINATIONS:** Where the terms of this Grant Agreement provide for action to be based upon, judgment, approval, review, or determination of either party hereto, such terms are not intended to be and shall never be construed as permitting such opinion, judgment, approval, review, or determination to be arbitrary, capricious, or unreasonable.

D.32) **PERFORMANCE AND ASSURANCES:** Grantee agrees to faithfully and expeditiously perform or cause to be performed all Project work as described in Exhibit A (Work Plan) and to apply State funds received only to Eligible Project Costs in accordance with applicable provisions of the law.

D.33) **PRIORITY HIRING CONSIDERATIONS:** If this Grant Agreement includes services in excess of $200,000, the Grantee shall give priority consideration in filling vacancies in positions funded by the Grant Agreement to qualified recipients of aid under Welfare and Institutions Code §11200 in accordance with Public Contract Code §10353.

D.34) **PROHIBITION AGAINST DISPOSAL OF PROJECT WITHOUT STATE PERMISSION:** The Grantee shall not sell, abandon, lease, transfer, exchange, mortgage, hypothecate, or encumber in any manner whatsoever all or any portion of any real or other property necessarily connected or used in conjunction with the

Projects, or with Grantee's service of water, without prior permission of State. Grantee shall not take any action, including but not limited to actions relating to user fees, charges, and assessments that could adversely affect the ability of Grantee to meet its obligations under this Grant Agreement, without prior written permission of State. State may require that the proceeds from the disposition of any real or personal property be remitted to State.

D.35) **REMEDIES NOT EXCLUSIVE:** The use by either party of any remedy specified herein for the enforcement of this Grant Agreement is not exclusive and shall not deprive the party using such remedy of, or limit the application of, any other remedy provided by law.

D.36) **RETENTION:** Notwithstanding any other provision of this Grant Agreement, State shall, for each project, withhold five percent (5.0%) until January 1, 2018 and ten percent (10.0%), thereafter, of the funds requested by Grantee for reimbursement of Eligible Costs. Each project in this Grant Agreement will be eligible to release its respective retention when that project is completed and Grantee has met requirements of Paragraph 19, "Submissions of Reports", except in the case of the last project to be completed under this Grant Agreement, in which case retention for such project will not be disbursed until the "Grant Completion Report" is submitted to and approved by State. State shall disburse retained funds to the Grantee.

D.37) **RIGHTS IN DATA:** Grantee agrees that all data, plans, drawings, specifications, reports, computer programs, operating manuals, notes and other written or graphic work produced in the performance of this Grant Agreement shall be made available to the State and shall be in the public domain to the extent to which release of such materials is required under the California Public Records Act., Government Code §6250 *et seq*. Grantee may disclose, disseminate and use in whole or in part, any final form data and information received, collected and developed under this Grant Agreement, subject to appropriate acknowledgement of credit to State for financial support. Grantee shall not utilize the materials for any profit-making venture or sell or grant rights to a third party who intends to do so. The State shall have the right to use any data described in this paragraph for any public purpose.

D.38) **SEVERABILITY:** Should any portion of this Grant Agreement be determined to be void or unenforceable, such shall be severed from the whole and the Grant Agreement shall continue as modified.

D.39) **STATE REVIEWS:** The parties agree that review or approval of projects applications, documents, permits, plans, and specifications or other project information by the State is for administrative purposes only and does not relieve the Grantee of their responsibility to properly plan, design, construct, operate, maintain, implement, or otherwise carry out the projects.

D.40) **SUSPENSION OF PAYMENTS:** This Grant Agreement may be subject to suspension of payments or termination, or both, and Grantee may be subject to debarment if the State determines that:
a) Grantee, its contractors, or subcontractors have made a false certification, or
b) Grantee, its contractors, or subcontractors violates the certification by failing to carry out the requirements noted in this Grant Agreement.

D.41) **SUCCESSORS AND ASSIGNS:** This Grant Agreement and all of its provisions shall apply to and bind the successors and assigns of the parties. No assignment or transfer of this Grant Agreement or any part thereof, rights hereunder, or interest herein by the Grantee shall be valid unless and until it is approved by State and made subject to such reasonable terms and conditions as State may impose.

D.42) **TERMINATION BY GRANTEE:** Subject to State approval which may be reasonably withheld, Grantee may terminate this Agreement and be relieved of contractual obligations. In doing so, Grantee must provide a reason(s) for termination. Grantee must submit all progress reports summarizing accomplishments up until termination date.

D.43) **TERMINATION FOR CAUSE:** Subject to the right to cure under Paragraph 14, the State may terminate this Grant Agreement and be relieved of any payments should Grantee fail to perform the requirements of this Grant Agreement at the time and in the manner herein, provided including but not limited to reasons of default under Paragraph 14.

D.44) **TERMINATION WITHOUT CAUSE:** The State may terminate this Grant Agreement without cause on 30 calendar days advance written notice. The Grantee shall be reimbursed for all reasonable expenses incurred up to the date of termination.

D.45) **THIRD PARTY BENEFICIARIES:** The parties to this Grant Agreement do not intend to create rights in, or grant remedies to, any third party as a beneficiary of this Agreement, or any duty, covenant, obligation or understanding established herein.

D.46) **TIMELINESS:** Time is of the essence in this Grant Agreement.

D.47) **TRAVEL:** Grantee agrees that travel and per diem costs shall NOT be eligible for reimbursement with State funds, and shall NOT be eligible for computing Grantee cost match. Travel includes the costs of transportation, subsistence, and other associated costs incurred by personnel during the term of this Grant Agreement.

D.48) **WAIVER OF RIGHTS:** None of the provisions of this Grant Agreement shall be deemed waived unless expressly waived in writing. It is the intention of the parties here to that from time to time either party may waive any of its rights under this Grant Agreement unless contrary to law. Any waiver by either party of rights arising in connection with the Grant Agreement shall not be deemed to be a waiver with respect to any other rights or matters, and such provisions shall continue in full force and effect.

D.49) **WORKERS' COMPENSATION:** Grantee affirms that it is aware of the provisions of §3700 of the Labor Code, which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and Grantee affirms that it will comply with such provisions before commencing the performance of the work under this Grant Agreement and will make its contractors and subcontractors aware of this provision.

EXHIBIT E
AUTHORIZING RESOLUTION

ASSOCIATION OF BAY AREA GOVERNMENTS
EXECUTIVE BOARD

RESOLUTION NO. 05-15

AUTHORIZING THE EXECUTIVE DIRECTOR OR DESIGNEE TO SUBMIT AN APPLICATION AND EXECUTE AN AGREEMENT WITH THE CALIFORNIA DEPARTMENT OF WATER RESOURCES FOR AN IRWMP IMPLEMENTATION GRANTON BEHALF OF THE SAN FRANCISCO BAY REGION

WHEREAS, the Association of Bay Area Governments (ABAG) is the home agency for the San Francisco Estuary Partnership SFEP, a coalition of resource agencies, non-profits, citizens, and scientists working to protect, restore, and enhance water quality and fish and wildlife habitat in and around the San Francisco Bay Delta Estuary, and

WHEREAS, ABAG is eligible to apply to the California Department of Water Resources to obtain an Integrated Regional Water Management Implementation Grant pursuant to the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Public Resource Code Section 75001 et seq.), and

WHEREAS, the ABAG Executive Board adopted the San Francisco Bay Integrated Regional Water Management Plan to encourage integrated regional strategies for management of water resources and to provide funding for implementation projects that support the plan by Resolution No. 11-06 and the Revised IRWMP Plan by Resolution No. 04-14 dated March 20, 2014.; and

WHEREAS, the Coordinating Committee (CC), the Regional Water Management Group for the Bay Area IRWMP selected ABAG/SFEP to be the Applicant for the next round of IRWMP Proposition 84 Round 2 funding and selected 10 regionally located projects for this application; and

WHEREAS, the total amount of state funding requested under the grant application is $41,305,435 and all project match will be met by project partners and SFEP from compatible grants or in-kind services.

ASSOCIATION OF BAY AREA GOVERNMENTS
RESOLUTION NO. 05-15

NOW, THEREFORE, BE IT RESOLVED that the Executive Board of the Association of Bay Area Governments hereby approves that application be made to the California Department of Water Resources to obtain a 2015 Integrated Regional Water Management Grant pursuant to the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Public Resource Code Section 75001 et seq.), and to enter into an agreement to receive a grant for the Bay Area Regional Climate Change Preparedness Program. The Executive Director, or designee, of the Association of Bay Area Governments is hereby authorized and directed to prepare the necessary data, conduct investigations, file such application, and execute a grant agreement with the California Department of Water Resources.

The foregoing was adopted by the Executive Board this 16th day of July, 2015.

Julie Pierce
President

Certification of Executive Board Approval

I, the undersigned, the appointed and qualified Secretary-Treasurer of the Association of Bay Area Governments (Association), do hereby certify that the foregoing resolution was adopted by the Administrative Committee of the Association at a duly called meeting held on the 16th day of July, 2015.

Ezra Rapport
Secretary-Treasurer

Approved as To Legal Form

Kenneth K. May
Legal Counsel

EXHIBIT I
STATE AUDIT DOCUMENT REQUIREMENTS AND FUNDING MATCH GUIDELINES FOR GRANTEES

State Audit Document Requirements

The list below details the documents/records that State Auditors typically reviewed in the event of a Grant Agreement being audited. Grantees should ensure that such records are maintained for each State funded Program/Project. Where applicable, this list of documents also includes documents relating to the Grantee's funding match which will be required for audit purposes.

Internal Controls:

1. Organization chart (e.g., Agency's overall organization chart and organization chart for this Grant Agreement's funded project.
2. Written internal procedures and flowcharts for the following:
   a) Receipts and deposits
   b) Disbursements
   c) State reimbursement requests
   d) State funding expenditure tracking
   e) Guidelines, policy(ies), and procedures on State funded Program/Project
3. Audit reports of the Grantee's internal control structure and/or financial statements within the last two years.
4. Prior audit reports on State funded Program/Project.

State Funding:

1. Original Grant Agreement, any amendment(s) and budget modification documents.
2. A list of all bond-funded grants, loans or subventions received from the State.
3. A list of all other funding sources for each Program/Project.

Contracts:

1. All subcontractor and consultant contracts and related, if applicable.
2. Contracts between the Grantee, member agencies, and project partners as related to the State funded Program/Project.

Invoices:

1. Invoices from vendors and subcontractors for expenditures submitted to the State for payments under the Grant Agreement.
2. Documentation linking subcontractor invoices to State reimbursement requests and related Grant Agreement budget line items.
3. Reimbursement requests submitted to the State for the Grant Agreement.

Cash Documents:

1. Receipts (copies of warrants) showing payments received from the State.
2. Deposit slips or bank statements showing deposit of the payments received from the State.
3. Cancelled checks or disbursement documents showing payments made to vendors, subcontractors, consultants, and/or agents under the Grant Agreement.

Accounting Records:

1. Ledgers showing receipts and cash disbursement entries for State funding.
2. Ledgers showing receipts and cash disbursement entries of other funding sources.
3. Bridging documents that tie the general ledger to reimbursement requests submitted to the State for the Grant Agreement

Administration Costs:

1. Supporting documents showing the calculation of administration costs.

Personnel:

1. List of all contractors and Grantee staff that worked on the State funded Program/Project.
2. Payroll records including timesheets for contractor staff and the Grantee's

Project Files:

1. All supporting documentation maintained in the Program/Project files.
2. All Grant Agreement related correspondence.

Funding Match Guidelines

Funding Match consists of non-State funds including in-kind services. In-kind services are defined as work performed or items contributed (i.e., dollar value of non-cash contributions) by the Grantee (and potentially other parties involved) directly related to the execution of Exhibit A (Work Plan) (*examples*: volunteer services, equipment use, and facilities). The cost of in-kind service can be counted as funding match in-lieu of actual funds (or revenue) provided by the Grantee. Other funding match and in-kind service eligibility conditions may apply. Provided below is guidance for documenting funding match with and without in-kind services.

1. Although tracked separately, in-kind services shall be documented and, to the extent feasible, supported by the same methods used by the Grantee for its own employees. Such documentation should include the following:
   a. Detailed description of the contributed item(s) or service(s)
   b. Purpose for which the contribution was made (tied to Grant Agreement Exhibit A (Work Plan))
   c. Name of contributing organization and date of contribution
   d. Real or approximate value of contribution. Who valued the contribution and how the value was determined? (e.g., actual, appraisal, fair market value, etc.). Justification of rate. (See item #2, below)
   e. For contributed labor, the person's name, the work performed, the number of hours contributed, and the pay rate applied
   f. If multiple sources exist, these should be summarized on a table with summed charges
   g. Source of contribution and whether it was provided by, obtained with, or supported by government funds
2. Rates for volunteer or in-kind services shall be consistent with those paid for similar work in the Grantee's organization. For example, volunteer service of clearing vegetation performed by an attorney shall be valued at a fair market value for this service, not the rate for professional legal services. In those instances in which the required skills are not found in the recipient organization, rates shall be consistent with those paid for similar work in the labor market. Paid fringe benefits that are reasonable, allowable and allocable may be included in the valuation.
3. Funding match contribution (including in kind services) shall be for costs and services directly attributed to activities included in the Grant Agreement Work Plan. These services, furnished by professional and technical personnel, consultants, and other skilled and unskilled labor may be counted as in-kind if the activities are an integral and necessary part of the State funded Program/Project under the Grant Agreement.
4. Cash contributions made to a Program/Project shall be documented as revenue and in-kind services as expenditure. These costs should be tracked separately in the Grantee's accounting systems.

A.7 Required Bid Submittals

Bidders are required to provide the following to meet qualifications for this bid notice:

1. A completed bid sheet. Use the blank bid sheet provided for each project component.
2. Authorized Bidders Statement Regarding Insurance coverage. Use attached version.
3. Authorized Non-Collusion Affidavit. Use attached version.
4. List of proposed suppliers and subcontractors. Provide all information requested in the blank sheet provided.
5. License and experience statement. Provide all information requested in the blank sheet provided.
6. **Submission of all bid materials by June 5th, 2017 by 7pm**.

BIDDER'S STATEMENT REGARDING
INSURANCE COVERAGE

Bidder hereby certifies that he has reviewed the insurance coverage requirements specified in the Contract Specifications. Should he be awarded the contract for the work, Bidder further certifies that he can meet all the Contract Specifications requirements for insurance including insurance coverage of his subcontractors.

_____
Bidder

By _____

_____
Title

_____
Date

NON-COLLUSION AFFIDAVIT

State of California

) ss

San Mateo County RCD

_____(name), being first duly sworn, deposes and says that he or she is _____(title) of _____(company) the party making the foregoing bid that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the Bidder has not directly or indirectly induced or solicited any other Bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any Bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the Bidder or any other Bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other Bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the Bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

_____
Bidder

By _____

_____
Title

_____
Date

PROPOSED SUPPLIERS AND SUBCONTRACTORS

List of subcontractors and suppliers who will perform work or provide materials. Bidders are not required to use this form but shall provide all requested information using these specific headers. A summary of the subcontractor's qualifications is only required for subcontractors providing more than 20 percent of the overall scope of work.

Name	Address	Work Subcontracted	Qualifications of Subcontractor

LICENSE AND EXPERIENCE STATEMENT

The following outline is a record of the Bidder's experience in construction and restoration of a type similar in magnitude and character to that contemplated under this contract. Additional numbered pages outlining this portion of the proposal may be attached to this page. The Contractor must be properly licensed to perform the work in this project as determined by the State Contractor's License Board.

Contractor's License No: _____

_____ _____
Class Description

License Expiration date: _____

These representations are being made under the penalty of perjury.

_____
Contractor's Signature

Relevant Experience Statement: Include as an attachment to your proposal a statement describing relevant experience with implementing similar projects. Include specific examples of past projects similar in scope and magnitude. Please include at least three references with names, phone numbers and email addresses.

BID SHEET
MOTY-KLINGMAN OFF-STREAM RESERVOIR

Cost Estimate Item	Pay Type	Units	Unit Rate	Quantity	Total
1.0) Site Mobilization/Demobilization					
1.1 Portable toilet	Lump Sum	MO			
1.2 Equipment mob/demob	Lump Sum	EA		1	
1.3 Pre-construction submittals	Lump Sum	EA		1	
1.4 Pre-construction meeting	Lump Sum	HR		8	
1.5 Stabilized entrance	Lump Sum	EA		1	
2.0) Irrigation					
2.1 Stakeout	Lump Sum	LF		1	
2.2 Creek Pump	Lump Sum	EA		1	
2.3 Reservoir Pump	Lump Sum	EA		1	
2.4 Raw Supply	Lump Sum	LF		1846	
2.5 Main Distribution	Lump Sum	LF		1208	
2.6 Lateral A	Lump Sum	LF		156	
2.7 Lateral B	Lump Sum	LF		1040	
2.8 Lateral C	Lump Sum	LF		911	
3.0) Reservoir					
3.1 Clearing/grubbing	Lump Sum	AC		3.7	
3.2 Over-excavation	Lump Sum	CY		48000	
3.3 Seepage Trench (Optional)	Lump Sum	LF		416	
3.4 Embankment	Lump Sum	CY		30500	
3.5 Over excavation survey	Lump Sum	EA		1	
3.6 Spillway	Lump Sum	LF		65	
3.7 Compaction testing	Lump Sum	HR			
3.8 Finish grade survey	Lump Sum	EA		1	
3.9 Straw wattles	Lump Sum	LF		1800	
3.10 Hydroseeding	Lump Sum	SF		59000	
4.0) Administration					
4.1 Management	Lump Sum	HR			
4.2 Bonding/licensing	Lump Sum	EA		1	
4.3 As-Builts	Lump Sum	EA		1	
			TOTAL		