Appendix A

Draft 100% Design Plan Drawings
Clover Creek / Millville Diversion
Fisheries Restoration Project

WESTERN SHASTA RESOURCE CONSERVATION DISTRICT

FISH PASSAGE IMPROVEMENT PLANS FOR THE

CLOVER CREEK / MILLVILLE DIVERSION FISHERIES RESTORATION PROJECT

LOCATED IN

MILLVILLE, CA

LOCATION MAP
NOT TO SCALE

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PROJECT CONTACTS

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HYDRAULIC ENGINEER
NORTHWEST HYDRAULIC CONSULTANTS
BRIAN WARDMAN
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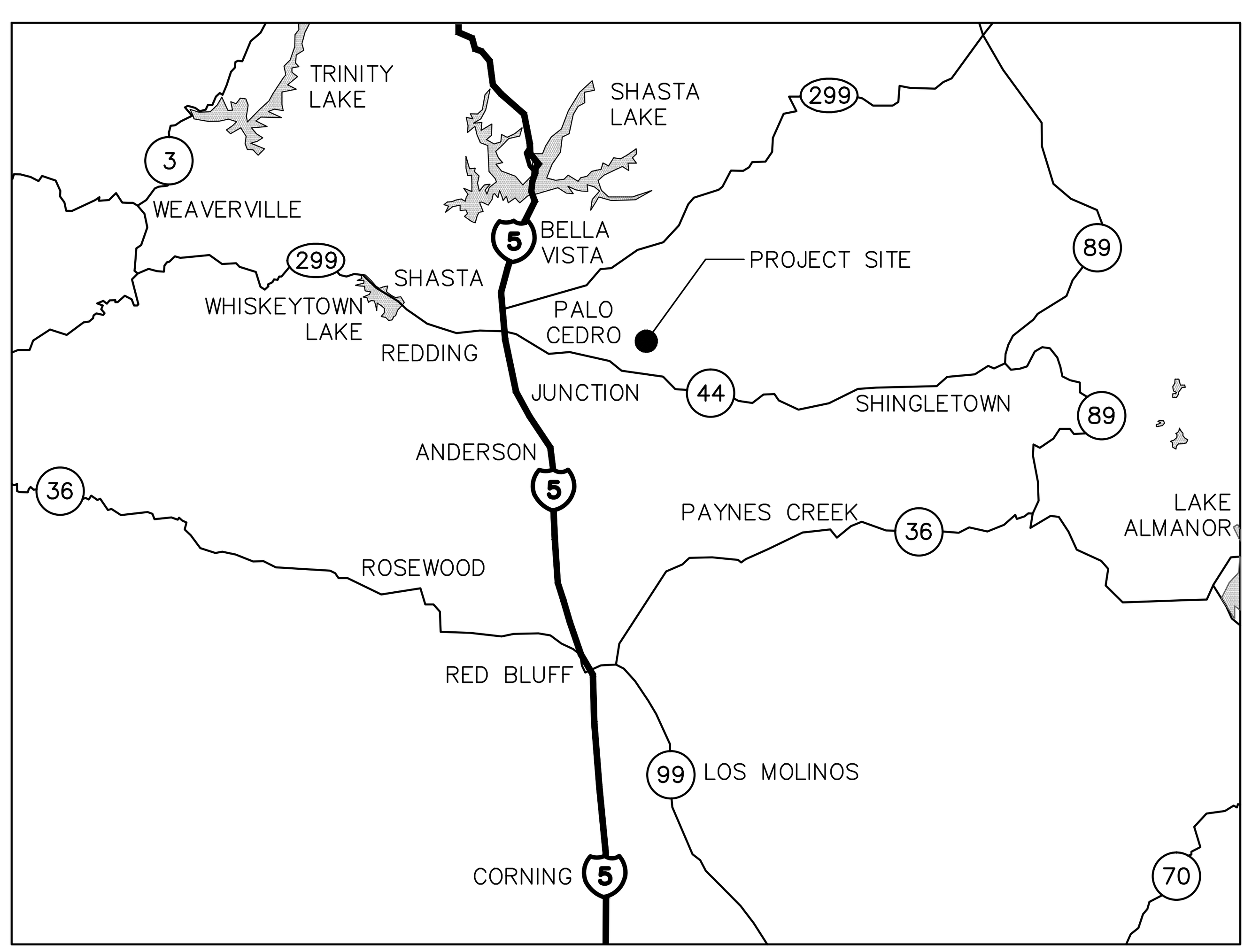
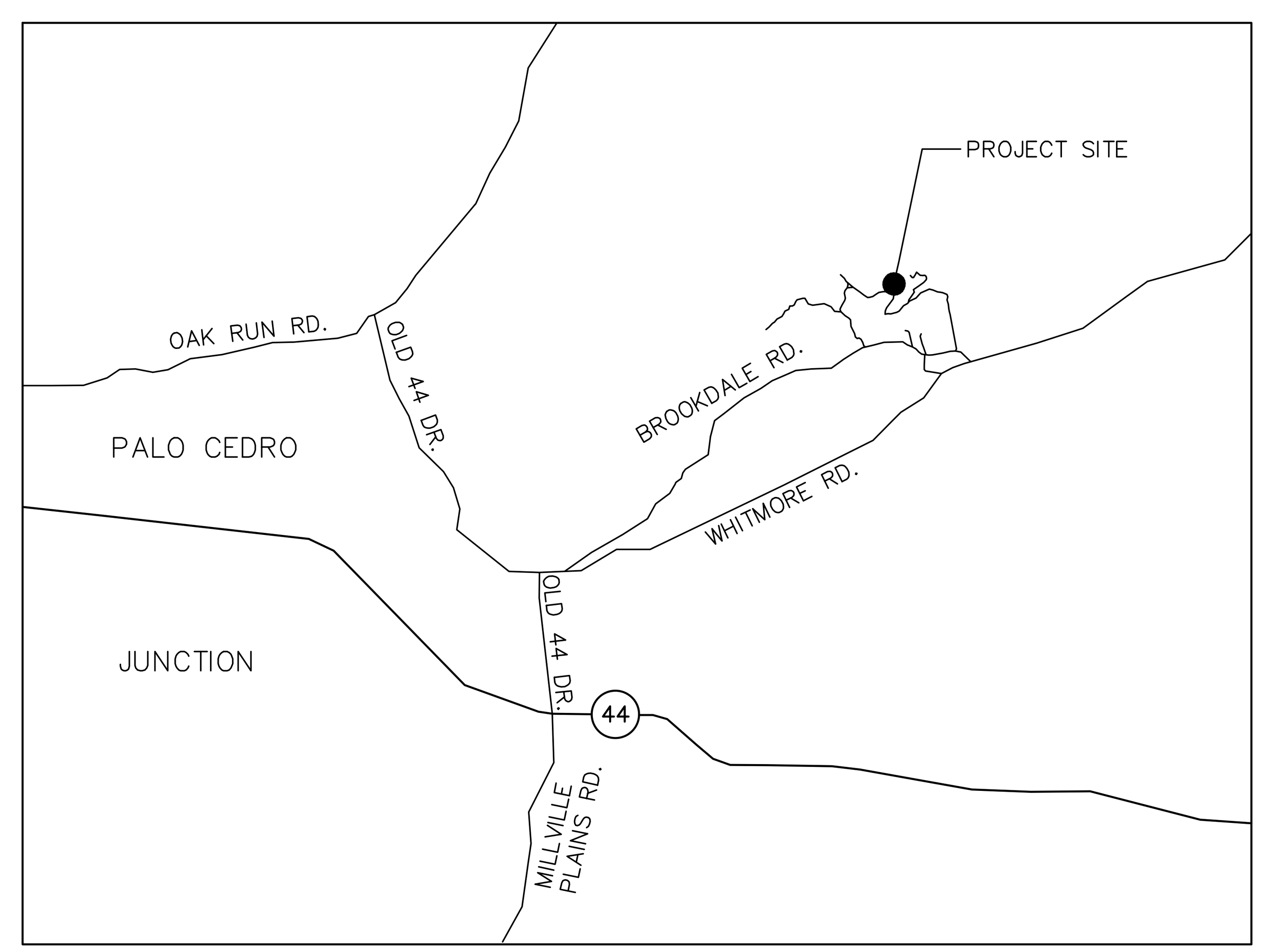


AREA MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

Know what's below. Call before you dig. 811

REVISED DRAFT 8/10/15

0 1"
REFERENCE SCALE

PLOT DATE: Monday, August 10, 2015 TIME: 2:54:06 PM BY: PAUL BARBER
FILE: N:\1–PROJECTS\2014\14–074.00 Clover Creek Fish Ladder\Phase 2 – Design\CAD\14–074.00–GENERAL.dwg

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TITLE SHEET
CLOVER CREEK / MILLVILLE DIVERSION FISHERIES RESTORATION PROJECT
MILLVILLE SHASTA COUNTY CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER TRAVIS W. KOCH CIVIL STATE OF CALIFORNIA
NOT FOR CONSTRUCTION

DATE: 8/10/15
SCALE: AS NOTED
DESIGNED BY: JLJ
DRAFTED BY: LDC
CHECKED BY: TWK
JOB NO.: 14-074.00
FILE: 14-074.00-GENERAL.dwg

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
2. THE NOTES PROVIDED ON THESE DRAWINGS DO NOT REPRESENT A COMPLETE DESCRIPTION OF THE WORK TO BE PERFORMED AND ARE INTENDED TO COMPLEMENT THE SPECIFICATIONS. WORK SHALL BE IN ACCORDANCE WITH CALTRANS 2010 STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS. SPECIFIC TECHNICAL SPECIFICATION SECTIONS INCLUDE, BUT ARE NOT LIMITED TO:
   A. SECTION 19 – EARTHWORK
   B. SECTION 21 – EROSION CONTROL
   C. SECTION 51 – CONCRETE STRUCTURES
   D. SECTION 64 – PLASTIC PIPE
   E. SECTION 72 – SLOPE PROTECTION
   F. SECTION 75 – MISCELLANEOUS METALS
   G. SECTION 88 – GEOSYNTHETICS
   H. SECTION 90 – CONCRETE
   I. SPECIAL PROVISION – HDPE PIPE
   J. SPECIAL PROVISION – FISH SCREEN BRUSH SOLAR DRIVE SYSTEM
3. SPECIFICATIONS AND NOTES MAY BE PRESENTED SEPARATELY, BUT SUCH SEPARATION SHALL NOT BE CONSIDERED TO LIMIT THE WORK REQUIRED OF ANY PARTICULAR TRADE.
4. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION MEANS AND METHODS.
5. LOCATIONS AND DIMENSIONS OF EXISTING STRUCTURES AND FEATURES HAVE NOT BEEN VERIFIED. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL CONTROLLING DIMENSIONS OF NEW AND EXISTING FEATURES PRIOR TO ORDERING OR FABRICATING MATERIAL OR CONSTRUCTING PROPOSED IMPROVEMENTS. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION OF THE FEATURE IN QUESTION.
6. PRIOR TO THE START OF CONSTRUCTION, LOCATE ALL EXISTING AND UNDERGROUND UTILITIES IN AND AROUND THE AREAS OF NEW CONSTRUCTION. VERIFY THAT THE PROPOSED CONSTRUCTION DOES NOT CONFLICT WITH EXISTING OR PROPOSED UTILITIES OR THAT APPROPRIATE MEANS ARE PROVIDED FOR REROUTING, SUPPORTING, PROTECTING, OR OTHERWISE INCORPORATING THE UTILITIES INTO THE CONSTRUCTION.
7. NOTIFY THE OWNER AND/OR ENGINEER WHERE A CONFLICT OR DISCREPANCY OCCURS BETWEEN THESE DRAWINGS AND ANY OTHER PORTION OF THE CONTRACT DOCUMENTS OR EXISTING FIELD CONDITIONS.
8. MONITOR ADJACENT PROPERTY BY SURVEYING OR OTHER RECORDABLE METHODS. ACTION SHALL BE TAKEN TO PREVENT ADJACENT PROPERTY OR UTILITY DAMAGE.
9. PRODUCTS REFERENCED ON THE DRAWINGS SHALL BE CONSTRUCTED, INSTALLED, AND/OR APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN RECOMMENDATIONS UNLESS OTHERWISE NOTED.
10. DO NOT SCALE DRAWINGS. CONTACT THE ENGINEER FOR ANY DIMENSIONS OR SPECIFIC DETAIL NOT SHOWN.

DESIGN BASIS AND LOADING

1. THE DESIGNS DEPICTED IN THESE DRAWINGS ARE BASED ON INFORMATION PROVIDED IN THE FOLLOWING REFERENCES:
   A. CLOVER CREEK–MILLVILLE FISH PASSAGE PROJECT PRELIMINARY ENGINEERING TECHNICAL REPORT, PREPARED BY THE CALIFORNIA DEPARTMENT OF WATER RESOURCES, DATED APRIL 2013.
   B. TOPOGRAPHIC BASE MAP PROVIDED BY NORTHWEST HYDRAULIC CONSULTANTS, RECEIVED ELECTRONICALLY ON NOVEMBER 3, 2014.
   C. DRAFT CLOVER CREEK GEOTECHNICAL INVESTIGATION REPORT, PREPARED BY SAGE ENGINEERS INC., DATED DECEMBER 23, 2014.
   D. HYDRAULIC BASIS OF DESIGN REPORT, CLOVER CREEK–MILLVILLE DIVERSION FISH PASSAGE IMPROVEMENT PROJECT, 75% DESIGN DRAFT, PREPARED BY NORTHWEST HYDRAULIC CONSULTANTS, DATED DECEMBER 29, 2014.
2. DESIGN IS IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS:
   - ACI 318–11, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
   - AISC STEEL CONSTRUCTION MANUAL, 14TH EDITION
   - AWS D1.1 STRUCTURAL WELDING CODE
3. GEOTECHNICAL DESIGN PARAMETERS:
   - ALLOWABLE BEARING PRESSURES:
     - DEAD + LIVE LOAD = 4,600 PSF
     - TOTAL LOAD = 6,133 PSF
   - ALLOWABLE PASSIVE PRESSURE = 300 PCF (EFP)
   - ALLOWABLE FRICTION FACTOR = 0.25
   - ACTIVE SOIL PRESSURE = 40 PCF (EFP)
   - AT–REST SOIL PRESSURE = 60 PCF (EFP)
4. DESIGN LOADS:
   - DEAD LOADS :
     - CONCRETE = 150 PCF
     - STEEL = 490 PCF
5. SEISMIC DESIGN PARAMETERS:
   - SDS = 0.46
   - PEAK GROUND ACCELERATION = 0.184g
6. HYDRAULIC DESIGN CRITERIA:
   - LOW–FLOW FISH PASSAGE = 10 CFS
   - HIGH–FLOW FISH PASSAGE = 400 CFS
   - 100–YEAR FLOOD EVENT = 7,013 CFS

SURVEY

1. HORIZONTAL COORDINATE SYSTEM: NAD83 CALIFORNIA STATE PLANE, ZONE 1
2. VERTICAL DATUM: NAVD88

0 1"
REFERENCE SCALE

EXCAVATION

1. NOTIFY UNDERGROUND SERVICE ALERT (USA NORTH) TO IDENTIFY THE LOCATION OF EXISTING UTILITIES AT LEAST 48 HOURS (TWO WORKING DAYS) PRIOR TO ANY EXCAVATION WORK: (800)–227–2600 OR WWW.USANORTH.ORG.
2. THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY AND SHORING OF TEMPORARY CUT SLOPES AND TRENCHES, AND SHALL CONFORM TO THE REQUIREMENTS OF CAL–OSHA.
3. EXCAVATIONS SHALL BE KEPT CLEAN AND DRY FOR THE DURATION OF THE WORK PERFORMED.

DEMOLITION

1. PROTECT EXISTING FEATURES THAT ARE TO REMAIN IN PLACE FROM DAMAGE UNLESS OTHERWISE NOTED.
2. EVALUATE AND REMOVE TREES THAT POSE A POTENTIAL CONSTRUCTION CONFLICT. EVALUATION AND REMOVAL SHALL BE PERFORMED BY A QUALIFIED ARBORIST. CONSTRUCTION SHALL REMAIN OUTSIDE OF THE DRIP LINE OF TREES TO REMAIN.

TEMPORARY ENVIRONMENTAL/EROSION CONTROL

1. CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING BEST MANAGEMENT PRACTICES (BMPS) AS REQUIRED BY THE PROJECT PERMITS.
2. CONTAIN SURFACE RUNOFF AND CONTENTIOUS MATERIAL DURING CONSTRUCTION TO PREVENT CONTAMINATION OF GROUND AND SURFACE WATERS.
3. MAINTAIN THE SITE AND ADJACENT PROPERTY IN A CLEAN, SAFE, AND USABLE CONDITION. ALL SPILLS OF SOIL, ROCK, OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED.
4. ALL DISTURBED EARTH SHALL BE REVEGETATED OR TREATED WITH WOOD CHIPS AT THE CULMINATION OF THE PROJECT. REVEGETATION SHALL CONSIST OF AN APPROVED SEED MIX.
5. COMPLETELY REMOVE TEMPORARY CONSTRUCTION BMPS AT THE COMPLETION OF CONSTRUCTION.

TEMPORARY DIVERSION/DETWATERING

1. CONTRACTOR SHALL PROVIDE A STREAM DIVERSION AND DEWATERING PLAN THAT DESCRIBES THE MATERIALS AND METHODS USED TO INSTALL AND MAINTAIN STREAM DIVERSIONS AND DEWATERING ACTIVITIES.
2. STREAM DIVERSIONS SHALL BE SIZED TO ACCOMODATE FLOWS UP TO 7 CFS WITHOUT UNDUE EROSION.
3. DESIGN OF TEMPORARY COFFERDAMS SHALL BE SIZED TO RETAIN A DEPTH OF WATER AS SHOWN ON THE PLANS.
4. COMPLETELY REMOVE DIVERSION DAMS AT THE COMPLETION OF CONSTRUCTION.

EARTHWORK

1. PREPARE DESIGNATED FILL AREAS BY GRUBBING AND STRIPPING VEGETATION, REMOVING DEBRIS, AND SCARIFYING TO A MINIMUM DEPTH OF 8 INCHES PRIOR TO MATERIAL PLACEMENT.
2. UNLESS OTHERWISE NOTED, PLACE FILL MATERIAL IN 8–INCH LOOSE LIFTS, MOISTURE CONDITION TO WITHIN 2% OF OPTIMUM MOISTURE CONTENT, AND COMPACT TO AT LEAST 90% RELATIVE COMPACTION (RC) PER ASTM D1557.
3. FILL MATERIAL SHALL BE FREE OF MATERIALS LARGER THAN 2.5 INCHES IN ANY DIMENSION, DEBRIS, WASTE, FROZEN MATERIALS, ORGANIC MATERIAL, AND OTHER DELETERIOUS MATTER.
   - ENGINEERED FILL: USE ON–SITE MATERIAL MEETING THE FOLLOWING REQUIREMENTS:
     - LIQUID LIMIT (LL) = LESS THAN 40
     - PLASTICITY INDEX (PI) = LESS THAN 20
     - PERCENT PASSING #200 SIEVE = 35% MAXIMUM
     - LITTLE TO NO CORROSION POTENTIAL
   - LOW PERMEABILITY SOIL CAP: ACCEPTABLE SOIL CLASSIFICATION GROUPS SC, GC, CL, ML, AMD CL–ML ACCORDING TO ASTM D2487 OR A COMBINATION OF THESE GROUPS, AND MEETS THE FOLLOWING REQUIREMENTS:
     - LIQUID LIMIT (LL) = LESS THAN 40
     - PLASTICITY INDEX (PI) = LESS THAN 20
     - PERCENT PASSING #200 SIEVE = 35% MINIMUM
4. PERFORM GRADING TO THE LINES AND GRADES SHOWN. FINISHED SURFACES SHALL PROVIDE POSITIVE SURFACE DRAINAGE WHERE PONDING IS PREVENTED.

CONCRETE

1. CONCRETE STRENGTH AND MIX REQUIREMENTS:
   - MINIMUM 28–DAY COMPRESSIVE STRENGTH (f'c) = 3,500 PSI
   - WATER/CEMENT RATIO = 0.50
   - MAXIMUM AGGREGATE SIZE = 1 ½"
   - CEMENT = ASTM C150 TYPE II
   - EXPOSURE CLASSES:
     - FREEZING AND THAWING = F0
     - SULFATE = S1
     - PERMEABILITY = P0
     - CORROSION = C1
2. EXPOSED CONCRETE EDGES SHALL HAVE A ¾" CHAMFER
3. REINFORCING STEEL:
   - DEFORMED REBAR = ASTM A615, GRADE 60 (fy = 60 KSI)
   - WELDED WIRE FABRIC (WWF) = ASTM A1064 (fy = 65 KSI)
4. REINFORCEMENT SPACING SHOWN IS CENTER TO CENTER OF BARS
5. UNLESS OTHERWISE NOTED, MAINTAIN COVERAGE TO THE FACE OF REBAR AS FOLLOWS:
   - CONCRETE CAST AGAINST EARTH = 3"
   - CONCRETE EXPOSED TO EARTH OR WEATHER:
     - #6 THROUGH #18 = 2"
     - #5 AND SMALLER = 1 ½"
   - OTHER SURFACES = 1 ½"
6. MINIMUM LAP LENGTHS SHALL CONFORM TO TABLE 1, THIS SHEET.
7. RUBBER MANHOLE STOP RINGS SHALL BE BY NORTHTOWN PIPE PROTECTION PRODUCTS OR APPROVED EQUIVALENT. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

CEMENT SLURRY BACKFILL

8. SAND CEMENT SLURRY PER CALTRANS SECTION 19–3.02D SHALL BE USED TO BACKFILL AROUND THE PIPE AS SHOWN.
9. MINIMUM SLURRY COVER AROUND PIPE:
   BEDDING = 4"
   SIDES OF TRENCH = 6"
   TOP OF PIPE = N/A
10. PREVENT THE PIPE FROM FLOATING OR MOVING UNTIL INITIAL SET IS ACHIEVED BY ANCHORING THE PIPE, ADDING WEIGHT, OR PLACING SLURRY IN SMALL LIFTS. BRING UP SLURRY IN EQUAL VOLUMES ON BOTH SIDES OF THE PIPE DURING PLACEMENT.

SIPHON PIPE

1. PIPE MATERIAL = SOLID WALL HIGH DENSITY POLYETHYLENE (HDPE) SDR 32.5, MEETING OR EXCEEDING ASTM D33509.
2. FABRICATED PIPE FITTINGS = HDPE SDR 17 WITH MITERED ENDS TO CONFORM TO SDR 32.5
3. PIPE SEGMENTS AND FITTINGS SHALL BE BUTT FUSION WELDED.
4. INSTALL PIPE TO THE LINES AND GRADES SHOWN ON CIVIL SHEETS. COLD BEND THE PIPE WHERE NECESSARY.
   - MINIMUM BEND RADIUS = 91 FT, OR PER MANUFACTURER RECOMMENDATIONS
5. MAXIMUM DESIGN PRESSURE = 6.5 PSI
6. MAXIMUM PRESSURE FOR LEAK TEST PER ASTM F2164 = 10 PSI
7. MINIMUM SOIL COVER OVER CEMENT SLURRY BACKFILL = 12"

ROCK SCOUR PROTECTION

1. INSTALL ROCK RIPRAP IN ACCORDANCE WITH CALTRANS METHOD A PLACEMENT.
2. RSP FABRIC SHALL BE CALTRANS CLASS 8.
3. INSTALL 6–INCH MIN LAYER OF ANGULAR 6–INCH ROCK ON TOP OF RSP FABRIC PRIOR TO PLACING RIPRAP.

METALS

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO FABRICATION.
2. MATERIALS:
   - WIDE FLANGE BEAMS = ASTM A992 GR. 50
   - CHANNELS, ANGLES, AND PLATES = ASTM A36
   - HSS = ASTM A500 GR. B
   - ALUMINUM COVER PLATES = A3003
   - BOLTS, WASHERS, AND NUTS = ASTM 325, SAE GR 8, OR APPROVED EQUIVALENT.
3. ALL STEEL SHALL BE HOT DIPPED GALVANIZED.
4. WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS IN ACCORDANCE WITH AWS REQUIREMENTS.
5. BOLTS SHALL BE TIGHTENED TO SNUG–TIGHT CONDITIONS.

FISH SCREEN COMPONENTS

1. SCREEN PANEL = WEDGEWIRE PROFILE BAR SCREEN WITH 1/16–INCH OPENINGS.
2. STRIP BRUSH = NYLON BRUSH WITH 0.045–IN BRISTLE DIAMETER AND 7/16–IN SPINE WIDTH.
3. SOLAR PANEL, MOTOR, GEARS, ETC. SHALL BE DESIGNED TO BE ABLE TO MOVE BRUSH ASSEMBLY AT 1 RPM AND SHALL BE SECURELY FASTENED TO CONCRETE STRUCUTRE.

TABLE 1 – TYPICAL DEVELOPMENT/LAP LENGTHS [1]

f'c = 3,500 PSI			fy = 60,000 PSI		
BAR SIZE	TOP BARS [2]		OTHER BARS		STD HOOKS
	DEV LENGTH Ld (IN)	CLASS B LAP SPLICE (IN)	DEV LENGTH Ld (IN)	CLASS B LAP SPLICE (IN)	DEV LENGTH Ldh (IN)
#3	20	26	16	2	4
#4	27	36	21	27	5
#5	33	43	26	33	6
#6	40	52	31	40	7
#7	58	75	45	58	8
#8	66	86	51	66	9

FOOTNOTES
1. BASED ON ACI 318–11 SECTIONS 12.2.2 AND 12.5.2.
2. TOP BARS SHALL BE DEFINED AS ANY HORIZONTAL BAR PLACED SUCH THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BAR IN ANY SINGLE POUR. HORIZONTAL WALL BARS ARE CONSIDERED TOP BARS.

LEGEND & ABBREVIATIONS

3500	(E) MAJOR CONTOUR
	(E) MINOR CONTOUR
3500	(N) MAJOR CONTOUR
	(N) MINOR CONTOUR
BP	BEGIN POINT
BOF	BOTTOM OF FOOTING
BW	BOTTOM OF WALL
CFS	CUBIC FEET PER SECOND
℄ OR CL	CENTER LINE
CLR	CLEAR COVER
CONC	CONCRETE
D/S	DOWNSTREAM
DEMO	DEMOLISH
DWG	DRAWING
(E)	EXISTING FEATURE
EF	EACH FACE
EG	EXISTING GRADE
EJ	EXPANSION JOINT
EL 2426.0	ELEVATION IN FEET
ELEV	ELEVATION
EP	END POINT
EW	EACH WAY
EQ	EQUAL
FG	FINISH GRADE
HDPE	HIGH DENSITY POLYETHYLENE
INV	INVERT
LOL	LAYOUT LINE
LONG	LONGITUDINAL
MAX	MAXIMUM
MIN	MINIMUM
(N)	NEW FEATURE
OAE	OR APPROVED EQUIVALENT
OC	ON CENTER
OD	OUTSIDE DIAMETER
PI	POINT OF INTERSECTION
RET	RETAINING
RSP	ROCK SLOPE PROTECTION
SCH	SCHEDULE
SDR	STANDARD DIMENSION RATIO
STA	STATION
STD	STANDARD
TOF	TOP OF FOOTING
TOT	TOTAL
TW	TOP OF WALL
TYP	TYPICAL
U/S	UPSTREAM
VAR	VARIES
WSE	WATER SURFACE ELEVATION

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REV	BY	DATE	DESCRIPTION

GENERAL NOTES

CLOVER CREEK / MILLVILLE DIVERSION
FISHERIES RESTORATION PROJECT

MILLVILLE SHASTA COUNTY CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
TRAVIS W. KOCH
No. 75422
CIVIL
STATE OF CALIFORNIA
NOT FOR CONSTRUCTION

DATE: 8/10/15
SCALE: AS NOTED
DESIGNED BY: JLJ
DRAFTED BY: LDC
CHECKED BY: TWK
JOB NO.: 14-074.00
FILE: 14-074.00-GENERAL.dwg

PLOT DATE: Monday, August 10, 2015 TIME: 2:54:09 PM BY: PAUL BARBER
FILE: N:\1-PROJECTS\2014\14-074.00 Clover Creek Fish Ladder\Phase 2 – Design\CAD\14-074.00-GENERAL.dwg

NOTE:

1. SATELLITE IMAGERY BY ESRI AND OTHERS, USED UNDER LICENSE; RESOLUTION 0.3M, ACCURACY 4.08M, ACQUISITION DATE JUNE 12, 2010.

0 1"
REFERENCE SCALE

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REV	BY	DATE	DESCRIPTION

ACCESS PLAN
CLOVER CREEK / MILLVILLE DIVERSION
FISHERIES RESTORATION PROJECT
SHASTA COUNTY CALIFORNIA
MILLVILLE

REGISTERED PROFESSIONAL ENGINEER
TRAVIS W. KOCH
No. 88160
CIVIL
STATE OF CALIFORNIA

NOT FOR CONSTRUCTION

DATE:	8/10/15
SCALE:	1" = 350'
DESIGNED BY:	JLJ
DRAFTED BY:	LDC
CHECKED BY:	TWK
JOB NO.:	14-074.00
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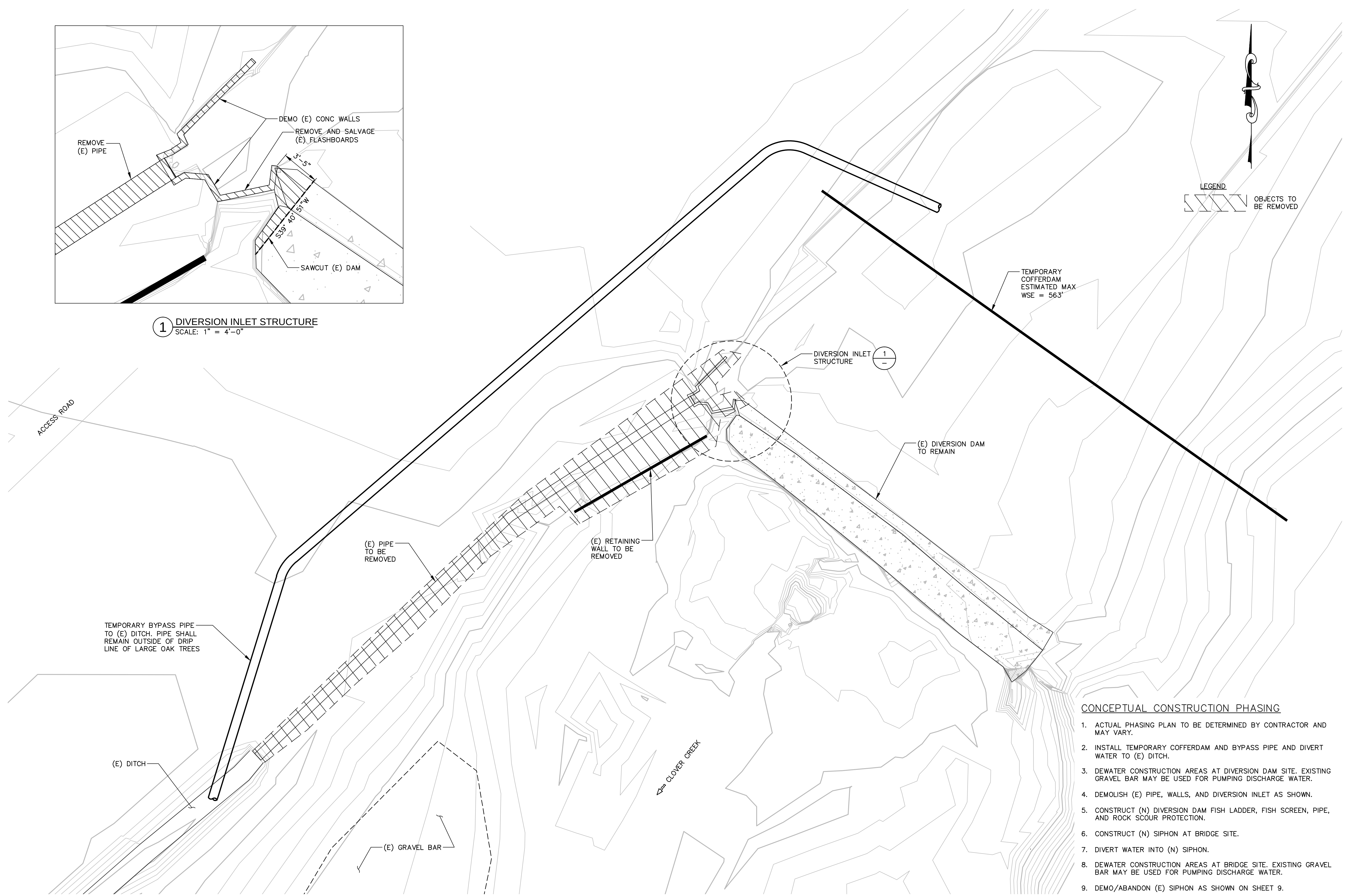
SHEET 3 OF 16



1 DIVERSION INLET STRUCTURE
SCALE: 1" = 4'-0"

CONCEPTUAL CONSTRUCTION PHASING

1. ACTUAL PHASING PLAN TO BE DETERMINED BY CONTRACTOR AND MAY VARY.
2. INSTALL TEMPORARY COFFERDAM AND BYPASS PIPE AND DIVERT WATER TO (E) DITCH.
3. DEWATER CONSTRUCTION AREAS AT DIVERSION DAM SITE. EXISTING GRAVEL BAR MAY BE USED FOR PUMPING DISCHARGE WATER.
4. DEMOLISH (E) PIPE, WALLS, AND DIVERSION INLET AS SHOWN.
5. CONSTRUCT (N) DIVERSION DAM FISH LADDER, FISH SCREEN, PIPE, AND ROCK SCOUR PROTECTION.
6. CONSTRUCT (N) SIPHON AT BRIDGE SITE.
7. DIVERT WATER INTO (N) SIPHON.
8. DEWATER CONSTRUCTION AREAS AT BRIDGE SITE. EXISTING GRAVEL BAR MAY BE USED FOR PUMPING DISCHARGE WATER.
9. DEMO/ABANDON (E) SIPHON AS SHOWN ON SHEET 9.
10. CONSTRUCT BRIDGE SITE FISH LADDER AND ROCK SCOUR PROTECTION.

DEMOLITION AND CONCEPTUAL DEWATERING PLAN
SCALE: 1" = 10'

0 1"
REFERENCE SCALE

REVISED DRAFT 8/10/15

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REV	BY	DATE	DESCRIPTION

DIVERSION DAM SITE
DEMOLITION AND CONCEPTUAL DEWATERING PLAN
CLOVER CREEK / MILLVILLE DIVERSION
FISHERIES RESTORATION PROJECT
MILLVILLE SHASTA COUNTY CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER TRAVIS W. KOCH No. 75432 CIVIL STATE OF CALIFORNIA
NOT FOR CONSTRUCTION

DATE: 8/10/15
SCALE: AS NOTED
DESIGNED BY: JLJ
DRAFTED BY: LDC
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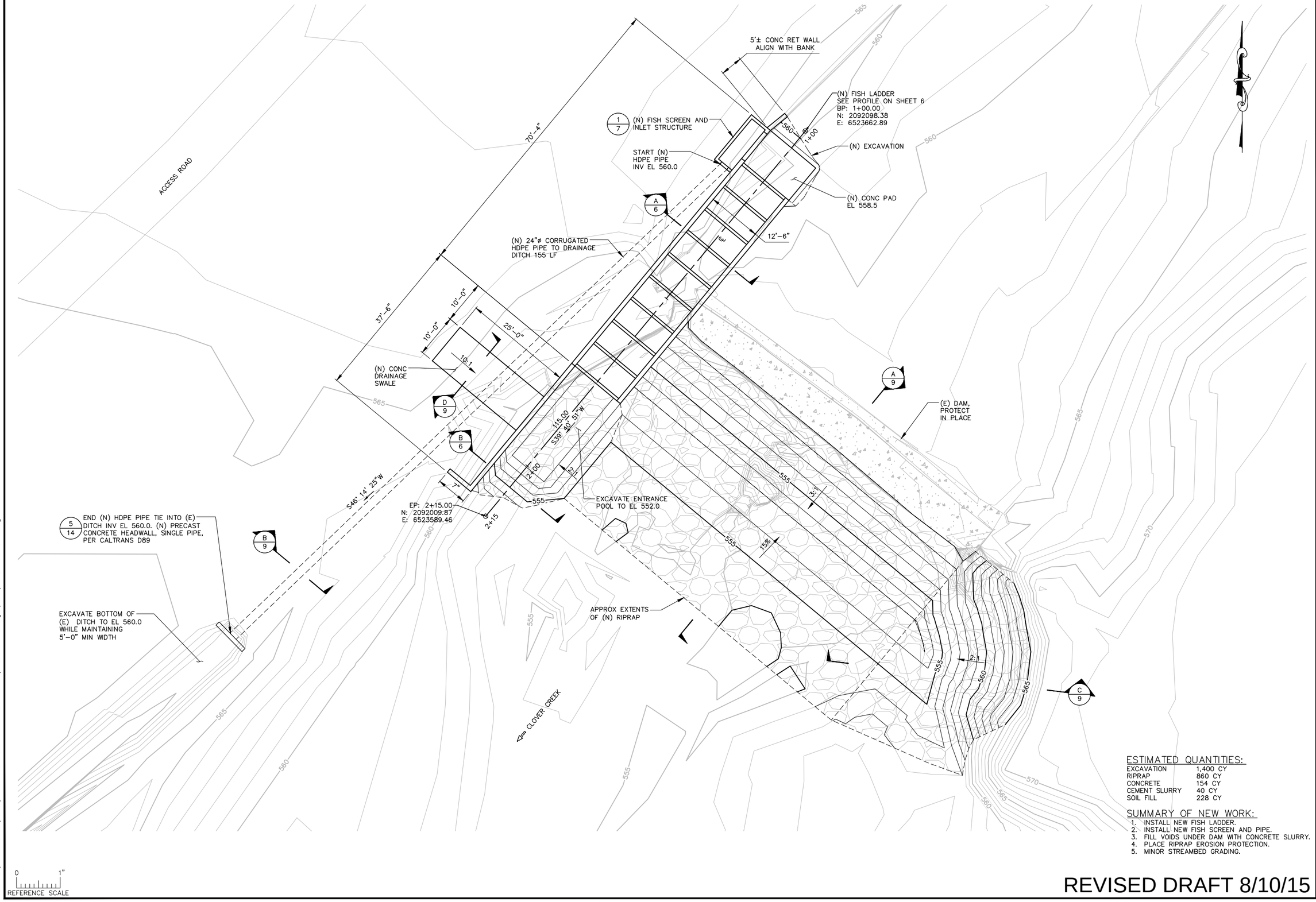

ESTIMATED QUANTITIES:

EXCAVATION	1,400 CY
RIPRAP	860 CY
CONCRETE	154 CY
CEMENT SLURRY	40 CY
SOIL FILL	228 CY

SUMMARY OF NEW WORK:

1. INSTALL NEW FISH LADDER.
2. INSTALL NEW FISH SCREEN AND PIPE.
3. FILL VOIDS UNDER DAM WITH CONCRETE SLURRY.
4. PLACE RIPRAP EROSION PROTECTION.
5. MINOR STREAMBED GRADING.

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DIVERSION DAM SITE
SITE PLAN

CLOVER CREEK / MILLVILLE DIVERSION
FISHERIES RESTORATION PROJECT

MILLVILLE SHASTA COUNTY CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER TRAVIS W. KOCH CIVIL STATE OF CALIFORNIA

NOT FOR CONSTRUCTION

DATE:	8/10/15
SCALE:	1" = 10'
DESIGNED BY:	JLJ
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JOB NO.:	14-074.00
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5

SHEET 5 OF 16

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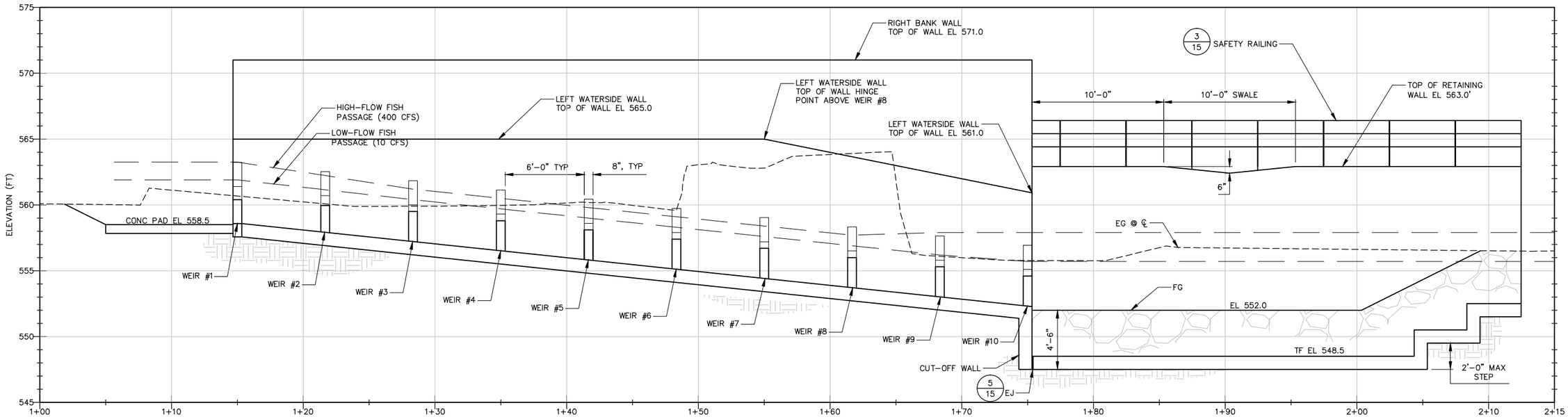
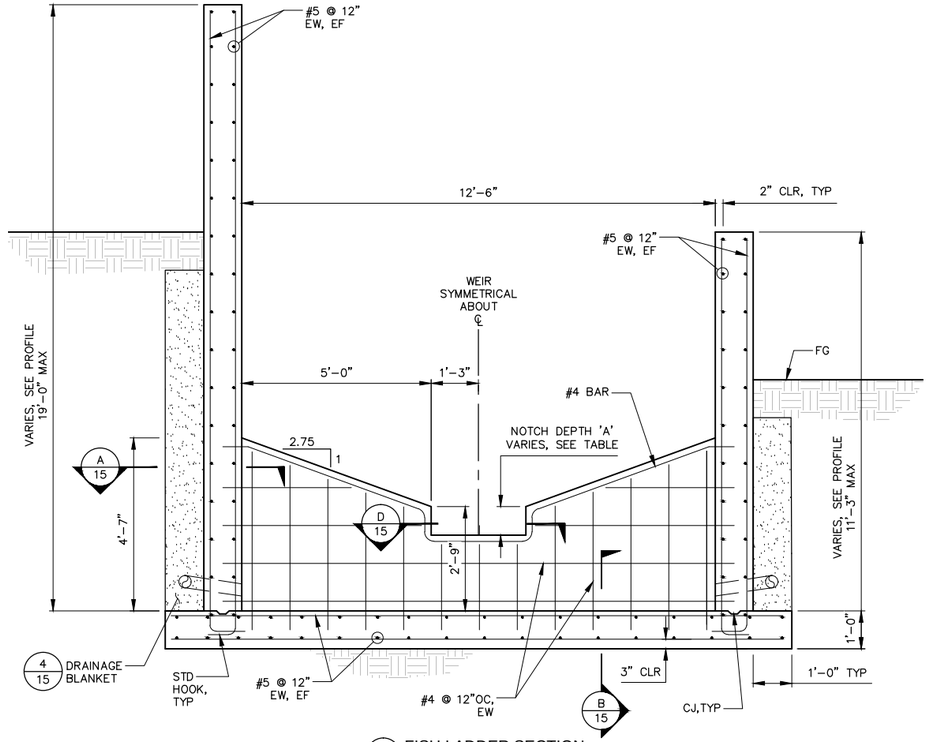


FISH LADDER PROFILE
SCALE: 1" = 4'

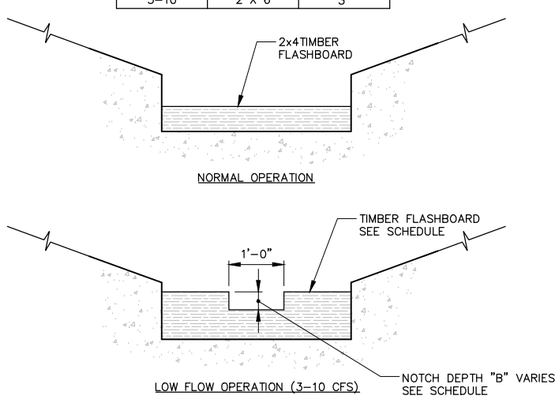
WEIR GEOMETRY AND ELEVATIONS			
WEIR	STATION[1]	NOTCH ELEVATION	NOTCH DEPTH 'A'
1	1+15.00	560.40	12"
2	1+21.67	559.95	9"
3	1+28.33	559.50	6"
4	1+35.00	558.80	6"
5	1+41.67	558.10	6"
6	1+48.33	557.40	6"
7	1+55.00	556.70	6"
8	1+61.67	556.00	6"
9	1+68.33	555.30	6"
10	1+75.00	554.60	6"

1. STATIONS ARE MEASURED TO THE CENTER OF THE WEIR.

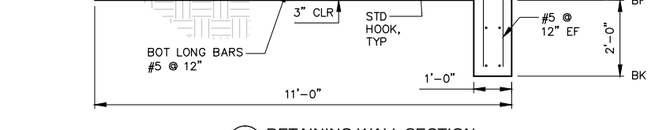


A FISH LADDER SECTION
SCALE: 1/2" = 1'

LOW FLOW (3-10 CFS) FLASHBOARD SCHEDULE		
WEIR	BOARD SIZE	NOTCH DEPTH "B"
1	2 X 12	9"
2	2 X 8	6"
3–10	2 X 6	3"



1 FLASHBOARD DETAIL
SCALE: NTS



B RETAINING WALL SECTION
SCALE: 1/2" = 1'

0 1"
REFERENCE SCALE

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REV	BY	DATE	DESCRIPTION

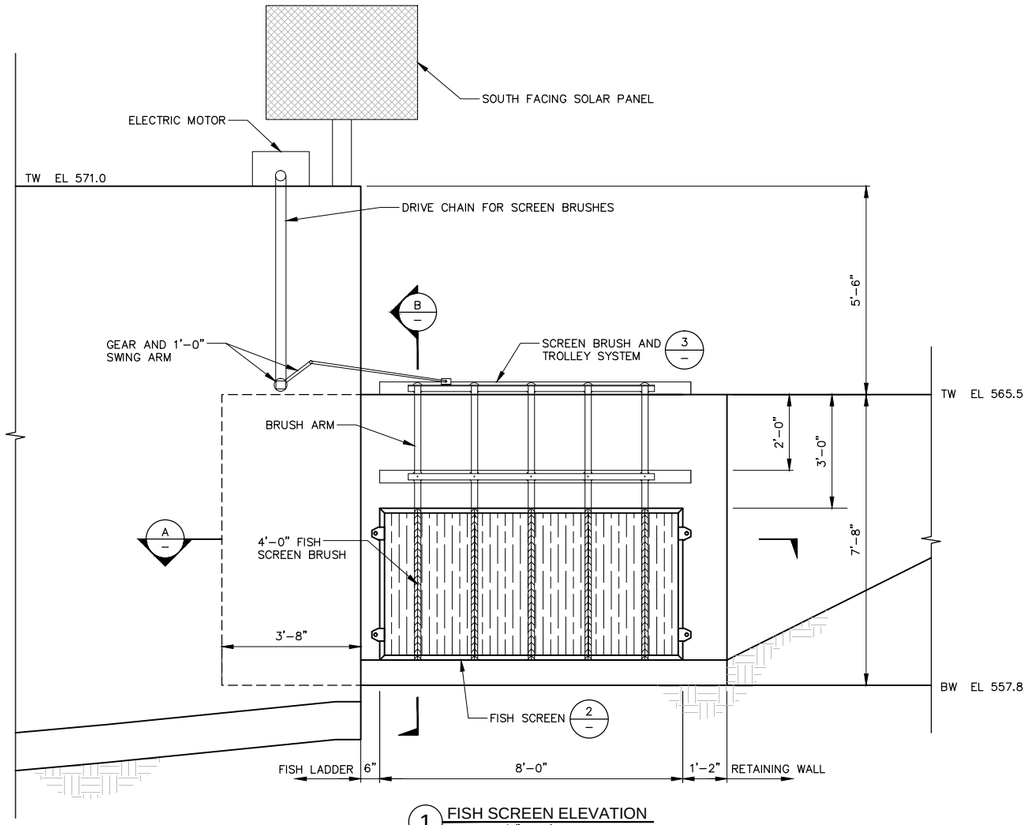
DIVERSION DAM SITE
FISH LADDER
CLOVER CREEK / MILLVILLE DIVERSION
FISHERIES RESTORATION PROJECT
SHASTA COUNTY CALIFORNIA
MILLVILLE

REGISTERED PROFESSIONAL ENGINEER
TRAVIS W. KOCH
CIVIL
STATE OF CALIFORNIA
NOT FOR CONSTRUCTION

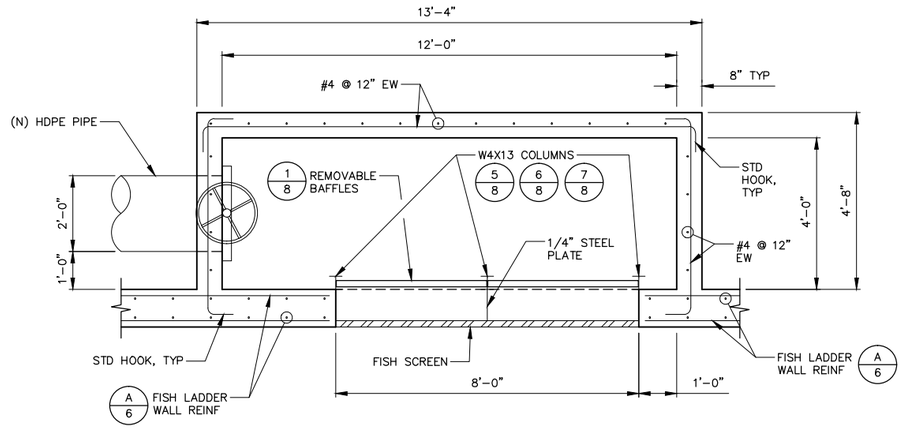
DATE:	8/10/15
SCALE:	AS NOTED
DESIGNED BY:	JLJ
DRAFTED BY:	LDC
CHECKED BY:	TWK
JOB NO.:	14-074.00
FILE:	14-074.00-DAM.dwg

6
SHEET 6 OF 16

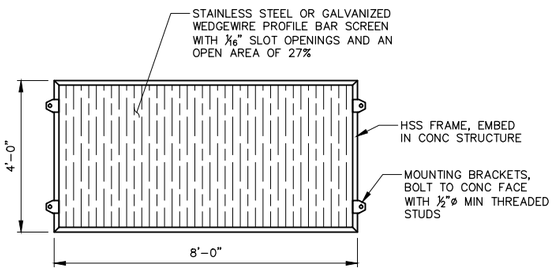
REVISED DRAFT 8/10/15



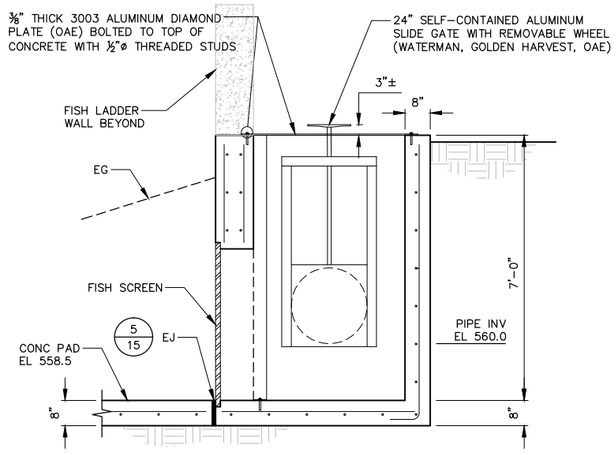
1 FISH SCREEN ELEVATION
SCALE: 1/2" = 1'



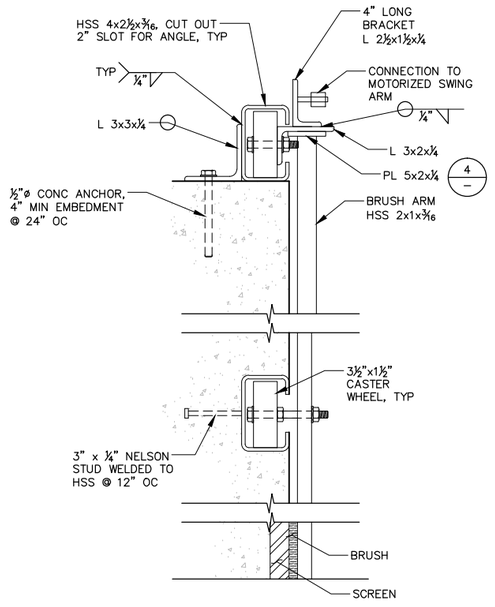
A FISH SCREEN SECTION
SCALE: 1/2" = 1'



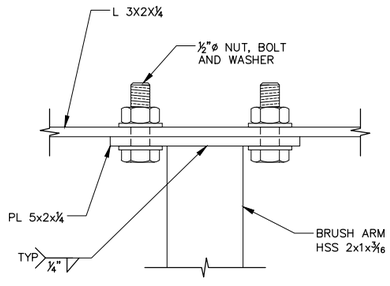
2 SCREEN DETAIL
SCALE: 1/2" = 1'



B FISH SCREEN SECTION
SCALE: 1/2" = 1'



3 BRUSH AND TROLLEY DETAIL
SCALE: 3" = 1'-0"



4 BRUSH ARM ATTACHMENT
SCALE: 6" = 1'

0 1"
REFERENCE SCALE

REVISED DRAFT 8/10/15

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REV	BY	DATE	DESCRIPTION

DIVERSION DAM SITE
FISH SCREEN
CLOVER CREEK / MILLVILLE DIVERSION
FISHERIES RESTORATION PROJECT
MILLVILLE SHASTA COUNTY CALIFORNIA

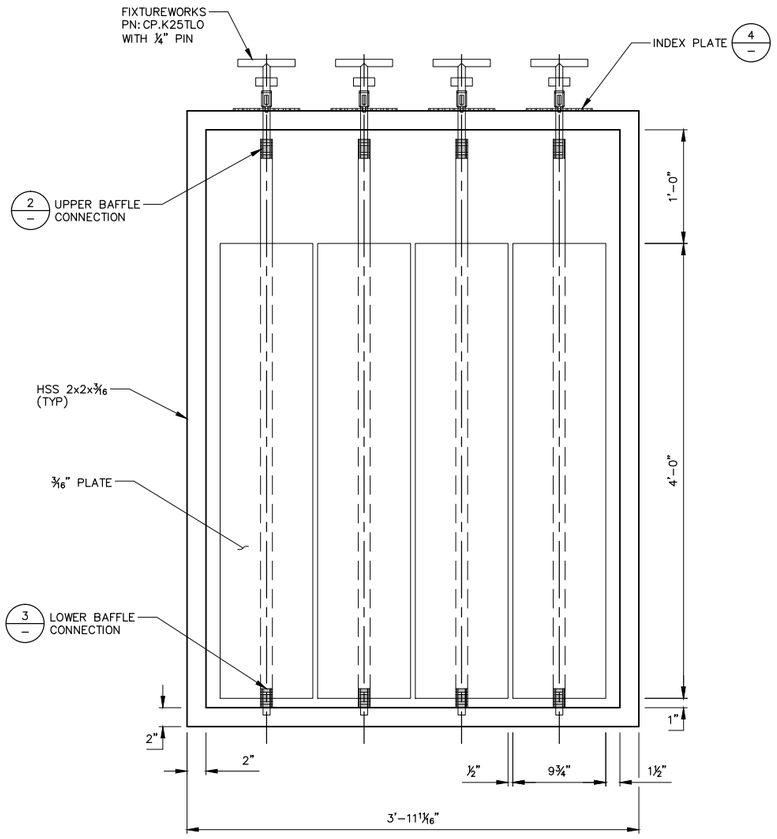
REGISTERED PROFESSIONAL ENGINEER TRAVIS W. KOCH CIVIL STATE OF CALIFORNIA

NOT FOR CONSTRUCTION

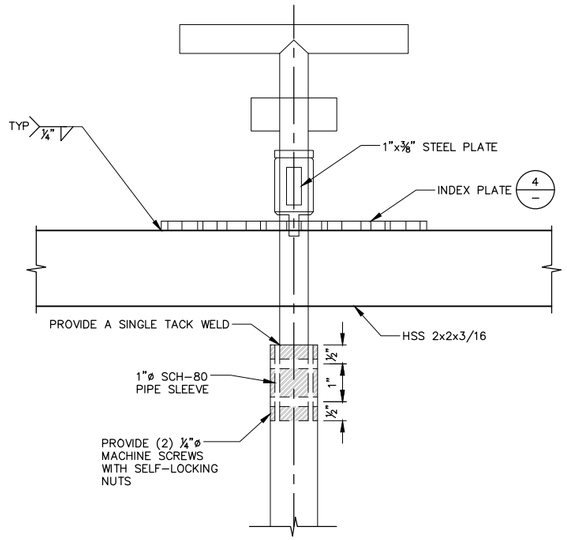
DATE:	8/10/15
SCALE:	AS NOTED
DESIGNED BY:	JLJ
DRAFTED BY:	LDC
CHECKED BY:	TWK
JOB NO.:	14-074.00
FILE:	14-074.00-DAM.dwg

7

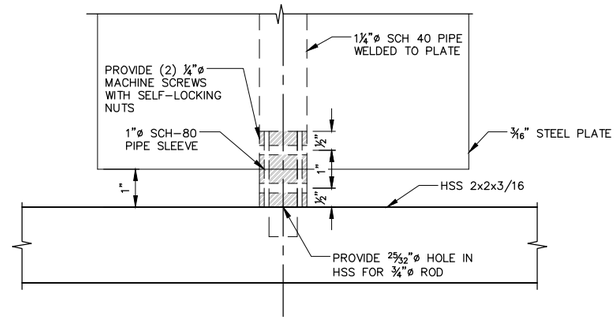
SHEET 7 OF 16



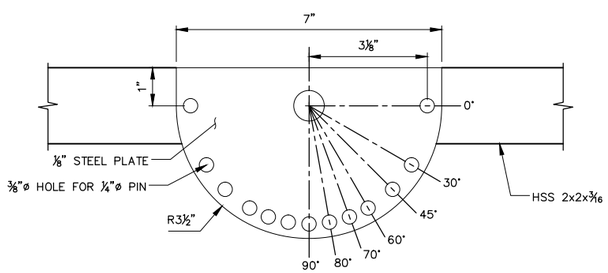
1 BAFFLE FRAME ASSEMBLY
SCALE: 1–1/2" = 1'–0"



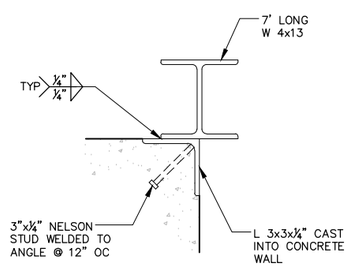
2 UPPER BAFFLE CONNECTION DETAIL
SCALE: 6" = 1'–0"



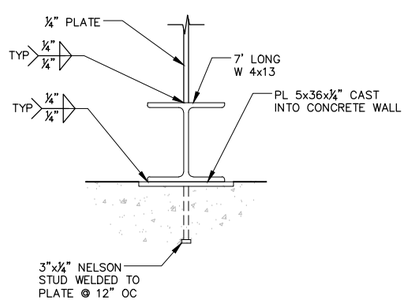
3 LOWER BAFFLE CONNECTION DETAIL
SCALE: 6" = 1'–0"



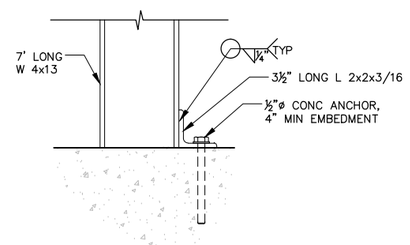
4 INDEX PLATE
SCALE: 6" = 1'–0"



5 CORNER CONNECTION - PLAN
SCALE: 6" = 1'–0"



6 MIDDLE CONNECTION - PLAN
SCALE: 6" = 1'–0"



7 BOTTOM CONNECTION - SECTION
SCALE: 6" = 1'–0"

0 1"
REFERENCE SCALE

REVISED DRAFT 8/10/15

PLOT DATE: Monday, August 10, 2015 TIME: 2:54:44 PM BY: PAUL BARBER
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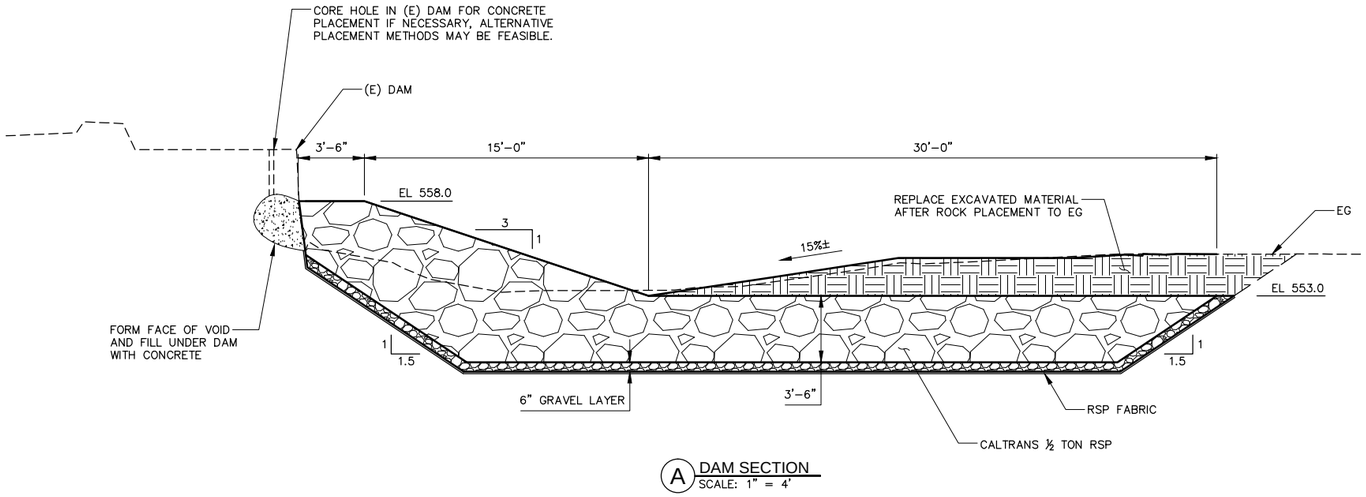
REV	BY	DATE	DESCRIPTION

DIVERSION DAM SITE
FISH SCREEN DETAILS
CLOVER CREEK / MILLVILLE DIVERSION
FISHERIES RESTORATION PROJECT
MILLVILLE SHASTA COUNTY CALIFORNIA

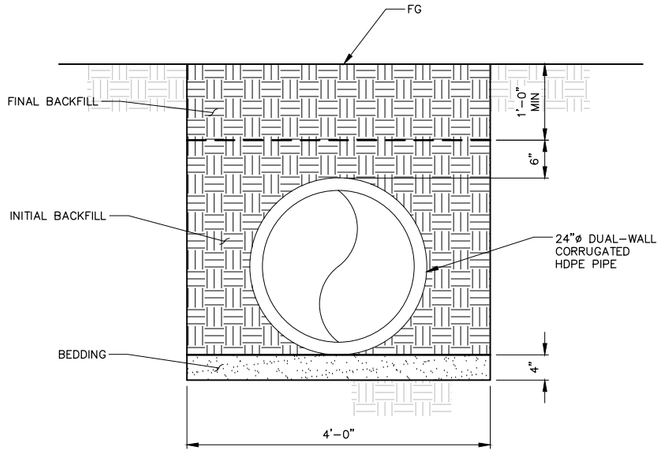
REGISTERED PROFESSIONAL ENGINEER TRAVIS W. KOSTER 17 CIVIL STATE OF CALIFORNIA
NOT FOR CONSTRUCTION

DATE:	8/10/15
SCALE:	AS NOTED
DESIGNED BY:	JLJ
DRAFTED BY:	LDC
CHECKED BY:	TWK
JOB NO.:	14-074.00
FILE:	14-074.00-DAM.dwg

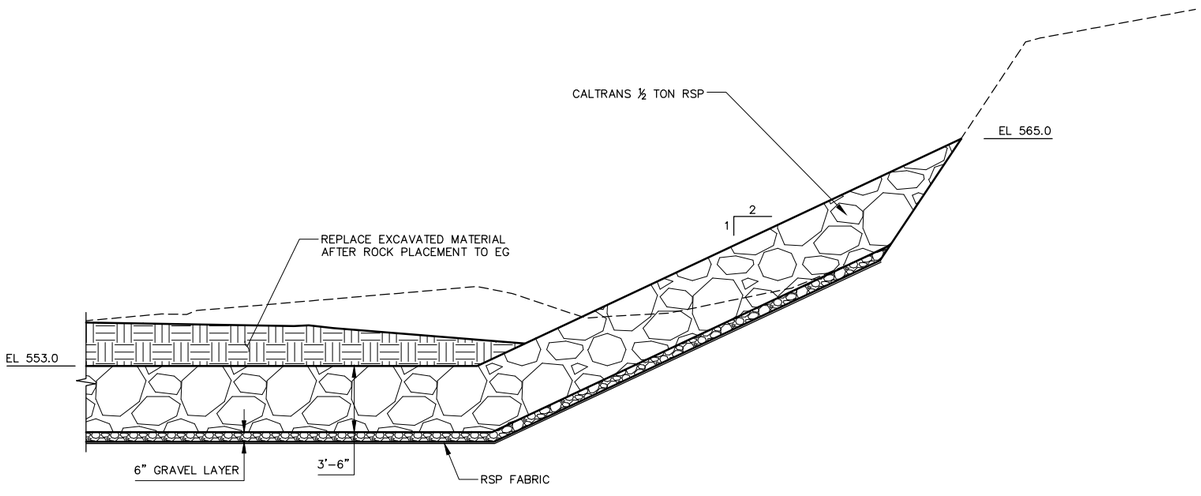
8
SHEET 8 OF 16



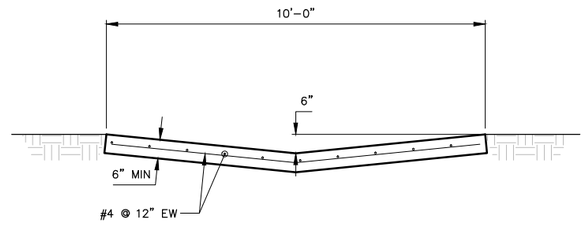
A DAM SECTION
SCALE: 1" = 4'



B PIPE SECTION
SCALE: 1" = 1'



C ROCK SLOPE SECTION
SCALE: 1" = 4'



D CONCRETE DRAINAGE SWALE
SCALE: 1" = 2'

0 1"
REFERENCE SCALE

PLOT DATE: Monday, August 10, 2015 TIME: 2:54:49 PM BY: PAUL BARBER
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REV	BY	DATE	DESCRIPTION

DIVERSION DAM SITE
RIP RAP SECTIONS

CLOVER CREEK / MILLVILLE DIVERSION
FISHERIES RESTORATION PROJECT

MILLVILLE SHASTA COUNTY CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
TRAVIS W. ROCHE
No. 79122
CIVIL
STATE OF CALIFORNIA

NOT FOR CONSTRUCTION

DATE:	8/10/15
SCALE:	AS NOTED
DESIGNED BY:	JLJ
DRAFTED BY:	LDC
CHECKED BY:	TWK
JOB NO.:	14-074.00
FILE:	14-074.00-DAM.dwg

9

NOTE: SEE SHEET 4 FOR CONCEPTUAL CONSTRUCTION PHASING

REVISED DRAFT 8/10/15

PLOT DATE: Monday, August 10, 2015 TIME: 2:54:56 PM BY: PAUL BARBER
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REV	BY	DATE	DESCRIPTION

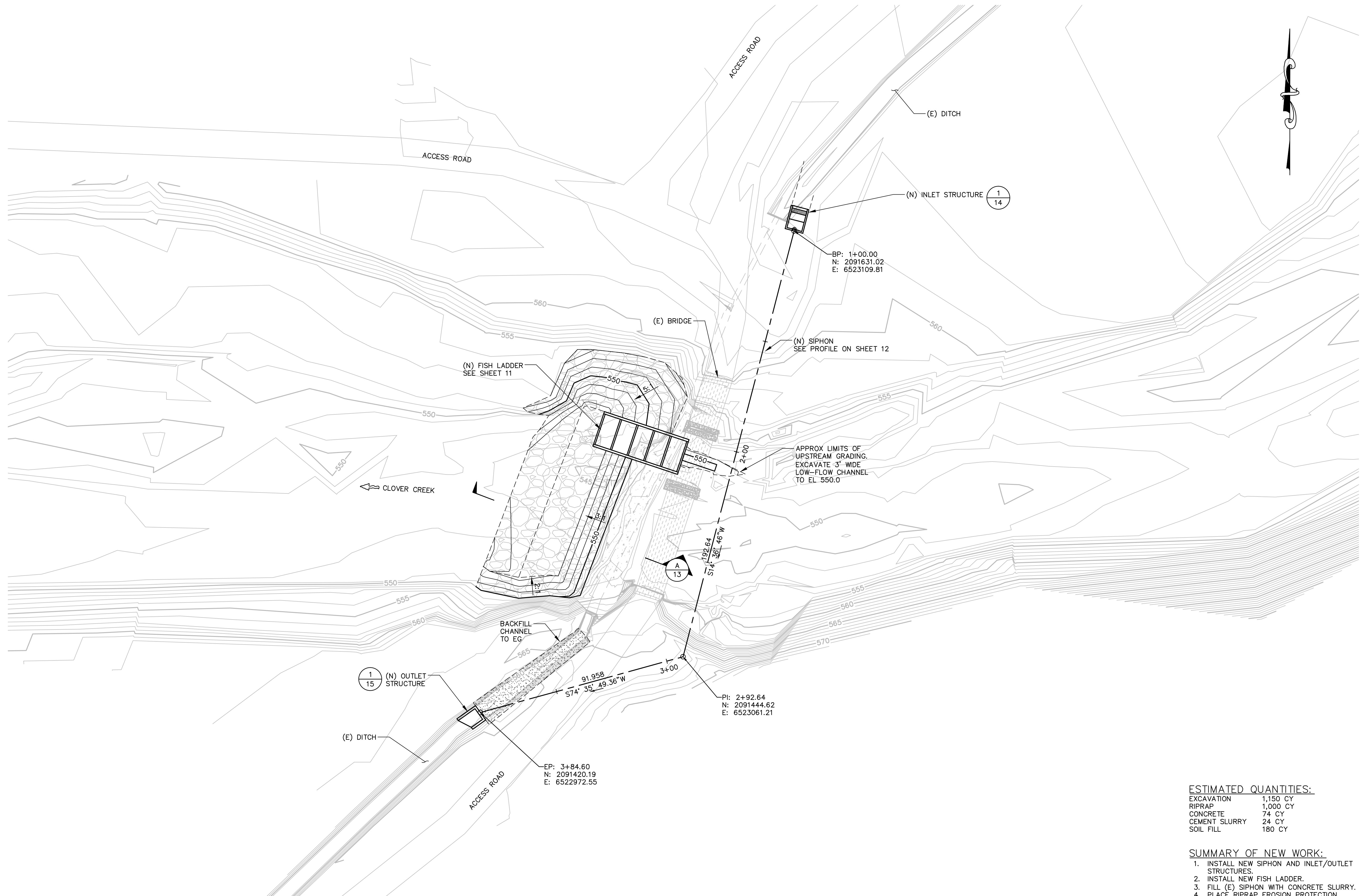
BRIDGE SITE
DEMOLITION AND CONCEPTUAL DEWATERING PLAN
CLOVER CREEK / MILLVILLE DIVERSION
FISHERIES RESTORATION PROJECT
MILLVILLE SHASTA COUNTY CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER TRAVIS W. KOCH CIVIL STATE OF CALIFORNIA

NOT FOR CONSTRUCTION

DATE:	8/10/15
SCALE:	1" = 20'
DESIGNED BY:	JLJ
DRAFTED BY:	LDC
CHECKED BY:	TWK
JOB NO.:	14-074.00
FILE:	14-074.00-BRIDGE-D.dwg

10
SHEET 10 OF 16



ESTIMATED QUANTITIES:

EXCAVATION	1,150 CY
RIPRAP	1,000 CY
CONCRETE	74 CY
CEMENT SLURRY	24 CY
SOIL FILL	180 CY

SUMMARY OF NEW WORK:

1. INSTALL NEW SIPHON AND INLET/OUTLET STRUCTURES.
2. INSTALL NEW FISH LADDER.
3. FILL (E) SIPHON WITH CONCRETE SLURRY.
4. PLACE RIPRAP EROSION PROTECTION.
5. MINOR STREAMBED GRADING.

0 1"
REFERENCE SCALE

REVISED DRAFT 8/10/15

PLOT DATE: Monday, August 10, 2015 TIME: 2:55:02 PM BY: PAUL BARBER
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REV	BY	DATE	DESCRIPTION

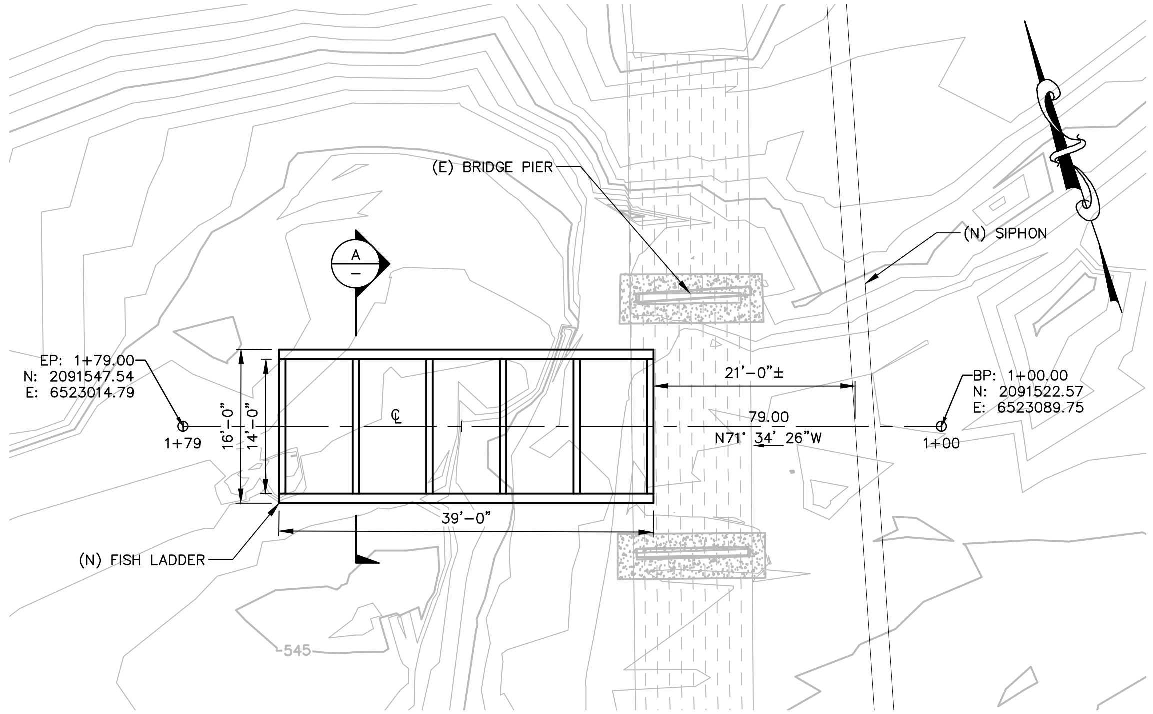
BRIDGE SITE
SITE PLAN

CLOVER CREEK / MILLVILLE DIVERSION
FISHERIES RESTORATION PROJECT

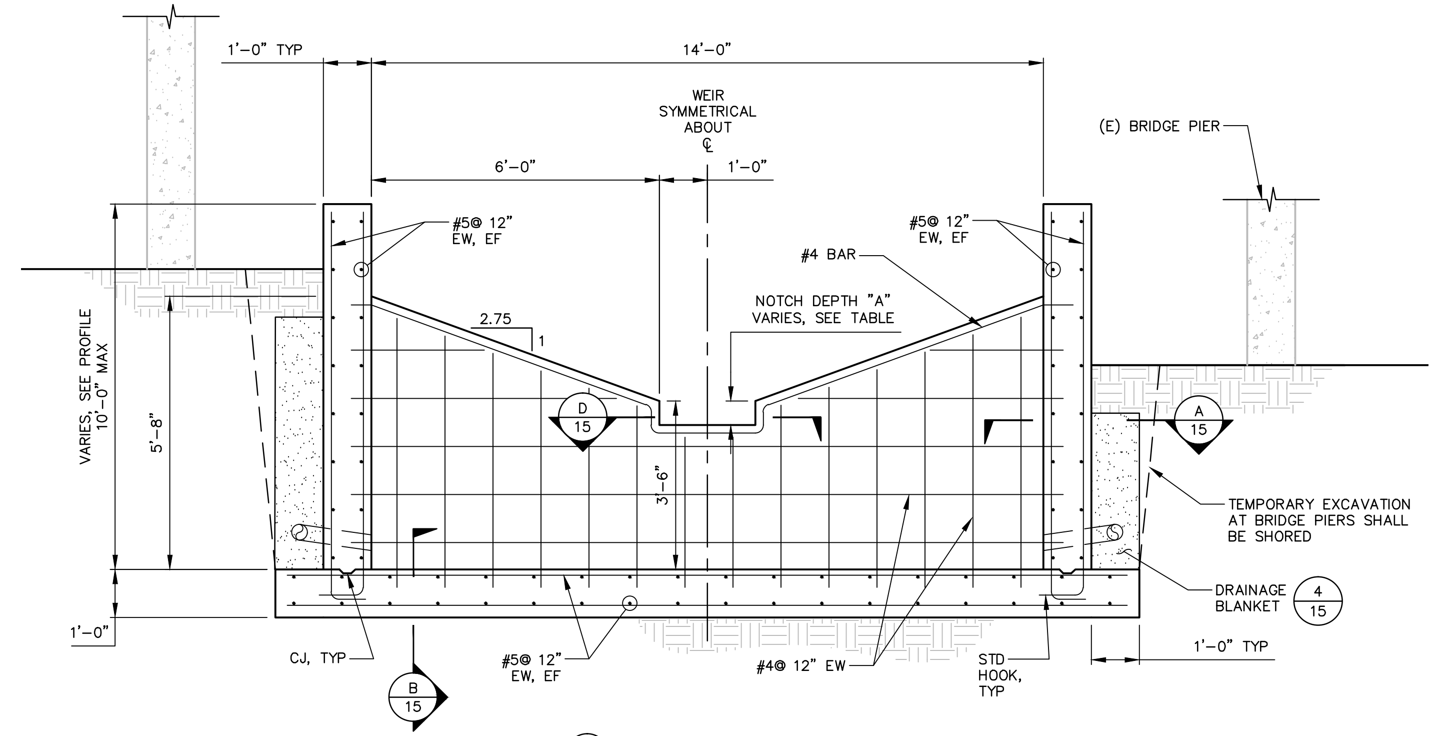
MILLVILLE SHASTA COUNTY CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — TRAVIS W. KOCH — CIVIL — STATE OF CALIFORNIA
NOT FOR CONSTRUCTION

DATE: 8/10/15
SCALE: 1" = 20'
DESIGNED BY: JLJ
DRAFTED BY: LDC
CHECKED BY: TWK
JOB NO.: 14-074.00
FILE: 14-074.00-BRIDGE.dwg



FISH LADDER PLAN
SCALE: 1" = 10'

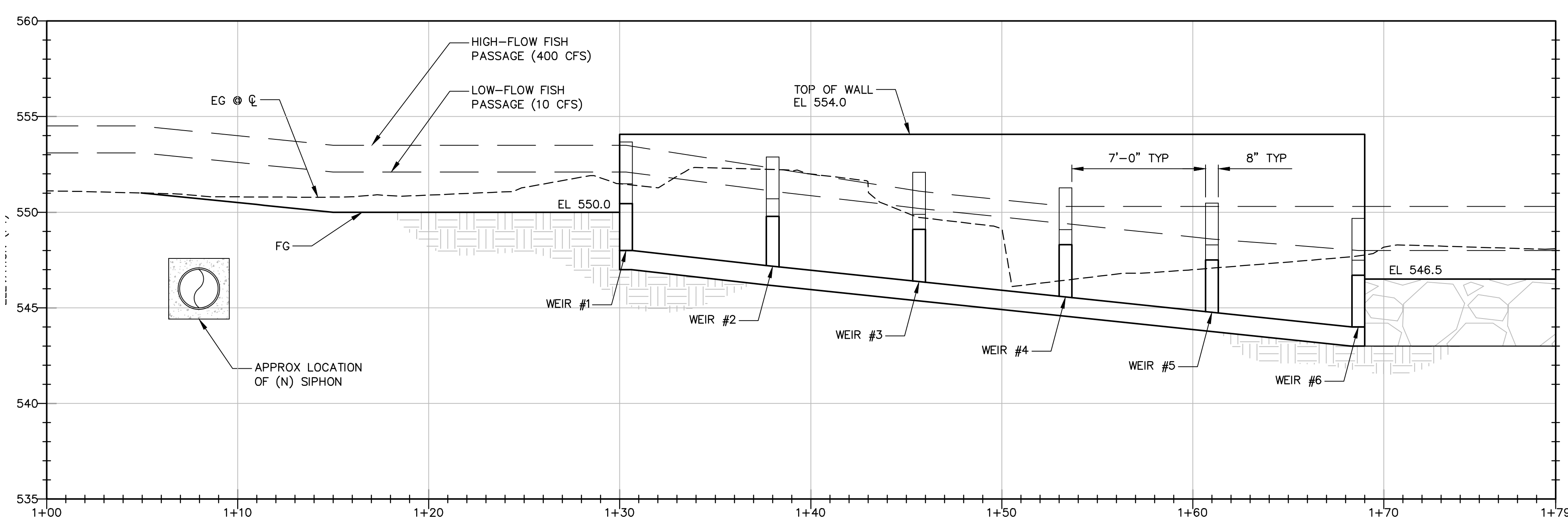


A FISH LADDER SECTION
SCALE: 1/2" = 1'

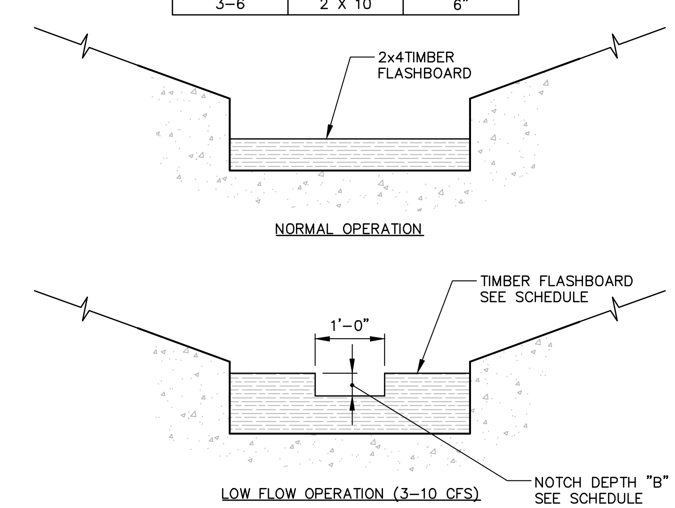
WEIR GEOMETRY AND ELEVATIONS			
WEIR	STATION[1]	NOTCH ELEVATION	NOTCH DEPTH 'A'
1	1+30.33	550.45	12.5"
2	1+38.00	549.78	11.0"
3	1+45.67	549.10	9.5"
4	1+53.33	548.30	9.5"
5	1+61.00	547.50	9.5"
6	1+68.67	546.70	9.5"

1. STATIONS ARE MEASURED TO THE CENTER OF THE WEIR.

LOW FLOW (3-10 CFS) FLASHBOARD SCHEDULE		
WEIR	BOARD SIZE	NOTCH DEPTH "B"
1	2 X 12	9"
2	2 X 12	7.5"
3-6	2 X 10	6"



FISH LADDER PROFILE
SCALE: 1" = 4'



1 FLASHBOARD DETAIL
SCALE: NTS

0 1"
REFERENCE SCALE

REVISED DRAFT 8/10/15

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REV	BY	DATE	DESCRIPTION

BRIDGE SITE
FISH LADDER

CLOVER CREEK / MILLVILLE DIVERSION
FISHERIES RESTORATION PROJECT

MILLVILLE SHASTA COUNTY CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER TRAVIS W. KOCH CIVIL STATE OF CALIFORNIA
NOT FOR CONSTRUCTION

DATE: 8/10/15
SCALE: AS NOTED
DESIGNED BY: JLJ
DRAFTED BY: LDC
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12
SHEET 12 OF 16

PLOT DATE: Monday, August 10, 2015 TIME: 2:55:04 PM BY: PAUL BARBER
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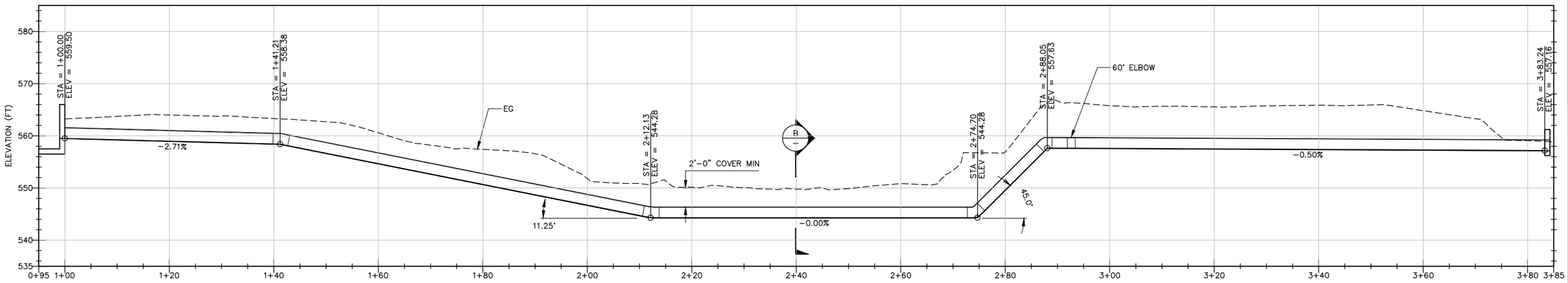
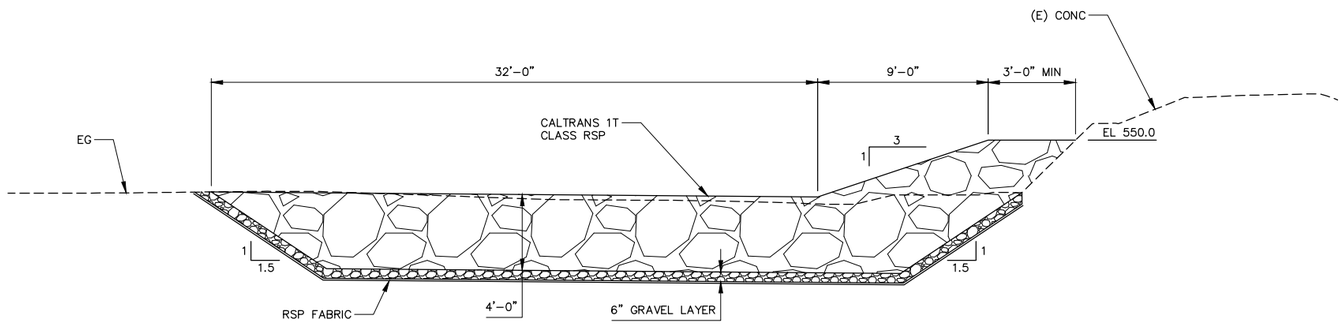
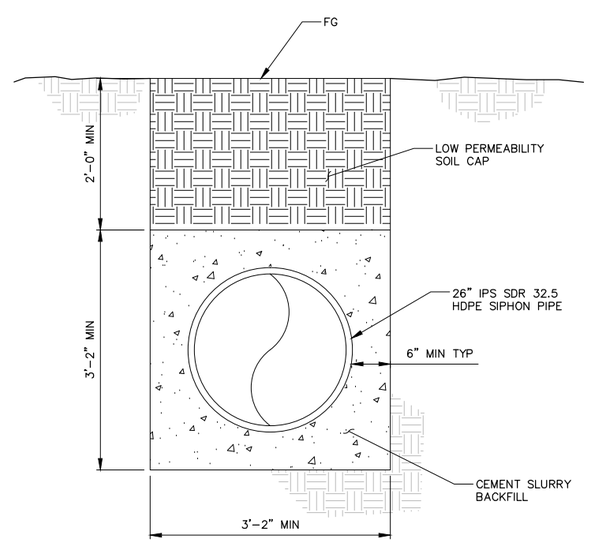


SIPHON PROFILE
SCALE: 1" = 10'



A RIPRAP SECTION
SCALE: 1" = 4'



B SIPHON SECTION
SCALE: 1" = 1'

0 1"
REFERENCE SCALE

REVISED DRAFT 8/10/15

PLOT DATE: Monday, August 10, 2015 TIME: 2:55:09 PM BY: PAUL BARBER
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REV	BY	DATE	DESCRIPTION

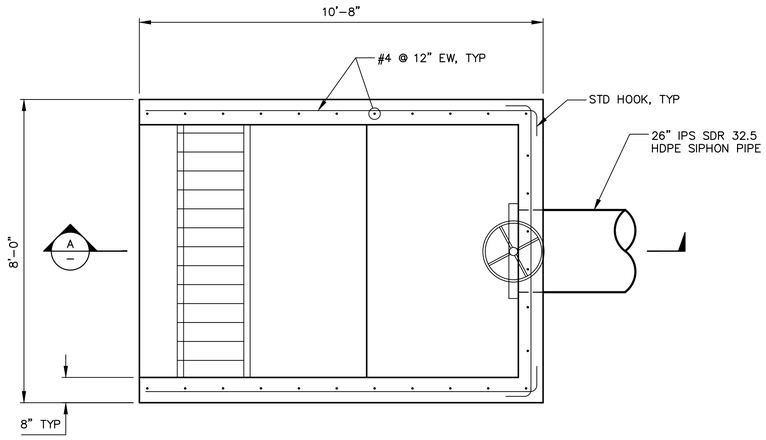
BRIDGE SITE
SIPHON PROFILE AND TYPICAL SECTIONS
CLOVER CREEK / MILLVILLE DIVERSION
FISHERIES RESTORATION PROJECT
MILLVILLE SHASTA COUNTY CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
TRAVIS W. KOCH
No. 84067
CIVIL
STATE OF CALIFORNIA

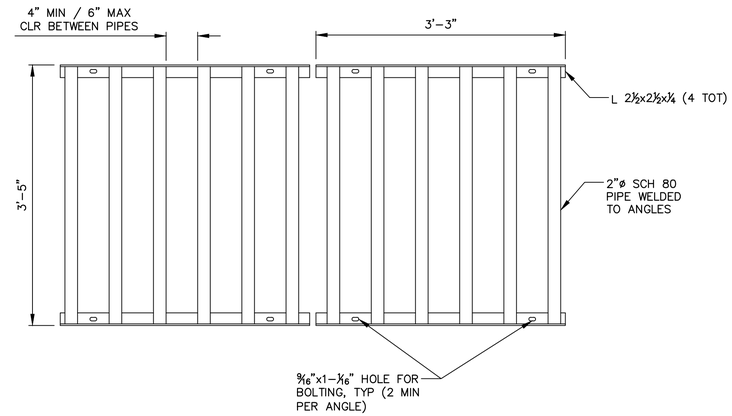
NOT FOR CONSTRUCTION

DATE:	8/10/15
SCALE:	AS NOTED
DESIGNED BY:	JLJ
DRAFTED BY:	LDC
CHECKED BY:	TWK
JOB NO.:	14-074.00
FILE:	14-074.00-BRIDGE.dwg

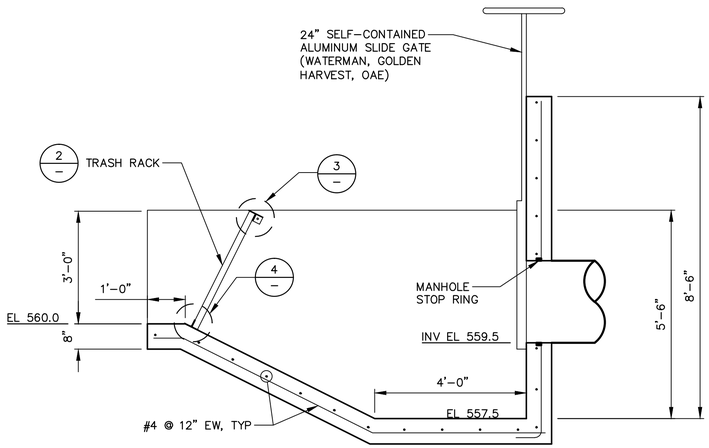
13



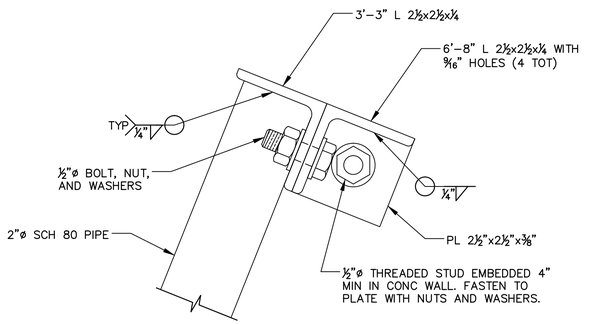
1 SIPHON INLET STRUCTURE - PLAN
SCALE: 1/2" = 1'



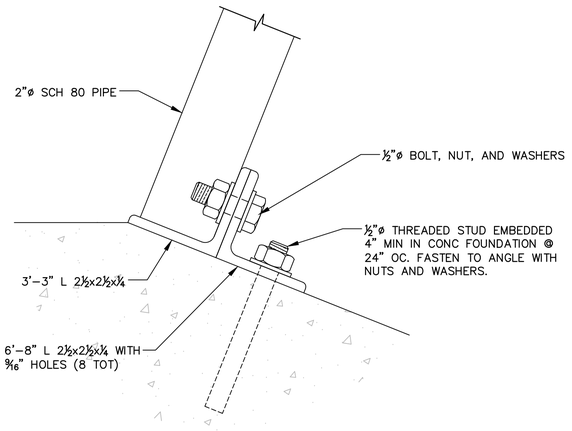
2 TRASH RACK ELEVATION
SCALE: 1" = 1'-0"



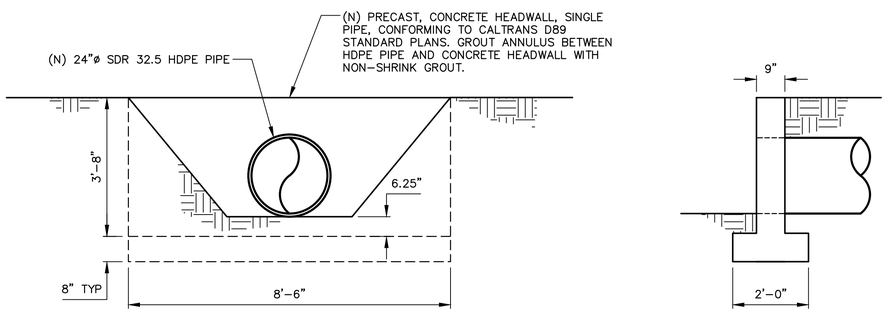
A SIPHON INLET STRUCTURE - SECTION
1/2" = 1'



3 TRASH RACK TOP CONNECTION
SCALE: 6" = 1'-0"



4 TRASH RACK BOTTOM CONNECTION
SCALE: 6" = 1'-0"



ELEVATION

SECTION

5 CULVERT OUTLET STRUCTURE
1/2" = 1'

0 1"
REFERENCE SCALE

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REV	BY	DATE	DESCRIPTION

STRUCTURAL DETAILS
CLOVER CREEK / MILLVILLE DIVERSION
FISHERIES RESTORATION PROJECT
SHASTA COUNTY
CALIFORNIA
MILLVILLE

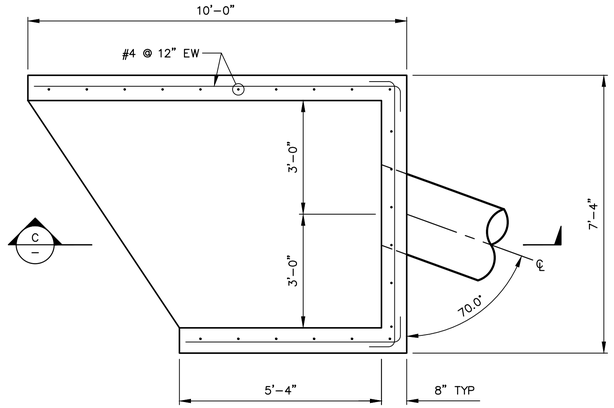
REGISTERED PROFESSIONAL ENGINEER
TRAVIS W. ROCH
No. 82430
CIVIL
STATE OF CALIFORNIA

NOT FOR CONSTRUCTION

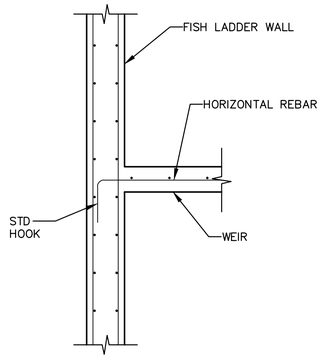
DATE:	8/10/15
SCALE:	AS NOTED
DESIGNED BY:	JLJ
DRAFTED BY:	LDC
CHECKED BY:	TWK
JOB NO.:	14-074.00
FILE:	14-074.00-DETAILS.dwg

14
SHEET 14 OF 16

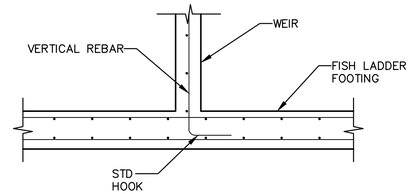
PLOT DATE: Monday, August 10, 2015 TIME: 2:55:16 PM BY: PAUL BARBER
FILE: N:\1-PROJECTS\2014\14-074.00 Clover Creek Fish Ladder\Phase 2 - Design\CAD\14-074.00-DETAILS.dwg



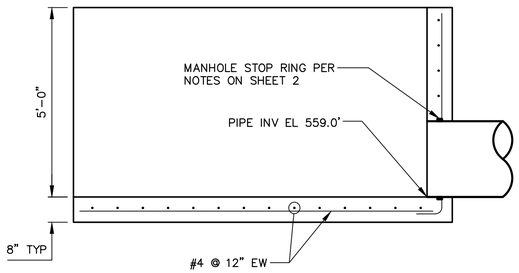
1 SIPHON OUTLET STRUCTURE - PLAN
SCALE: 1/2" = 1'



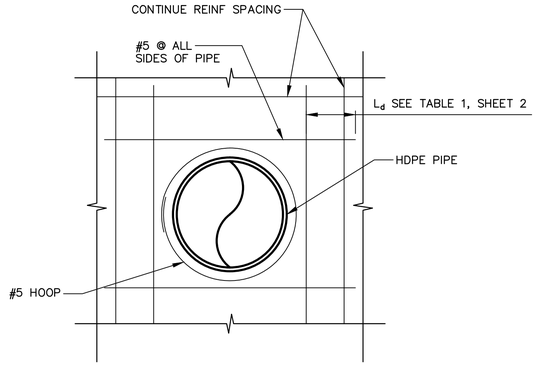
A FISH LADDER CROSS SECTION - PLAN
SCALE: 1/2"=1'–0"



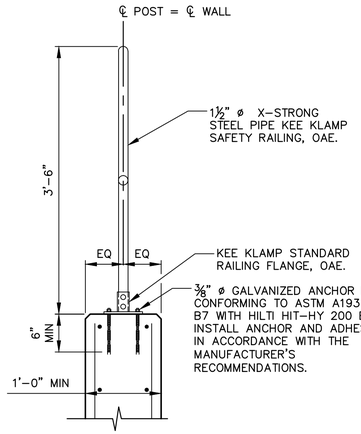
B FISH LADDER CROSS SECTION - ELEVATION
SCALE: 1/2"=1'–0"



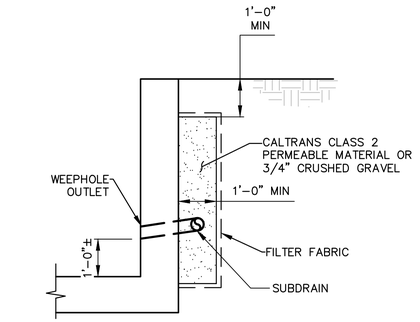
C SIPHON OUTLET STRUCTURE - SECTION
1/2" = 1'



2 PIPE PENETRATION DETAIL
NTS

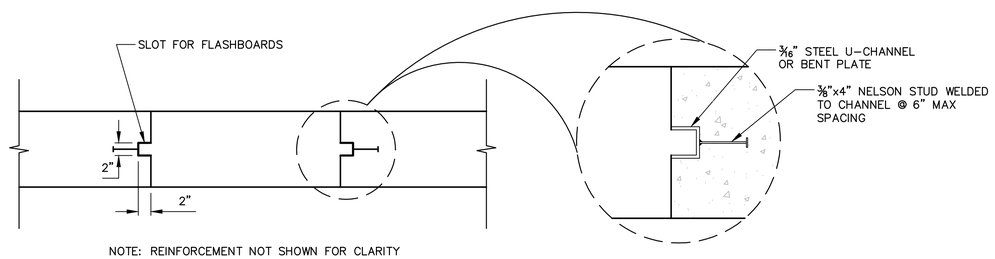


3 SAFETY RAILING DETAIL
SCALE: 1" = 1'



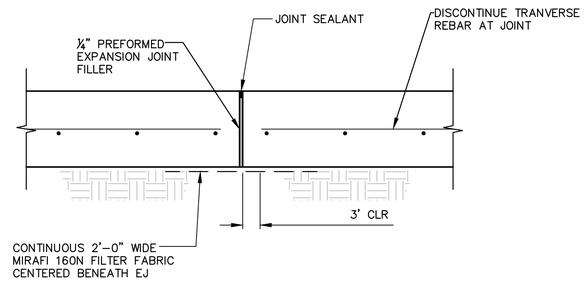
NOTES:
1. PROVIDE 4"ø OUTLETS AT LOW POINTS AND EVERY 50' MIN. LOCATE OUTLETS 12" ABOVE FINISHED GRADE UNLESS OTHERWISE NOTED.
2. SUBDRAIN: 4"ø SDR35 PVC PERFORATED PVC WITH PERFORATIONS FACING DOWNWARD.
3. USE MIRAFI 160N FILTER FABRIC (OR EQUIVALENT) WHEN 3/4 " CRUSHED ROCK IS USED.

4 DRAINAGE DETAIL
SCALE: 1/2"=1'–0"



NOTE: REINFORCEMENT NOT SHOWN FOR CLARITY

D FLASHBOARD SLOT DETAIL
SCALE: 1" = 1'



5 EXPANSION JOINT
NTS

0 1"
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SHASTA COUNTY CALIFORNIA
MILLVILLE

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15
SHEET 15 OF 16

PLOT DATE: Monday, August 10, 2015 TIME: 2:55:19 PM BY: PAUL BARBER
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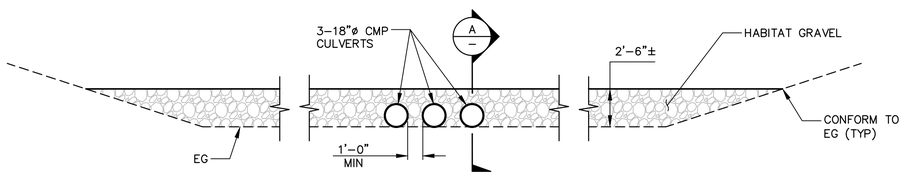
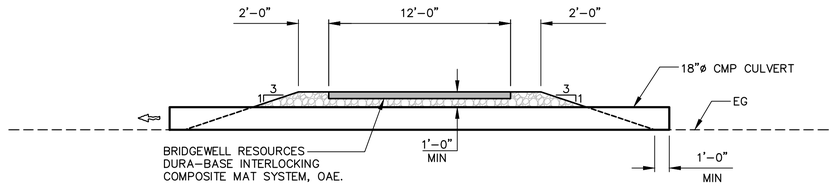
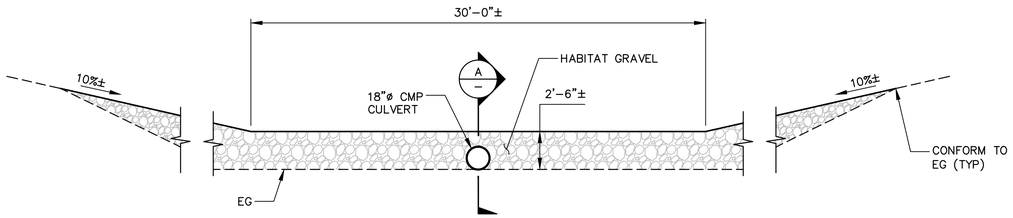


1 UPSTREAM TEMPORARY CROSSING PROFILE
1" = 5'



A TEMPORARY CROSSING TYPICAL SECTION
1" = 5'

HABITAT GRAVEL GRADATION		
PARTICLE SIZE	PERCENT PASSING	PERCENT RETAINED
5"	95–100	0–5
2"	75–85	15–30
1"	40–50	50–60
¾"	25–35	60–75
⅜"	10–20	85–90
¼"	0–5	95–100



2 DOWNSTREAM TEMPORARY CROSSING PROFILE
1" = 5'

TEMPORARY STREAM CROSSING NOTES:

1. THE CULVERT SHOULD CONNECT THE LOW POINTS IN THE CHANNEL ON EITHER SIDE OF THE TEMPORARY CROSSING TO MINIMIZE PONDING UPSTREAM OF THE CROSSING.
2. HABITAT GRAVEL SHALL BE PLACED IN 1 FOOT LIFTS. EACH LIFT SHALL BE COMPACTED PRIOR TO PLACEMENT OF NEXT LIFT.
3. MINIMUM OF 1 FOOT OF COMPACTED GRAVEL REQUIRED OVER TOP OF CULVERT(S).
4. MINIMUM OF 1 FOOT OF COMPACTED GRAVEL REQUIRED OVER THE CHANNEL BED.
5. DURA–BASE COMPOSITE MAT SYSTEM OR APPROVED EQUAL SHALL BE INSTALLED ACCORDING TO MANUFACTURERS RECOMMENDATION PRIOR TO TRAFFIC CROSSING THE TEMPORARY CROSSING.
6. HABITAT GRAVEL SHALL MEET THE GRADATION AS SHOWN ON THIS SHEET.
7. HABITAT GRAVEL SHALL BE UNCRUSHED, ROUNDED NATURAL RIVER ROCK WITH NO SHARP EDGES.
8. HABITAT GRAVEL SHALL BE WASHED AT LEAST ONCE AND HAVE A CLEANLINESS VALUE OF 85 OR HIGHER, BASED ON CALTRANS TEST NO. 227. GRAVEL SHALL BE COMPLETELY FREE OF OILS, CLAY, DEBRIS, AND ORGANIC MATERIAL.
9. AFTER CONSTRUCTION IS COMPLETE, THE CULVERTS AND CONSTRUCTION MATS SHALL BE REMOVED, AND THE GRAVEL SPREAD INTO A LAYER NO MORE THAN 18" THICK.

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TEMPORARY STREAM CROSSING DETAILS
CLOVER CREEK / MILLVILLE DIVERSION
FISHERIES RESTORATION PROJECT
MILLVILLE SHASTA COUNTY CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
TRAVIS W. ROCHA
No. 82132
CIVIL
STATE OF CALIFORNIA

NOT FOR CONSTRUCTION

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DRAFTED BY:	PAB
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16
SHEET 16 OF 16

REVISED DRAFT 8/10/15

0 1"
REFERENCE SCALE

PLOT DATE: Monday, August 10, 2015 TIME: 2:55:24 PM BY: PAUL BARBER
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Appendix B

Vascular Plant Species Observed Within or Near Project Site

Appendix B. Plant Species Observed within the Proposed Cow Creek Fish Passage - Clover Creek/Millville Diversion Fisheries Restoration Project Study Area, Shasta County, CA on June 11, 2012 and May 23, 2013.

Acer	*negundo*			N	Box-elder	Sapindaceae
Achyrachaena	*mollis*			N	Blow-wives	Asteraceae
Acmispon	*brachycarpus*			N	Foothill Lotus	Fabaceae
Acmispon	*micranthus*			N	Small-flowered Lotus	Fabaceae
Acmispon	*americanus*	var.	*americanus*	N	Spanish Lotus	Fabaceae
Acmispon	*wrangelianus*			N	Wrangel Lotus	Fabaceae
Aegilops	*triuncialis*			I	Barbed Goatgrass	Poaceae
Aesculus	*californica*			N	California Buckeye	Sapindaceae
Agoseris	*heterophylla*			N	Annual Agoseris	Asteraceae
Agrostis	*stolonifera*			I	Creeping Bentgrass	Poaceae
Aira	*caryophyllea*			I	Silver European Hairgrass	Poaceae
Allium	*amplectens*			N	Clasping Onion	Alliaceae
Allium	*peninsulare*	var.	*peninsulare*	N	Mexican Onion	Alliaceae
Alnus	*rhombifolia*			N	White Alder	Betulaceae
Amaranthus	*albus*			I	Tumbleweed	Amaranthaceae
Amsinckia	*intermedia*			N	Common Fiddleneck	Boraginaceae
Amsinckia	*menziesii*			N	Menzies' Fiddleneck	Boraginaceae
Anagallis	*arvensis*			I	Scarlet Pimpernel	Myrsinaceae
Arctostaphylos	*manzanita*	ssp.	*manzanita*	N	Big Manzanita	Ericaceae
Arctostaphylos	*viscida*	ssp.	*viscida*	N	White-leaved Manzanita	Ericaceae
Aristida	*oligantha*			N	Oldfield Three-awn	Poaceae
Aristolochia	*californica*			N	California Pipevine	Aristolochiaceae
Artemisia	*douglasiana*			N	Mugwort	Asteraceae
Asclepias	*fascicularis*			N	Narrow-leaved Milkweed	Apocynaceae
Astragalus	*gambelianus*			N	Gambel's Milk-vetch	Fabaceae
Athysanus	*pusillus*			N	Petty Athysanus	Brassicaceae
Avena	*barbata*			I	Slender Wild Oat	Poaceae
Avena	*fatua*			I	Wild Oat	Poaceae
Baccharis	*salicifolia*			N	Mule's-fat	Asteraceae
Bidens	*frondosa*			N	Sticktight	Asteraceae
Brickellia	*californica*			N	California Brickellbush	Asteraceae
Briza	*minor*			I	Lesser Quaking-grass	Poaceae
Brodiaea	*californica*			N	California Brodiaea	Themidaceae
Brodiaea	*coronaria*			N	Harvest Brodiaea	Themidaceae
Brodiaea	*elegans*	ssp.	*elegans*	N	Elegant Brodiaea	Themidaceae
Bromus	*diandrus*			I	Ripgut Brome	Poaceae
Bromus	*hordeaceus*			I	Soft Chess	Poaceae
Bromus	*madritensis*	ssp.	*madritensis*	I	Foxtail Chess	Poaceae
Bromus	*madritensis*	ssp.	*rubens*	I	Red Brome	Poaceae
Bromus	*tectorum*			I	Cheat Grass, Downy Brome	Poaceae
Calycadenia	*fremontii*			N	Fremont's Calycadenia	Asteraceae
Calycadenia	*truncata*			N	Rosinweed	Asteraceae
Capsella	*bursa-pastoris*			I	Shepherds's-purse	Brassicaceae
Cardamine	*oligosperma*			N	Western Bittercress	Brassicaceae
Carex	*barbarae*			N	Santa Barbara Sedge	Cyperaceae
Carex	*nudata*			N	Torrent Sedge	Cyperaceae
Castilleja	*attenuata*			N	Valley Tassel	Orobanchaceae
Ceanothus	*cuneatus*	var.	*cuneatus*	N	Buckbrush	Rhamnaceae
Centaurea	*solstitialis*			I	Yellow Starthistle	Asteraceae
Centromadia	*fitchii*			N	Fitch's Spikeweed	Asteraceae
Cerastium	*glomeratum*			I	Sticky Mouse-eared Chickweed	Caryophyllaceae
Chamaemelum	*fuscatum*			I	Dusky Dog-fennel	Asteraceae
Chamaesyce	*ocellata*	ssp.	*ocellata*	N	Valley Spurge	Euphorbiaceae
Chamaesyce	*serpyllifolia*	ssp.	*serpyllifolia*	N	Thyme-leaved Spurge	Euphorbiaceae
Chenopodium	*album*			I	Lamb's Quarters	Chenopodiaceae
Chlorogalum	*angustifolium*			N	Narrow-leaved Soap-plant	Agavaceae
Chlorogalum	*pomeridianum*	var.	*pomeridianum*	N	Wavy-leaved soap-plant	Agavaceae
Chorizanthe	*membranacea*			N	Pink Spineflower	Polygonaceae
Chorizanthe	*polygonoides*	var.	*polygonoides*	N	Knotweed Spineflower	Polygonaceae
Cichorium	*intybus*			I	Chicory	Asteraceae
Clarkia	*purpurea*	ssp.	*quadrivulnera*	N	Purple Clarkia	Onagraceae
Clematis	*ligusticifolia*			N	Virgin's-bower	Ranunculaceae
Convolvulus	*arvensis*			I	Bindweed	Convolvulaceae
Cornus	*glabrata*			N	Brown Dogwood	Cornaceae
Crassula	*tillaea*			I	Mossy Pigmyweed	Crassulaceae
Croton	*setigerus*			N	Turkey-mullein	Euphorbiaceae
Crucianella	*angustifolia*			I	Crosswort	Rubiaceae
Crypsis	*schoenoides*			I	Swamp Grass	Poaceae
Cynodon	*dactylon*			I	Bermuda Grass	Poaceae
Cynosurus	*echinatus*			I	Hedgehog Dogtail	Poaceae
Cyperus	*eragrostis*			N	Tall Cyperus	Cyperaceae
Daucus	*pusillus*			N	Rattlesnake-weed	Apiaceae
Delphinium	*variegatum*	ssp.	*variegatum*	N	Royal Larkspur	Ranunculaceae
Deschampsia	*danthonioides*			N	Annual Hairgrass	Poaceae
Dichelostemma	*multiflorum*			N	Round-toothed Ookow	Themidaceae

Appendix B. Plant Species Observed within the Proposed Cow Creek Fish Passage - Clover Creek/Millville Diversion Fisheries Restoration Project Study Area, Shasta County, CA on June 11, 2012 and May 23, 2013.

Dodecatheon	*clevelandii*	ssp.	*patulum*	N	Lowland Shootingstar	Primulaceae
Draba	*verna*			N	Spring Whitlow Grass	Brassicaceae
Elatine	*sp.*			N	Waterwort	Elatinaceae
Eleocharis	*macrostachya*			N	Pale Spike-rush	Cyperaceae
Eleocharis	*quinqueflora*			N	Few-flowered Spike-rush	Cyperaceae
Elymus	*elymoides*	ssp.	*californicus*	N	Squirreltail	Poaceae
Elymus	*glaucus*	ssp.	*glaucus*	N	Blue Wild-rye	Poaceae
Elymus	*hispidus*			I	Intermediate Wheatgrass	Poaceae
Elymus	*triticoides*			N	Alkali Ryegrass	Poaceae
Elymus	*caput-medusae*			I	Medusa-head	Poaceae
Epilobium	*brachycarpum*			N	Tall Annual Willowherb	Onagraceae
Epilobium	*cleistogamum*			N	Cleistogamous Spike-primrose	Onagraceae
Epilobium	*torreyi*			N	Torrey's Spike-primrose	Onagraceae
Eriodictyon	*californicum*			N	California Yerba-santa	Boraginaceae
Erodium	*botrys*			I	Long-beaked Stork's-bill	Geraniaceae
Erodium	*brachycarpum*			I	Short-fruited Stork's-bill	Geraniaceae
Erodium	*cicutarium*			I	Red-stemmed Filaree	Geraniaceae
Eryngium	*articulatum*			N	Bee-thistle	Apiaceae
Euthamia	*occidentalis*			N	Western Goldenrod	Asteraceae
Festuca	*arundinacea/pratensis*			I	Meadow Fescue	Poaceae
Festuca	*perennis*			I	Annual Ryegrass	Poaceae
Festuca	*bromoides*			I	Brome Fescue	Poaceae
Festuca	*microstachys*			N	Small Fescue	Poaceae
Festuca	*myuros*			I	Rattail Sixweeks Grass	Poaceae
Frangula	*californica*	ssp.	*tomentella*	N	Hoary Coffeeberry	Rhamnaceae
Fraxinus	*latifolia*			N	Oregon Ash	Oleaceae
Galium	*aparine*			N	Cleavers	Rubiaceae
Galium	*parisiense*			I	Wall Bedstraw	Rubiaceae
Galium	*porrigens*	var.	*tenue*	N	Narrow-leaved Climbing Bedstraw	Rubiaceae
Gastridium	*phleoides*			I	Nitgrass	Poaceae
Gnaphalium	*palustre*			N	Western Cudweed	Asteraceae
Helenium	*puberulum*			N	Rosilla	Asteraceae
Hirschfeldia	*incana*			I	Mediterranean Hoary-mustard	Brassicaceae
Holcus	*lanatus*			I	Common Velvetgrass	Poaceae
Hordeum	*marinum*	ssp.	*gussoneanum*	I	Mediterranean Barley	Poaceae
Hordeum	*murinum*	ssp.	*leporinum*	I	Hare Wall Barley	Poaceae
Hypericum	*perforatum*			I	Klamathweed	Hypericaceae
Hypochaeris	*glabra*			I	Smooth Cat's-ear	Asteraceae
Juglans	*hindsii*			N	Northern California Black Walnut	Juglandaceae
Juncus	*bufonius*	var.	*bufonius*	N	Common Toad Rush	Juncaceae
Juncus	*bufonius*	var.	*occidentalis*	N	Round-fruited Toad Rush	Juncaceae
Juncus	*effusus*	ssp.	*pacificus*	N	Pacific Rush	Juncaceae
Juncus	*exiguus*			N	Weak Rush	Juncaceae
Lactuca	*serriola*			I	Prickly Lettuce	Asteraceae
Lamium	*amplexicaule*			I	Giraffehead	Lamiaceae
Lasthenia	*californica*			N	California Goldfields	Asteraceae
Lathyrus	*angulatus*			I	Angular-seeded Pea	Fabaceae
Layia	*fremontii*			N	Fremont's Tidytips	Asteraceae
Leersia	*oryzoides*			N	Rice Cutgrass	Poaceae
Lemna	*sp.*			N	Duckweed	Araceae
Leontodon	*saxatillis*			I	Long-beaked Hawkbit	Asteraceae
Lepidium	*nitidum*			N	Shiny Pepper-grass	Brassicaceae
Lepidium	*strictum*			N	Upright Pepper-grass	Brassicaceae
Leptosiphon	*ciliatus*			N	Whiskerbrush	Polemoniaceae
Logfia	*gallica*			N	Narrow-leaved Filago	Asteraceae
Lomatium	*marginatum*	var.	*marginatum*	N	Margined Lomatium	Apiaceae
Lonicera	*interrupta*			N	Chaparral Honeysuckle	Caprifoliaceae
Lotus	*corniculatus*			I	Bird's-foot Trefoil	Fabaceae
Lupinus	*bicolor*			N	Bicolored Lupine	Fabaceae
Lupinus	*nanus*			N	Valley Sky Lupine	Fabaceae
Lythrum	*hyssopifolium*			I	Hyssop Loosestrife	Lythraceae
Maclura	*pomifera*			I	Mock Orange	Moraceae
Madia	*subspicata*			N	Spiked Tarweed	Asteraceae
Malva	*parviflora*			I	Little Mallow	Malvaceae
Matricaria	*discoidea*			I	Common Pineapple-weed	Asteraceae
Medicago	*polymorpha*			I	California or Common Bur-clover	Fabaceae
Melica	*californica*			N	California Melic	Poaceae
Melilotus	*albus*			I	White Sweet-clover	Fabaceae
Mentha	*sp.*			I	Mint	Lamiaceae
Micropus	*californicus*	var.	*californicus*	N	Slender Cottonweed	Asteraceae
Minuartia	*californica/cismontana*				Sandwort (dried)	Caryophyllaceae
Monardella	*sheltonii*			N	Shelton's Coyote-mint	Lamiaceae
Morus	*alba*			I	White Mulberry	Moraceae
Navarretia	*divaricata*	ssp.	*vividior*	N	Spreading Navarretia	Polemoniaceae
Navarretia	*intertexta*	ssp.	*intertexta*	N	Needle-leaved Navarretia	Polemoniaceae

Appendix B. Plant Species Observed within the Proposed Cow Creek Fish Passage - Clover Creek/Millville Diversion Fisheries Restoration Project Study Area, Shasta County, CA on June 11, 2012 and May 23, 2013.

Navarretia	*pubescens*			N	Downy Navarretia	Polemoniaceae
Navarretia	*tagetina*			N	Marigold Navarretia	Polemoniaceae
Navarretia	*viscidula*			N	Sticky Navarretia	Polemoniaceae
Odontostomum	*hartwegii*			N	Hartweg's Odontostomum	Tecophilaeceae
Panicum	*sp.*			I	Panicgrass	Poaceae
Persicaria	*maculosa*			I	Lady's Thumb	Polygonaceae
Petrorhagia	*dubia*			I	Grass Pink	Caryophyllaceae
Phleum	*pratense*			I	Cultivated Timothy	Poaceae
Philadelphus	*lewisii*			N	Mock Orange	Hydrangeaceae
Pinus	*sabiniana*			N	Gray Pine	Pinaceae
Plagiobothrys	*canescens*			N	Valley Popcorn-flower	Boraginaceae
Plagiobothrys	*fulvus*	var.	*campestris*	N	Fulvous Popcorn-flower	Boraginaceae
Plagiobothrys	*nothofulvus*			N	Common Popcorn-flower	Boraginaceae
Plagiobothrys	*stipitatus*	var.	*micranthus*	N	Small-flowered Popcorn-flower	Boraginaceae
Plantago	*erecta*			N	Erect Plantain	Plantaginaceae
Plantago	*lanceolata*			I	English Plantain	Plantaginaceae
Poa	*annua*			I	Annual Bluegrass	Poaceae
Poa	*pratensis*	ssp.	*pratensis*	I	Kentucky Bluegrass	Poaceae
Poa	*secunda*	ssp.	*secunda*	N	One-sided Bluegrass	Poaceae
Polygonum	*aviculare*	ssp.	*depressum*	I	Common Knotweed	Polygonaceae
Polygonum	*californicum*			N	California Knotweed	Polygonaceae
Polygonum	*parryi*			N	Parry's Knotweed	Polygonaceae
Polypogon	*interruptus*			I	Ditch Beard Grass	Poaceae
Polypogon	*monspeliensis*			I	Annual Beard Grass	Poaceae
Populus	*fremontii*	ssp.	*fremontii*	N	Fremont's Cottonwood	Salicaceae
Potamogeton	*sp.*			N	Pondweed	Potamogetonaceae
Prunus	*cerasifera*			I	Cherry Plum	Rosaceae
Psilocarphus	*oregonus*			N	Oregon Woolly-marbles	Asteraceae
Quercus	*douglasii*			N	Blue Oak	Fagaceae
Quercus	*kelloggii*			N	California Black Oak	Fagaceae
Quercus	*lobata*			N	Valley Oak	Fagaceae
Quercus	*morehus*			N	Oracle Oak	Fagaceae
Quercus	*wislizenii*	var.	*wislizeni*	N	Interior Live Oak	Fagaceae
Ranunculus	*aquatilis*	var.	*aquatilis*	N	Broad-leaved Water Buttercup	Ranunculaceae
Ranunculus	*sp.*			N	Buttercup (dried)	Ranunculaceae
Rhamnus	*tomentella*	ssp.	*tomentella*	N	Hoary Coffeeberry	Rhamnaceae
Rhus	*aromatica*			N	Skunkbrush	Anacardiaceae
Rosa	*californica*			N	California Rose	Rosaceae
Rubus	*armeniacus*			I	Himalayan Blackberry	Rosaceae
Rumex	*pulcher*			I	Fiddle Dock	Polygonaceae
Rumex	*crispus*			I	Curly Dock	Polygonaceae
Salix	*exigua*			N	Sandbar Willow	Salicaceae
Salix	*gooddingii*			N	Black Willow	Salicaceae
Salix	*laevigata*			N	Red Willow	Salicaceae
Salix	*lasiandra* ssp. *lucida*			N	Shining Willow	Salicaceae
Salix	*lasiolepis*			N	Arroyo Willow	Salicaceae
Sambucus	*nigra*	ssp.	*caerulea*	N	Blue Elderberry	Apoxaceae
Sanicula	*bipinnatifida*			N	Purple Sanicle	Apiaceae
Schoenoplectus	*acutus*	var.	*occidentalis*	N	Hard-stemmed Tule	Cyperaceae
Scleranthus	*annuus*	ssp.	*annuus*	I	Knawel	Caryophyllaceae
Selaginella	*hansenii*			N	Hansen's Spike-moss	Selaginellaceae
Sidalcea	*hartwegii*			N	Hartweg's Checkerbloom	Malvaceae
Silene	*gallica*			I	Windmill-pink	Caryophyllaceae
Silybum	*marianum*			I	Milk-thistle	Asteraceae
Solidaga	*velutine*	ssp.	*californica*	N	California Goldenrod	Asteraceae
Sonchus	*asper*	ssp.	*asper*	I	Prickly Sow Thistle	Asteraceae
Sorghum	*halepense*			I	Johnsongrass	Poaceae
Spergularia	*bocconei*			I	Baccone's Sandspurry	Caryophyllaceae
Symphoricarpos	*albus*	var.	*laevigatus*	N	Common Snowberry	Caprifoliaceae
Thysanocarpus	*curvipes*	var.	*elegans*	N	Elegant Fringepod	Brassicaceae
Torilis	*arvensis*			I	Tall Sock-Destroyer	Apiaceae
Toxicodendron	*diversilobum*			N	Western Poison-oak	Anacardiaceae
Trichostema	*lanceolatum*			N	Vinegar-weed	Lamiaceae
Trifolium	*ciliolatum*			N	Foothill Clover	Fabaceae
Trifolium	*depauperatum*		*?*	N	Cowbag Clover	Fabaceae
Trifolium	*dubium*			I	Little Hop Clover	Fabaceae
Trifolium	*glomeratum*			I	Sessile-headed Clover	Fabaceae
Trifolium	*hirtum*			I	Rose Clover	Fabaceae
Trifolium	*microcephalum*			N	Small-headed Clover	Fabaceae
Trifolium	*variegatum*			N	White-tipped Clover	Fabaceae
Triphysaria	*eriantha*	ssp.	*eriantha*	N	Johnnytuck	Orobanchaceae
Ventenata	*dubia*			I	Ventenata	Poaceae
Verbascum	*blattaria*			I	Moth Mullein	Scrophulariaceae
Veronica	*peregrina*	ssp.	*xalapensis*	N	Purslane Speedwell	Plantaginaceae
Vicia	*villosa*	ssp.	*varia*	I	Winter Vetch	Fabaceae

Appendix B. Plant Species Observed within the Proposed Cow Creek Fish Passage - Clover Creek/Millville Diversion Fisheries Restoration Project Study Area, Shasta County, CA on June 11, 2012 and May 23, 2013.

Vitis	*californica*			N	California Wild Grape	Vitaceae
Wolffia	*borealis*			N	Northern Watermeal	Araceae
Wyethia	*angustifolia*			N	Narrow-leaved Mule's-ears	Asteraceae
Xanthium	*strumarium*			N	Cocklebur	Asteraceae
Zeltnera	*venusta*			N	Canchalagua	Gentianaceae

Appendix C

Potentially-occurring Special-status Vascular Plant Species Within or Near the Project Site

Appendix C. Special-status Vascular Plant Species With Potential to Occur in Vicinity of Proposed - Clover Creek / Millville Diversion Fisheries Restoration Project, Northeast of Millville, Shasta County, California; CNDDB and CNPS Query Conducted for Palo Cedro and Adjacent Eight USGS 7.5' Quadrangles, Shasta and Tehama Counties

Common Name ***Scientific Name***	**Status* (CNPS)**	**Geographic Range (CA Counties)**	**Habitat (Elevation)**	**Plant Community Association†**	**Flowering Period**
Henderson's Bentgrass *Agrostis hendersonii*	3.2	Butte?, Calaveras, Merced, Shasta, Tehama and Tuolumne	Vernally mesic (70 to 305 m)	VFGrs , VnPls	April-July
Pointed Broomsedge *Carex scoparia* var. *scoparia*	2.2	Plumas and Shasta	Vernally mesic (130-1220 m)	GBScr	May
Pink Creamsacks *Castilleja rubicundula* ssp. *rubicundula*	1B.2	Butte, Contra Costa, Colusa, Glenn, Lake, Napa, Santa Clara, Shasta	Serpentinite (20-910 m)	CmWld, Chprl, Medws, VFGrs	April-June
Shasta Clarkia *Clarkia borealis* ssp. *arida*	1B.1	Shasta and Tehama	Forest openings (490-595 m)	CmWld, LMCFrs	
Silky Cryptantha *Cryptantha crinita*	1B.2	Shasta and Tehama	Gravelly streambeds (61 to 1,215 m)	CmWld, LCFrs, RpFrs, RpWld and VFGrs	April-May
Boggs Lake Hedge-Hyssop *Gratiola heterosepala*	1B.2 CE	Fresno, Lake, Lassen, Madera, Merced, Modoc, Placer, Sacramento, Shasta, Siskiyou, San Joaquin, Solano, Tehama; Oregon	Vernally mesic; (10-2,375 m)	MshSw(lake margin), VnPls/clay	April-Aug
Red Bluff Dwarf Rush *Juncus leiospermus* var. *leiospermus*	1B.1	Butte, Placer, Shasta and Tehama	Vernally mesic (35 to 1,020 m)	Chprl, CmWld, Medws, VFGrs and VnPls	March-May
Legenere *Legenere limosa*	1B.1	Alameda, Lake, Monterey, Napa, Placer, Sacramento, Santa Clara, Shasta, San Joaquin, San Mateo, Solano, Sonoma, Stanislaus*****, Tehama, Yuba	Vernally mesic (1-880 m)	VFGrs , VnPls	April-June
Bellinger's Meadow Foam *Limnanthes floccosa* ssp. *bellingeriana*	1B.2	Shasta; OR	Vernally mesic (290-1,100 m)	CmWld; Mdws (mesic)	April-June
Wooly Meadowfoam *Limnanthes floccosa* ssp. *floccosa*	4.2	Butte, Lake, Napa, Shasta, Siskiyou, Tehama, and Trinity; Oregon.	Vernally mesic (60 to 1,335 m)	Chprl, CmWld, VFGrs and VnPls	March-June
Tehama Navarretia *Navarretia heteranda*	4.3	Butte, Colusa, Lake, Shasta, Tehama, Trinity and Yuba; Oregon	(30 to 1,010 m)	VFGrs and VnPls	April-June
Slender Orcutt Grass *Orcuttia tenuis*	1B.1 SE,FT	Butte, Lake, Lassen, Modoc, Plumas, Sacramento, Shasta, Siskiyou and Tehama	(35-1,760 m)	VnPls	May-October
Ahart's Paronychia *Paronychia ahartii*	1B.1	Butte, Shasta and Tehama	(30 and 510 m)	CmWld, VFGrs and VnPls	February-June

*** California Native Plant Society (CNPS) Status Codes:**
List **1B** = Rare, Threatened, or Endangered in CA and elsewhere
List **2** = Rare, Threatened or Endangered in CA but more common elsewhere.
Threat ranks: **0.1** = high; **0.2** = moderate; **0.3** = low

Agency Listing Codes: CE = State Endangered; **FT =** Federally Threatened

† **Plant Community Association Codes: Chrpl** = Chaparral; **CmWld** = Cis Montane Woodland; **GBScr** = Great Basin Scrub; **LMCfrs**= Lower Montane Coniferous Forest; **NJW** = Northern Juniper Woodland; **MCF** = Mixed Conifer Forest; **Mdws** = Meadows; **MshSw** = Marshes and Swamps; **NCCF** = Northern Coastal Conifer Forest; **NCS** = Northern Coastal Scrub; **UCfrs**= Upper Montane Coniferous Forest; **YPF** = Yellow Pine Forest

Appendix D

Faunal Species Observed Within or Near the Project Site

APPENDIX D
Faunal Species Observed Within or Near the Project Site
Clover Creek / Millville Diversion Fisheries Restoration Project

COMMON NAME	SCIENTIFIC NAME	LISTING STATUS	
		Federal	State
AMPHIBIANS & REPTILES			
Bullfrog*	*Rana catesbeiana*		
Common Garter Snake	*Thamnophis sirtalis*		
Gopher Snake	*Pituophis melanoleucus*		
Pacific Chorus Frog	*Pseudacris regilla*		
Racer	*Coluber constrictor*		
Western Fence Lizard	*Sceloporus occidentalis*		
Western Pond Turtle	*Emys marmorata*		CSC
Western Toad	*Bufo boreas*		
BIRDS			
Acorn Woodpecker	*Melanerpes formicivorus*		
American Bald Eagle	*Haliaeetus leucocephalus*	D	E / FP
American Crow	*Corvus brachyrhynchos*		
American Kestrel	*Falco sparverius*		
American Robin	*Turdus migratorius*		
Anna's Hummingbird	*Calypte anna*		
Ash-throated Flycatcher	*Myiarchus cinerascens*		
Belted Kingfisher	*Ceryle alcyon*		
Black Phoebe	*Sayornis nigricans*		
Brewer's Blackbird	*Euphagus cyanocephalus*		
Brown-headed Cowbird	*Molothrus ater*		
Bushtit	*Psaltriparus minimus*		
California Quail	*Callipepla californica*		
California Towhee	*Pipilo crissalis*		
Canada Goose	*Branta canadensis*		
Cliff Swallow	*Hirundo pyrrhonota*		
Common Merganser	*Mergus merganser*		
Common Raven	*Corvus corax*		
Cooper's Hawk	*Accipiter cooperii*		
Downy Woodpecker	*Picoides pubescens*		
European Starling*	*Sturnus vulgaris*		
Great Blue Heron	*Ardea herodias*		
Great Egret	*Casmerodius albus*		
Green Heron	*Butorides striatus*		
Killdeer	*Charadrius vociferous*		
Lazuli Bunting	*Passerina amoena*		
Lesser Goldfinch	*Spinus psaltria*		
Lewis's Woodpecker	*Melanerpes lewis*		
Mallard	*Anas platyrhynchos*		
Mourning Dove	*Zenaida macroura*		
Northern Flicker	*Calaptes auratus*		
Northern Mockingbird	*Mimus polyglottos*		
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*		
Nuttall's Woodpecker	*Picoides nuttallii*		
Oak Titmouse	*Parus inornatus*		

APPENDIX D
Faunal Species Observed Within or Near the Project Site
Clover Creek / Millville Diversion Fisheries Restoration Project

COMMON NAME	SCIENTIFIC NAME	LISTING STATUS	
		Federal	State
Red-shouldered Hawk	*Buteo lineatus*		
Red-tailed Hawk	*Buteo jamaicensis*		
Red-winged Blackbird	*Agelaius phoeniceus*		
Say's Phoebe	*Sayornis saya*		
Sharp-shinned Hawk	*Accipiter striatus*		
Song Sparrow	*Melospiza melodia*		
Spotted Towhee	*Pipilo maculatus*		
Steller's Jay	*Cyanocitta stelleri*		
Tree Swallow	*Tachycineta bicolor*		
Turkey Vulture	*Cathartes aura*		
Violet-green Swallow	*Tachycineta thalassina*		
Western Bluebird	*Sialia mexicana*		
Western Kingbird	*Tyrannus verticalis*		
Western Meadowlark	*Sturnella neglecta*		
Western Scrub-Jay	*Aphelocoma californica*		
Western Wood-Pewee	*Contopus sordidulus*		
White-breasted Nuthatch	*Sitta carolinensis*		
Wood Duck	*Aix sponsa*		
Yellow-billed Magpie	*Pica nutalli*		
Yellow-breasted Chat	*Icteria virens*		CSC
FISH			
Green Sunfish*	*Lepomis cyanellus*		
Sacramento Pikeminnow	*Ptychocheilus grandis*		
INVERTEBRATES			
Crawfish*	*Unknown species*		
MAMMALS			
Black-tailed Jackrabbit	*Lepus californicus*		
California Ground Squirrel	*Spermophilus beecheyi*		
Coyote	*Canis latrans*		
Mule Deer (Black-tailed Deer)	*Odocoileus hemionus*		
Raccoon	*Procyon lotor*		
River Otter	*Lutra canadensis*		
Striped Skunk	*Mephitis mephitis*		
Western Gray Squirrel	*Sciurus griseus*		

LEGEND:

E = Endangered
T = Threatened
C = Candidate for listing as Endangered or Threatened
P = Proposed for listing as Endangered or Threatened
CSC = California Species of Special Concern
FP = California Fully Protected
SC = NMFS Species of Concern
D = Delisted
PD = Proposed for Delisting
***** = Non-native Species

Appendix E

California Wildlife Habitat Relationships Database Potential Special Status Wildlife Species List

State of California Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Region 1 – Northern
601 Locust Street
Redding, CA 96001
www.wildlife.ca.gov

EDMUND G. BROWN, Jr. Governor
CHARLTON H. BONHAM Director

March 25, 2015

Leslie Bryan
Western Shasta Resource Conservation District
6270 Parallel Road
Anderson, CA 96007

Subject: CORRECTION: Potential Special Status Wildlife Species within the Clover Creek / Millville Diversion Fisheries Restoration Project

Dear Ms. Bryan:

You recently received a species list from the California Department of Fish and Wildlife (Department), which was generated for wildlife species which should be addressed in the Clover Creek/Millville Diversion Fisheries Restoration Project (Project). Several errors were discovered on the list, which was due to a copy and paste problem between the California Wildlife Habitat Relationships (CWHR) program and Microsoft Word. There was also an oversight on a species whose listing status applied to a subspecies located elsewhere. Below is the corrected list.

CWHR ID, Species Name, Status:

~~A003 Long-Toed Salamander Fe Ce Cf~~
~~A007 California Newt Sc~~
~~A012 Common Ensatina Sc~~
~~A024 Shasta Salamander Ct~~
~~A026 Coastal Tailed Frog Sc~~
A028 Western Spadefoot Sc
~~A041 Oregon Spotted Frog Sc Pt~~
~~A042 Cascades Frog Sc~~
A043 Foothill Yellow-Legged Frog Sc
~~A045 Northern Leopard Frog Sc~~
A071 California Red-Legged Frog Ft Sc
~~B003 Common Loon Sc~~
~~B042 American White Pelican Sc~~
~~B070 Greater White-Fronted Goose Sc~~
~~B090 Redhead Sc~~
~~B096 Harlequin Duck Sc~~
~~B102 Barrow's Goldeneye Sc~~
B111 White-Tailed Kite Cf
B113 Bald Eagle Ce Cf Cd
B114 Northern Harrier Sc
~~B117 Northern Goshawk Sc Cd~~
B121 Swainson's Hawk Ct
B126 Golden Eagle Cf Cd
B129 Peregrine Falcon Cf Cd
~~B134 Sooty Grouse Sc~~
~~B140 California Quail Sc~~
~~B150 Sandhill Crane Ct Cf Sc~~
~~B235 Black Tern Sc~~
B269 Burrowing Owl Sc
~~B270 Spotted Owl Ft Sc Cd~~
B272 Long-Eared Owl Sc
B273 Short-Eared Owl Sc
~~B279 Black Swift Sc~~
~~B281 Vaux's Swift Sc~~
B309 Olive-Sided Flycatcher Sc
B315 Willow Flycatcher Fe Ce
B338 Purple Martin Sc
~~B342 Bank Swallow Ct~~
~~B368 Bewick's Wren Sc~~
~~B372 Marsh Wren Sc~~

List continued:

B410 Loggerhead Shrike Fe Sc
~~B417 Hutton's Vireo Sc~~
B430 Yellow Warbler Sc
~~B461 Common Yellowthroat Sc~~
B467 Yellow-Breasted Chat Sc
~~B483 Spotted Towhee Sc~~
~~B484 California Towhee Ft Ce~~
~~B487 Rufous-Crowned Sparrow Sc~~
~~B494 Vesper Sparrow Sc~~
~~B497 Bell's Sparrow Ft Sc~~
~~B499 Savannah Sparrow Ce Sc~~
B501 Grasshopper Sparrow Sc
~~B505 Song Sparrow Sc~~
~~B519 Red-Winged Blackbird Sc~~
B520 Tricolored Blackbird Sc
~~B522 Yellow-Headed Blackbird Sc~~
~~M003 Vagrant Shrew Sc~~
~~M018 Broad-Footed Mole Sc~~
M033 Western Red Bat Sc
M036 Spotted Bat Sc
M037 Townsend's Big-Eared Bat Sc
M038 Pallid Bat Sc
M042 Western Mastiff Bat Sc
~~M045 Brush Rabbit Fe Ce~~
~~M049 Snowshoe Hare Sc~~
~~M050 White-Tailed Jackrabbit Sc~~
~~M051 Black-Tailed Jackrabbit Sc~~
~~M052 Mountain Beaver Fe Sc~~
~~M080 Northern Flying Squirrel Sc~~
~~M105 California Kangaroo Rat Sc~~
~~M117 Deer Mouse Sc~~
~~M127 Dusky-Footed Woodrat Fe Sc~~
~~M134 California Vole Fe Ce Sc~~
~~M147 Red Fox Ct~~
M152 Ringtail Cf
~~M154 Marten Sc~~
M155 Fisher Sc Fc
~~M159 Wolverine Ct Cf Pt~~
M160 American Badger Sc
~~M161 Western Spotted Skunk Sc~~
~~M163 Northern River Otter Sc~~
~~M165 Mountain Lion Sc~~
R004 Western Pond Turtle Sc
~~R036 Western Skink Sc~~
~~R046 Northern Rubber Boa Ct~~ (this looks like a naming error; should be Southern Rubber Boa)
~~R053 Striped Racer Ft Ct~~
~~R057 Gophersnake Sc~~
~~R059 California Mountain Kingsnake Sc~~
~~R061 Common Gartersnake Fe Ce Cf Sc~~

Total Number of Species: 89

Species highlighted in yellow are designated as Neotropical Migratory birds (source: U.S. Fish and Wildlife Service, internet website) and so therefore are afforded special protection by the state and federal governments, as per Fish and Game Code (FGC) 3513 and the Migratory Bird Treaty Act (Executive Order 13186) (http://www.fws.gov/birdhabitat/Grants/NMBCA/Birdlist.shtm). Fully Protected birds are addressed in FGC 3511. Fully Protected mammals are addressed in FGC 4700; reptiles and amphibians, FGC 5050.

As previously stated, this list is only for special status wildlife species; fish and botanical species may also be present and should be addressed. I apologize for any inconvenience this may have caused. Should you have any questions, please contact me at (530) 225-3845, patricia.bratcher@wildlife.ca.gov.

Sincerely,

Patricia Bratcher
Senior Environmental Scientist/Specialist
Northern Region

ec: Mr. Jeff Souza and Ms. Kelly Peterson
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Mr. Michael Harris and Mr. Brad Henderson, Ms. Patricia Bratcher,
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Appendix F

Potentially-occurring Special-status Faunal Species Within or Near the Project Site

APPENDIX F
Potentially-occurring Special-status Species
Clover Creek / Millville Diversion Fisheries Restoration Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
Common Name (*Scientific Name*)	Federal	State		
AMPHIBIANS & REPTILES				
Western Pond Turtle *(Emys marmorata marmorata)*	---	CSC	In or near aquatic habitats in slow moving water. Often associated with basking substrate (e.g. logs, large rocks, etc.). Use adjacent uplands to nest and overwinter.	Observed during site surveys.
Shasta Salamander (*Hydromantes shastae)*	---	T	Primarily found in limestone fissures and caverns in valley-foothill hardwood-conifer, ponderosa pine and mixed conifer habitats.	Not likely to occur within the project site due to a lack of suitable habitat and due to the fact that the project site is outside of the current known range of the species. Not observed during site surveys; however protocol surveys were not conducted.
Foothill Yellow-legged Frog *(Rana boylii)*	---	CSC	In or near rocky streams in a variety of habitats. Rarely encountered far from permanent water.	There is a moderate likelihood of occurrence within the project site. Potential habitat present within the project site. Not observed during multiple site surveys. Known to occur approximately 0.75 mile downstream of the site in the Clover Creek watershed (P. Bratcher pers. comm. 2015).
California Red-legged Frog *(Rana draytonii)*	T	CSC	Slow moving or pooled aquatic habitats with overhanging vegetation.	Not likely to occur within the project site due to the fact that the project site is well outside the current known range of the species and the marginal breeding habitat within the project site. California red-legged frog is generally believed to have been extirpated from the Central Valley. Not observed during multiple site surveys; however protocol-level surveys were not conducted.
Western Spadefoot *(Spea hammondii)*	---	CSC	Grasslands and, occasionally, valley-foothill hardwood woodlands with shallow temporary pools for breeding.	May occur. Potential breeding habitat present within the project site. Not observed during site surveys; however protocol surveys were not conducted.

APPENDIX F
Potentially-occurring Special-status Species
Clover Creek / Millville Diversion Fisheries Restoration Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
Common Name (*Scientific Name*)	Federal	State		
BIRDS				
Tricolored Blackbird *(Agelaius tricolor)*	---	E / CSC	Breeds colonially in tall emergent vegetation or sometimes in tall, upland herbaceous vegetation in areas large enough to support approximately 50 pairs (Zeiner et al. 1990a). Forages in grasslands, agricultural lands.	Not likely to nest within the project site, due to a lack of suitable nesting habitat of sufficient size. May forage within the project site if nesting habitat is present in the general area. Not observed during site surveys.
Grasshopper Sparrow *(Ammodramus savannarum)*	---	CSC	Uses short- to mid-height moderately open grasslands with scattered shrubs and tall forbs. Ground nesting in depressions near the base of overhanging grass or forb clumps.	May occur. Potential nesting and foraging habitat present within the project site. Not observed during site surveys. Known to nest within the general area near Millville Plains / Parkville Road.
Golden Eagle *(Aquila chrysaetos)*	---	FP	Uses rolling foothills and mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, and cliffs and rock outcrops. Generally inhabit more open country.	Not likely to nest within the project site due to a lack of suitable nesting habitat and the presence of an active bald eagle nest within the project site. May forage within the project, potential winter foraging habitat may be present within the project site. Not observed during site surveys.
Short-eared Owl *(Asio flammeus)*	---	CSC	Uses open areas with few trees including grasslands, prairies, dunes, meadows, irrigated areas and emergent wetlands. Nests in open country supporting rodents and herbaceous cover sufficient to conceal ground nests.	Not likely to nest within the project site due to the fact that the project site is well outside the current known breeding range for the species and lack of suitable habitat. Potential winter foraging habitat may be present within the project site. Not observed during site surveys.
Long-eared Owl *(Asio otus)*	---	CSC	Riparian, live oak or conifer thickets with small, densely canopies trees used for roosting and nesting. Generally forages in open areas.	Nesting and foraging habitat present within the project site. Not observed during site surveys.
Burrowing Owl (*Athene cunicularia hypugea*)	---	CSC	Uses open grasslands deserts or scrublands. Nest and roost in underground burrows. Species is gregarious.	Marginal nesting and foraging habitat present within the grassland habitats of the project site. No individuals observed during site surveys.

APPENDIX F
Potentially-occurring Special-status Species
Clover Creek / Millville Diversion Fisheries Restoration Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
Common Name (*Scientific Name*)	Federal	State		
Vaux's Swift *(Chaetura vauxi)*	---	CSC	Nests in large hollow trees and snags in redwood, Douglas fir and other conifer habitats. Often nests in large colonies. Forages widely, put prefers rivers and lakes.	No suitable nesting habitat present within the project site. May forage within the project site, particularly during spring and fall migration periods. Not observed during site surveys.
Northern Harrier *(Circus cyaneus)*	---	CSC	Nest and forage in a variety of open habitats such as grasslands, rangelands, agricultural lands, meadows and emergent wetlands that provide adequate vegetative cover, prey, and scattered hunting, plucking, and lookout perches such as shrubs or fence posts. Nests on the ground, mostly within patches of dense, often tall, vegetation in undisturbed areas.	Potential nesting and foraging habitat present within the grassland and agriculture fields project site. No individuals observed during site surveys.
Western yellow-billed Cuckoo *(Coccyzus americanus occidentalis)*	T	E	Nests in dense deciduous riparian cover, esp. willow with low level understory foliage, near slow moving water with high humidity, utilizes riparian forests and adjacent orchards for foraging. Requires large $\geq$ 7 acre habitat patch sizes for nesting.	Not likely to nest or forage within the project site due to the fact that the project site is well outside the current known breeding range for the species and lack of minimum nesting habitat acreage requirements.
Olive-sided Flycatcher *(Contopus cooperi)*	---	CSC	Nests mostly in montane conifer forests where tall trees overlook canyons, meadows, lakes or other open terrain. In the Sierra Nevada, they utilize open mixed conifer forest and are generally considered an edge species.	Not likely to nest within the project site, due to the low elevations at the project site. May forage within the project site during spring and fall migration. Not observed during site surveys.
Little Willow Flycatcher *(Empidonax traillii brewsteri)*	---	E	Nests in upper elevation riparian habitats such as dense willow thickets near rivers, streams and lakes and wet meadow habitats.	Not likely to nest within the project site, due to low project site elevation. May forage within the project site during spring and fall migration. Not observed during site surveys.
White-tailed Kite *(Elanus caeruleus)*	---	FP	Nests in dense tree stands near open foraging areas. Forages in open grassland and agricultural areas.	Potential nesting and foraging habitat present within the project site. Not observed during site surveys.
American Peregrine Falcon (*Falco peregrinus anatum*)	D	D / FP	Riparian areas, coastal and inland wetlands are important habitats. Breeds mostly in woodland, forest and coastal habitats on cliff ledges, occasionally in snag cavities and in other used raptor nests.	Potential nesting habitat present within the vicinity of the project site along the utility transmissions lines. May forage within the project site. Not observed during site surveys.

APPENDIX F
Potentially-occurring Special-status Species
Clover Creek / Millville Diversion Fisheries Restoration Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
Common Name (*Scientific Name*)	Federal	State		
American Bald Eagle *(Haliaeetus leucocephalus)*	D	E / FP	Nests in large trees with open branchwork, usually near permanent water including rivers, streams and lakes / reservoirs. Forages over large bodies of water with abundant fish.	Observed nesting and foraging within the project site during site surveys.
Yellow-breasted Chat *(Icteria virens)*	---	CSC	Nests in low dense vegetation along streams and rivers.	Nesting and foraging habitat present within the project site. Observed during site surveys. Likely to nest within the project area.
Loggerhead Shrike *(Lanius ludovicianus)*	---	CSC	Prefers open habitats with scattered trees, shrubs, posts, fences and other perches. Found primarily in valley-foothill and desert habitats.	Potential nesting and foraging habitat present within the riparian and upland habitats within the project site. Not observed during site surveys.
Purple Martin (*Progne subis*)	---	CSC	Inhabits open forests, riparian areas and woodlands with snags and very large trees in breeding season. Nests in tree cavities, bridges, utility poles, lava tubes and buildings with low canopy cover at the nest height.	Not likely to nest within the project site, due to the project site being located outside of the current known breeding range for the species. May forage within the project site during spring and fall migration. Not observed during site surveys.
Bank Swallow *(Riparia riparia)*	---	T	Nests in excavated burrows in fine-textured vertical stream banks.	Not likely to nest due to a lack of suitable nesting habitat. May forage within the project area if nesting habitat is present in the general area. Not observed during site surveys.
Yellow Warbler *(Setophaga petechia)*	---	CSC	Nests in riparian habitats, montane chaparral and open conifer forests with substantial amounts of brush.	May nest in riparian habitats within the project site. Likely to forage within the project site during spring and fall migration if nesting does not occur locally. Not observed during site surveys.
Northern Spotted Owl *(Strix occidentalis caurina)*	T	C / CSC	Occurs in mature second growth and late-successional forest, uses dense multi-layered canopy cover for roost selection.	Not likely to nest or forage within the project site, due to the project site being located outside of the current known breeding range and distribution for the species.

APPENDIX F
Potentially-occurring Special-status Species
Clover Creek / Millville Diversion Fisheries Restoration Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
Common Name (*Scientific Name*)	Federal	State		
FISH				
River Lamprey *(Lampetra ayresii)*		CSC	Adults spawn in gravelly riffles in river tributary streams. Ammocoetes (young) use silty backwaters and eddies.	Not well studied in Clover or Cow Creek. May be present within ammocoete stage and may spawn within project site. Not observed during site surveys.
Hardhead *(Mylopharodon conocephalus)*	---	CSC	Low- to mid-elevation streams in the Sacramento and San Joaquin drainage. Also present in the Russian River. Clear, deep pools with slow water velocity, sand, gravel, and boulder substrate. Not found where exotic centrarchids predominate.	Potential spawning and rearing habitat present within the project site. Likely to occur within Clover Creek (CDFG 2012). Not observed during site surveys.
Central Valley Steelhead *(Oncorhynchus mykiss)*	T	---	Spawns in cool, clear water with clean spawning gravel in the Sacramento River and many tributaries.	Potentially present in Clover Creek, but presence and timing is not well documented. Known to occur within Cow Creek; however, they are not likely to occur within the project site during construction due to inadequate water temperatures. Not observed during site surveys.
Central Valley Fall- / Late Fall-run Chinook Salmon *(Oncorhynchus tshawytscha)*	SC	CSC	Spawns in cool, clear water with clean spawning gravel in the Sacramento River and many tributaries.	Adults are known to spawn in Clover Creek, below the project site diversion dam; however, they are not likely to occur within the project site during construction due to inadequate water temperatures. Not observed during site surveys.
Central Valley Spring-run Chinook Salmon *(Oncorhynchus tshawytscha)*	T	T	Spawns in the late summer / early fall in cool, clear water with clean spawning gravel in the Sacramento River and some tributaries.	Not likely to occur within the project site due to the fact that the project site is not within the current range and distribution of the species (Bratcher 2015). Not observed during site surveys.
Sacramento River Winter-run Chinook Salmono *(Oncorhynchus tshawytscha)*	E	E	Spawns in the summer in cool, clear water with clean spawning gravel, almost exclusively in the main-stem of the Sacramento River.	Not likely to occur within the project site due to the fact that the project site is not within the current range and distribution of the species (Bratcher 2015). Not observed during site surveys.

APPENDIX F
Potentially-occurring Special-status Species
Clover Creek / Millville Diversion Fisheries Restoration Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
Common Name (*Scientific Name*)	Federal	State		
INVERTEBRATES				
Conservancy Fairy Shrimp *(Branchinecta conservation)*	E		Vernal pool and vernal pool-like habitats.	No potential habitat is present within the project site.
Vernal Pool Fairy Shrimp *(Branchinecta lynchi)*	T		Vernal pool and vernal pool-like habitats.	No potential habitat is present within the project site.
Valley Elderberry Longhorn Beetle *(Desmocerus californicus dimorphus)*	T	---	Elderberry shrubs with stems one inch or greater in diameter.	Potential habitat present within the project site. No exit holes observed during site surveys. It is currently unclear whether this subspecies range includes Shasta County.
Vernal Pool Tadpole Shrimp *(Lepidurus packardi)*	E		Vernal pool and ephemeral wetland habitats.	No potential habitat is present within the project site.
MAMMALS				
Pallid Bat *(Antrozous pallidus)*	---	CSC	Uses a wide variety of habitats including grassland, shrubland, woodland and forest. Roosts in caves, mines, crevices, hollow trees and buildings.	Potential roosting and foraging habitat present within the project site.
Ringtail *(Bassariscus astutus)*	---	FP	Riparian habitats and forest and shrub habitats near rocky areas or riparian areas from low to middle elevations.	Potential denning, nesting and foraging habitat present within the project site.
Townsend's Big-eared Bat *(Corynorhinus townsendii)*	---	C / CSC	Roosts in caves, mines, tunnels and buildings. Very sensitive to human disturbance; however, in some instances it can become habituated to reoccurring and predictable human activity.	No roosting habitat present within the project site. May forage within the project area if roosting habitat is present in the general area.
Spotted Bat *(Euderma maculatum)*	---	CSC	Prefers to roost in rock crevices on cliffs but also roosts in caves and buildings. Forages over water in a variety of habitats.	No roosting habitat present within the project site. May forage within the project site if roosting habitat is present in the general area.

APPENDIX F
Potentially-occurring Special-status Species
Clover Creek / Millville Diversion Fisheries Restoration Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
Common Name (*Scientific Name*)	Federal	State		
Western Mastiff Bat *(Eumops perotis)*	---	CSC	Roosts in crevices in cliff faces, high buildings, trees and tunnels. Occur in open arid to semi-arid habitats with abundant roost sites.	No roosting habitat present within the project site. May forage within the project site if roosting habitat is present in the general area.
Western Red Bat (*Lasiurus blossevillii*)	---	CSC	Roosts primarily in trees, less often in shrubs. Roost sites often are in edge habitats adjacent to streams, fields, or urban areas. Prefers edges or habitat mosaics that have trees for roosting and open areas for foraging.	Potential roosting and foraging habitat present within the project site.
Pacific Fisher *(Pekania pennanti)*	C	C	Large areas of mature, dense coniferous forest and riparian forest stands with snags and high percent canopy cover.	Low likelihood of occurrence. The project site lacks preferred confer habitat. Not observed during site surveys; however protocol surveys were not conducted.
American badger *(Taxidea taxus)*	---	CSC	Found in dry, open grasslands, fields, and pastures. Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	Potential habitat present within the project site; however, there is a low likelihood for occurrence due to the lack of burrows within the project site. Not observed during site surveys.

LEGEND:

E = Endangered
T = Threatened
C = Candidate for listing as Endangered or Threatened
P = Proposed for listing as Endangered or Threatened
CSC = California Species of Special Concern
D = Delisted
PD = Proposed for Delisting
FP = California Fully Protected
SC = NMFS Species of Concern

Appendix G

List of Mitigation Measures Table

Mitigation Measures Clover Creek / Millville Diversion Fisheries Restoration Project	
Measure Number	**Mitigation Measure**
AIR-1	A Fugitive Dust Permit will be obtained from the Shasta County Air Quality Management District (SCAQMD).
AIR-2	All construction equipment will be maintained in proper tune according to manufacturer's specifications. To the extent feasible, the use of diesel construction equipment meeting the California Air Resources Board's (CARB) 1996 or newer certification standard for off-road heavy-duty diesel engines will be maximized. If required by the SCAQMD, verify that owners or operators of vehicles are registered with the California Air Resources Board Diesel Off-Road On-Line Reporting System (DOORS) program: (www.arb.ca.gov/msprog/ordiesel/ordiesel.htm). The DOORS program assists fleet owners in reporting their off-road diesel vehicle inventories to reduce vehicle emissions, as required by the In-Use Off-Road Diesel Regulation. If required by the SCAQMD, verify that owners or operators of portable engines and certain other types of equipment are registered under the California Air Resources Board's Statewide Portable Equipment Registration Program (PERP) in order to operate their equipment throughout California without having to obtain individual permits from local air districts: (www.arb.ca.gov/portable/portable.htm).
VEGETATION-1	Disturbance to riparian vegetation and other existing vegetation will be avoided or minimized to the extent possible.
VEGETATION-2	All heavy equipment shall be thoroughly cleaned prior to mobilization onsite to remove any soil, weed seeds and plant parts in order to reduce the importation and spread of invasive non-native plant species.
VEGETATION-3	Only certified weed-free straw shall be used for erosion control or other purposes to reduce the importation and spread of invasive non-native plant species.
VEGETATION-4	A revegetation plan will be prepared to replace impacted riparian wetlands and riparian habitat by a measure of quantity and quality equal to, or exceeding impacts of the project or as required by regulatory permit conditions, using appropriate native riparian trees and shrubs.
VEGETATION-5	Areas with woody vegetation that have been disturbed will be revegetated in accordance with the revegetation plan.
VEGETATION-6	Whenever feasible, existing trees within the alignment shall be left in place. All trees to be removed shall be clearly marked on the project plan sheets.
VEGETATION-7	No smoking will be allowed on the construction site or within the Action Area, for fire prevention purposes.

Mitigation Measures Clover Creek / Millville Diversion Fisheries Restoration Project	
Measure Number	**Mitigation Measure**
WILDLIFE-1	Prior to work in aquatic habitats, water bodies shall be surveyed by a qualified biologist to determine if any foothill yellow-legged frogs or western pond turtles are present. If any individuals of these species are found, a qualified and permitted biologist shall determine and implement appropriate relocation procedures. Herpetological exclusion fencing shall be erected around the perimeter of the instream work areas prior to construction initiation. Exclusionary fencing shall be maintained daily and remain until work in aquatic habitats is complete.
WILDLIFE-2	A qualified biologist experienced in the identification of amphibian species (particularly *Rana* species) will conduct survey(s) for California red-legged frogs at a frequency / rate deemed acceptable by the California Department of Fish and Wildlife (CDFW) to determine if this species is present within any of the disturbance areas. If any California red-legged frogs are found to be present, all potentially disturbing construction activities will be suspended until appropriate protective measures can be developed in consultation with the U.S. Fish and Wildlife Service (USFWS) Endangered Species Act (ESA) staff.
WILDLIFE-3	Prior to the initiation of construction, a survey to identify active bald eagle nests within 0.50 mile (as access allows) of project construction, shall be conducted by a qualified biologist. If active bald eagle nests are found to be present, tree removal, vegetation clearing and the onset of potentially disturbing construction activities shall be suspended until the qualified biologist, in consultation with CDFW and USFWS, makes a determination as to whether construction work will affect the active nest or disrupt reproductive behavior and whether appropriate protective buffer areas or monitoring will be required to minimize impacts to nesting bald eagles. No construction activities should commence within established buffer areas until the qualified biologist determines that the nest is not active or the juvenile birds have fledged and are no longer using the nest as their primary day and / or night roost. Trees with unoccupied eagle nests shall not be removed.

Mitigation Measures Clover Creek / Millville Diversion Fisheries Restoration Project	
Measure Number	**Mitigation Measure**
WILDLIFE-4	Any tree removal, vegetation clearing, or the onset of potentially disturbing construction activities shall occur between August 31 and January 1 (outside of the nesting season for avian species). If tree removal, vegetation clearing, or the onset of potentially disturbing construction activities must occur during the nesting season for non-raptor avian species (March 1 through July 31), a nesting survey of the construction area and adjacent suitable habitat shall be conducted by a qualified biologist no more than seven days prior to the initiation of the onset of these activities. If active avian nests are found to be present, tree removal, vegetation clearing and the onset of potentially disturbing construction activities shall be suspended until a qualified biologist, in consultation with CDFW and / or USFWS, can establish an appropriate protective buffer area to minimize impacts to the nesting birds. No construction activities shall commence within the buffer area until the qualified biologist determines that the young birds have fledged or the nest is no longer active. If tree removal, vegetation clearing, or the onset of potentially disturbing construction activities must occur during the raptor nesting season January 1 through August 31, a raptor nesting survey of the construction area and a 0.25 mile buffer (as access allows) shall be conducted by a qualified biologist no more than seven days prior to the initiation of the onset of these activities. If active raptor nests are found to be present, tree removal, vegetation clearing and the onset of potentially disturbing construction activities shall be suspended until a qualified biologist, in consultation with CDFW and / or USFWS can establish an appropriate protective buffer area to minimize impacts to the nesting raptors. No construction activities should commence within the buffer area until the qualified biologist determines that the young birds have fledged or the nest is no longer active.
WILDLIFE-5	Prior to any construction work, a survey shall be conducted by a qualified biologist to ensure that pallid bats are not roosting within the areas to be disturbed. If pallid bats are found to be roosting within the area to be disturbed, construction activities shall be suspended until a qualified biologist, in consultation with CDFW, can establish appropriate measures to minimize impacts to pallid bats.
WILDLIFE-6	Prior to construction, a qualified biologist will inspect the area to be disturbed to determine if potential ringtail denning is occurring. If potential ringtail denning is found to be occurring, construction activities should be suspended until a qualified biologist, in consultation with CDFW, can establish appropriate measures to minimize impacts to ringtail.
WILDLIFE-7	A qualified biologist (biological monitor) shall regularly inspect construction-related activities to ensure that no unnecessary disturbance to special-status species and / or their associated habitats occurs. The biological monitor should have the authority to stop all activities that may result in such disturbance until appropriate corrective measures have been completed. The biologist will also be required to report any unauthorized take to CDFW, USFWS and / or NMFS immediately.

Mitigation Measures Clover Creek / Millville Diversion Fisheries Restoration Project	
Measure Number	**Mitigation Measure**
WILDLIFE-8	A construction worker education program shall be implemented that includes an explanation of all special-status animal species, identification, avoidance measures, and federal and state laws that protect the species. This shall include, at a minimum, those species potentially significantly impacted by the project in the environmental documents.
WILDLIFE-9	Aquatic habitat preservation: Embedded pieces of large woody debris or the stumps of existing trees that can potentially serve as basking sites and/or encourage pool formation shall be left in place whenever possible. If removal is determined to be necessary (none anticipated), large woody debris, large flat boulders, or stumps will be replaced with structures of equal or greater habitat value.
WILDLIFE-10	To reduce potential impacts to valley elderberry longhorn beetle (VELB) to less than significant levels, the proposed project shall comply with 1999 USFWS *Conservation Guidelines for the Valley Elderberry Longhorn Beetle*, or as directed by the results of the Endangered Species Act Section 7 consultation with the USFWS. Prior to construction, biological surveys for potential habitat, not identified in previous VELB surveys shall be completed. All elderberry shrubs within 100 ft. of the Project Area boundary will be clearly flagged, and the flags will be maintained throughout the duration of the Project's construction. If access to the shrub is difficult due to dense riparian growth, then the boundary of the riparian stand will be clearly flagged, whichever is more protective of the elderberry shrub. All elderberry shrubs that are within 50 ft. of Project activity will be clearly fenced; the purpose of the fencing and fencing specs (e.g. color of fencing) shall be clearly shared with construction employees and staff. If elderberry shrubs cannot be avoided then the mitigation guidelines in the USFWS 1999 *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* will be followed or mitigation credits will be purchased from a USFWS-approved mitigation bank. Any revegetation efforts will consider and incorporate use of elderberries in the planting mix, where appropriate.
WILDLIFE-11	As close to the beginning of construction as possible, but not more than 14 days prior to construction, a qualified biologist shall conduct a final pre-activity survey of the construction zone to ensure that no other special-status wildlife species have recently occupied the site, including at a minimum those species described as potentially occurring, and species listed in the California Wildlife Habitat Relationship Program list generated for this project by CDFW. If special status species nests or roosting sites are found, a services-approved biologist shall be employed to determine and implement appropriate relocation procedures or exclusion zones, in coordination with regulatory agencies. If special-status species are found during the pre-construction survey, the biologist will be present immediately prior to construction activities that have the potential to impact special-status species to identify and protect potentially sensitive resources. In addition, special status wildlife species captured during fish removal activities (see FISH-3) will be carefully located either above the dam / upper water crossing OR below the low water crossing so that potential impacts to these species are minimized.

Mitigation Measures Clover Creek / Millville Diversion Fisheries Restoration Project	
Measure Number	**Mitigation Measure**
WILDLIFE-12	Appropriate measures will be used to avoid the spread of Aquatic Invasive Species such as Zebra / Quagga mussels, New Zealand mudsnails and Chytrid Fungus to and from the project area and could include such measures as physical removal from equipment, freezing equipment and saturation of equipment in a chemical solution(s).
WILDLIFE-13	Exclusionary devices approved by CDFW and / or USFWS, shall be installed on the bridge near the Exposed Siphon by February 15 to exclude swallows from nest building. The exclusion measures shall be monitored and maintained at a frequency sufficient to ensure that nest building is not occurring and to ensure there are no open entry points. If exclusionary devices fail to exclude swallow nesting, all traces of nesting precursors (mud placed by swallows for construction of nests) shall be continuously removed, including new and old nesting materials. Any nest shall be removed at the first sign of nest building and before the nest reaches a size which could hold any eggs. Nest removal shall not result in the destruction of any eggs or completed nests or cause harm to adult swallows or any other birds. If a swallow nest with eggs and / or young birds are found, work must stop until a no-disturbance buffer is established and marked in the field in coordination with CDFW. All exclusionary devices shall be removed after project completion.
WETLAND-1	Project activities will avoid impacts to wetlands and other aquatic habitats to the extent possible.
WETLAND-2	High-visibility fencing will be installed in areas where equipment will be working near any wetlands or other aquatic habitats that are not to be disturbed
WETLAND-3	Construction crews will be informed about the importance of avoiding sensitive areas, including wetlands.
WETLAND-4	A Clean Water Act Section 404 Permit will be obtained from the U.S. Army Corps of Engineers and a Clean Water Act Section 401 Certification will be obtained from the Central Valley Regional Water Quality Control Board (Central Valley Water Board) for the project and all permit / certification conditions and all agreements will be adhered to.
WETLAND-5	A California Fish and Game Code Section 1600 Lake and Streambed Alteration Agreement will be obtained from CDFW for the project.
FISH-1	All instream construction work shall be conducted between July 1 and October 14. Water diversions can occur before May 31, or as flows allow. Work within the channel and banks, outside of this instream work window must be isolated from flowing water, and fish passage will be accommodated through the project site after October 14.
FISH-2	All construction debris already on site and generated as a result of construction activity (concrete, metal, etc.) from the fish passage improvement-related construction activities will be removed from the active stream channel post-construction.

Mitigation Measures Clover Creek / Millville Diversion Fisheries Restoration Project	
Measure Number	**Mitigation Measure**
FISH-3	Prior to construction, exclusionary fish netting shall be installed upstream and downstream of the construction area. Specifically, a net will be installed above and below the dam/upper water crossing; above and below the siphon / bridge, and above and below the lower water crossing. Best professional determination will be used to decide which method(s) of rescue and location of exclusionary netting is most appropriate. Biologists will first try to haze and herd fish out of the fish exclusion area. If fish biologists determine that the use of electrofishing is necessary for the efficient and successful removal of fish, the National Marine Fisheries Service (NMFS) electrofishing guidelines (NMFS 2000) will be strictly followed. The fish rescue team will be comprised of fishery biologists with professional experience using seines and electrofishing equipment.
FISH-4	All dewatering and rewatering activities will be conducted slowly, in order to minimize disturbance to fish.
FISH-5	All pumps used during dewatering or other construction activities will be screened to meet CDFW and NMFS criteria.
CULTURAL-1	In the event subsurface cultural remains over 45 years of age are encountered during ground-disturbing activities, all work will cease at the general area of discovery and the USFWS regional archaeologist, or other lead agency archaeologist, will be notified immediately. A field exam by a professional archaeologist may be required and further steps for resource protection will be implemented, including mitigation and consultation with the Native American Indian community if human remains are encountered (following Native American Graves Protection and Repatriation Act procedures).
SOIL / GEO-1	After ground-disturbing activities are complete, all disturbed areas (outside of the active stream channel) shall be seeded with native plant species and mulched as described in the revegetation plan.
SOIL / GEO-2	Construction of all project actions shall comply with RWQCB Basin Plan Objectives. Standard Best Management Practices (BMPs) will be incorporated into the project designs and / or Stormwater Pollution Prevention Plan (SWPPP), if required.
SOIL / GEO-3	If the total disturbance area is greater than one acre, a Notice of Intent will be submitted to the State Water Resources Control Board to obtain coverage under the National Pollution Discharge Elimination System General Permit for Discharges of Stormwater Associated with Construction Activity and a SWPPP will be prepared.

Mitigation Measures Clover Creek / Millville Diversion Fisheries Restoration Project	
Measure Number	**Mitigation Measure**
SOIL / GEO-4	For site grading, on-site materials may be used as engineered fill, provided they are prepared free of organics, trash and other debris, they do not contain oversize particles larger than 2.5 inches in greatest dimension, they have no more than 35 percent passing the No. 200 sieve, they have little to no corrosion potential and have a relatively low expansion potential, defined by a liquid limit less than 40 and a plasticity index lower than 20. If imported fill is used, it shall be submitted to the geotechnical engineer of record for approval at least 72 hours before it is to be used on site. Compaction Requirements: Engineered fill, where planned, shall be placed in maximum eight-inch-thick loose lifts, moisture-conditioned to within two percent of optimum moisture content, and compacted to at least 90 percent relative compaction. Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density of the same material, as determined by ASTM D1557 laboratory compaction procedure. (Source: Sage Engineers 2015)
SOIL / GEO-5	Where temporary excavations are required, temporary slopes will be used. Temporary slopes shall be excavated in accordance with the latest edition of the CAL-OSHA excavation and trench safety standards as a minimum (OSHA 2012, OSHA Standards for the Construction Industry, 29 CFR Part 1926). The sand / gravel / cobble matrix present at the site shall be preliminarily classified as Type C according to the CAL-OSHA classification system. The maximum allowable slope for Type C soil is 1.5H:1V; however, flatter temporary slopes may be required to provide a stable slope, especially where there are low fines contents. Where encountered, bedrock shall be classified as Stable Rock, for which vertical cuts are allowed; however this shall be confirmed in the field once exposed. The Contractor is responsible for all temporary slopes at the site, and shall designate one of their on-site employees as a "competent person" who is responsible for trench and excavation safety. The competent person shall be responsible for determination of the actual CAL-OSHA soil type and shall direct the excavation crews to adjust slope inclinations if appropriate. If temporary shoring is used, the Contractor shall retain the services of a design engineer familiar with shoring system design in creek deposits. (Source: Sage Engineers 2015)
SOIL / GEO-6	Where permanent cut and fill slopes are required in soil, they shall be constructed with a maximum inclination of 2H:1V. Cut slopes in the bedrock shall be excavated to inclinations of 1H:1V, but shall be confirmed in the field by a Certified Engineering Geologist during construction based on the actual conditions encountered. Steeper permanent slopes in rock cuts may be feasible as determined by the Geologist. (Source: Sage Engineers 2015)
SOIL / GEO-7	All creek crossings associated with construction / project activity shall occur only at the two designated low water crossings
HAZ-1	A designated concrete washout area will be located at least 100 feet from any high water mark within adjacent waterways and will be developed and used following the Standard California Department of Transportation Temporary Concrete Washout Plan.
HAZ-2	Construction equipment and building materials shall not be stored or stockpiled in the creek channel, and shall be stored at least 50 feet from the top of the bank.
HAZ-3	No petroleum-based products shall be used as soil stabilizing material.

Mitigation Measures Clover Creek / Millville Diversion Fisheries Restoration Project	
Measure Number	**Mitigation Measure**
WATER-1	All construction shall be conducted in the summer / early fall during the low flow period. Any work within the channel and banks, outside of this instream work window must be isolated from flowing water and dewatering will be required.
WATER-2	BMPs will be developed and implemented to ensure that wet concrete does not enter Clover Creek during construction.
WATER-3	Monitoring of water turbidity and settleable materials shall be conducted in accordance with the Clean Water Act Section 401 Certification through consultation with the Central Valley Water Board.
WATER-4	All equipment and machinery that contains fuel, oil or other petroleum products used during construction-related activities shall be checked for petroleum leaks immediately prior to being mobilized to the project site and again each day prior to use.
WATER-5	All equipment refueling and / or maintenance shall take place within a secondary containment structure and a minimum of 100 feet away from Clover Creek or other aquatic sites.
WATER-6	An emergency spill kit and absorbent oil booms will be onsite during construction activities.
WATER-7	All equipment operations within the channel and banks of Clover Creek will be required to use readily biodegradable hydraulic oil.
WATER-8	A dewatering permit will be obtained from the Central Valley Water Board for each project site, if deemed necessary, based on the dewatering methods used.
NOISE-1	Construction work (including arrival and departure of trucks hauling materials) will generally be conducted from 7:00 am to 7:00 pm Monday through Friday. Weekend work will only be allowed, if necessary to complete the projects within the established environmental time frames.

Appendix H

CEQA Environmental Checklist Form

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☑ Air Quality / Greenhouse Gas Emissions
☑ Biological Resources	☑ Cultural Resources	☑ Geology /Soils
☐ Land Use / Planning	☑ Hazards & Hazardous Materials	☑ Hydrology / Water Quality
☐ Population / Housing	☐ Mineral Resources	☑ Noise
☐ Transportation/Traffic	☐ Public Services	☐ Recreation
☐ Utilities / Service Systems	☑ Mandatory Findings of Significance	

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☑ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Signature Date

_____ _____

Signature Date

Environmental Checklist Form

I. AESTHETICS (See EA/IS Section 3.1) - Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☑
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☑
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☑
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☑

II. AGRICULTURE RESOURCES (See EA/IS Section 3.2) In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non- agricultural use?	☐	☐	☐	☑
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☑
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	☑

III. AIR QUALITY / GREEN HOUSE GAS (See EA/IS Section 3.3) Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☑
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☑	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☑	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☑	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☑
f) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☑	☐
g) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☑

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES (See EA/IS Section 3.4)				
- Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☑	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☑	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal,filling, hydrological interruption, or other means?	☐	☑	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☑	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☑
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☑
V. CULTURAL RESOURCES (See EA/IS Section 3.5)				
- Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?	☐	☐	☑	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	☐	☑	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☑	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☑	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. GEOLOGY AND SOILS (See EA/IS Section 3.8)				
- Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☑
ii) Strong seismic ground shaking?	☐	☐	☐	☑
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☑
iv) Landslides?	☐	☐	☐	☑
b) Result in substantial soil erosion or the loss of topsoil?	☐	☑	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☑
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☑
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☑
VII. HAZARDS AND HAZARDOUS MATERIALS (See EA/IS Section 3.9)				
- Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☑	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☑	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☑	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☑
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☑
VIII. HYDROLOGY AND WATER QUALITY (See EA/IS Section 3.10)				
- Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☑	☐	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☑
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☑	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☑	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☑
f) Otherwise substantially degrade water quality?	☐	☑	☐	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☑
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☑	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☑
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☑
IX. LAND USE AND PLANNING (See EA/IS Section 3.11)				
- Would the project:				
a) Physically divide an established community?	☐	☐	☐	☑
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☑
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☑
X. MINERAL RESOURCES (See EA/IS Section 3.8)				
- Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☑
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☑
XI. NOISE (See EA/IS Section 3.12)				
- Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☑	☐	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☑
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☑
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☑	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑
XII. POPULATION AND HOUSING (See EA/IS Section 3.13)				
- Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☑
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑
XIII. PUBLIC SERVICES (See EA/IS Section 3.14)				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☐	☑
Police protection?	☐	☐	☐	☑
Schools?	☐	☐	☐	☑
Parks?	☐	☐	☐	☑
Other public facilities?	☐	☐	☐	☑
XIV. RECREATION (See EA/IS Section 3.15)				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☑

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☑
XV. TRANSPORTATION/TRAFFIC (See EA/IS Section 3.16)				
- Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	☑	☐
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☑
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☑
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☑
e) Result in inadequate emergency access?	☐	☐	☐	☑
f) Result in inadequate parking capacity?	☐	☐	☐	☑
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☑
XVI. UTILITIES AND SERVICE SYSTEMS (See EA/IS Section 3.14)				
- Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☑
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☑
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☑
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☑

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☑
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☑
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☑
XVII. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☑	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	☑
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☑	☐	☐