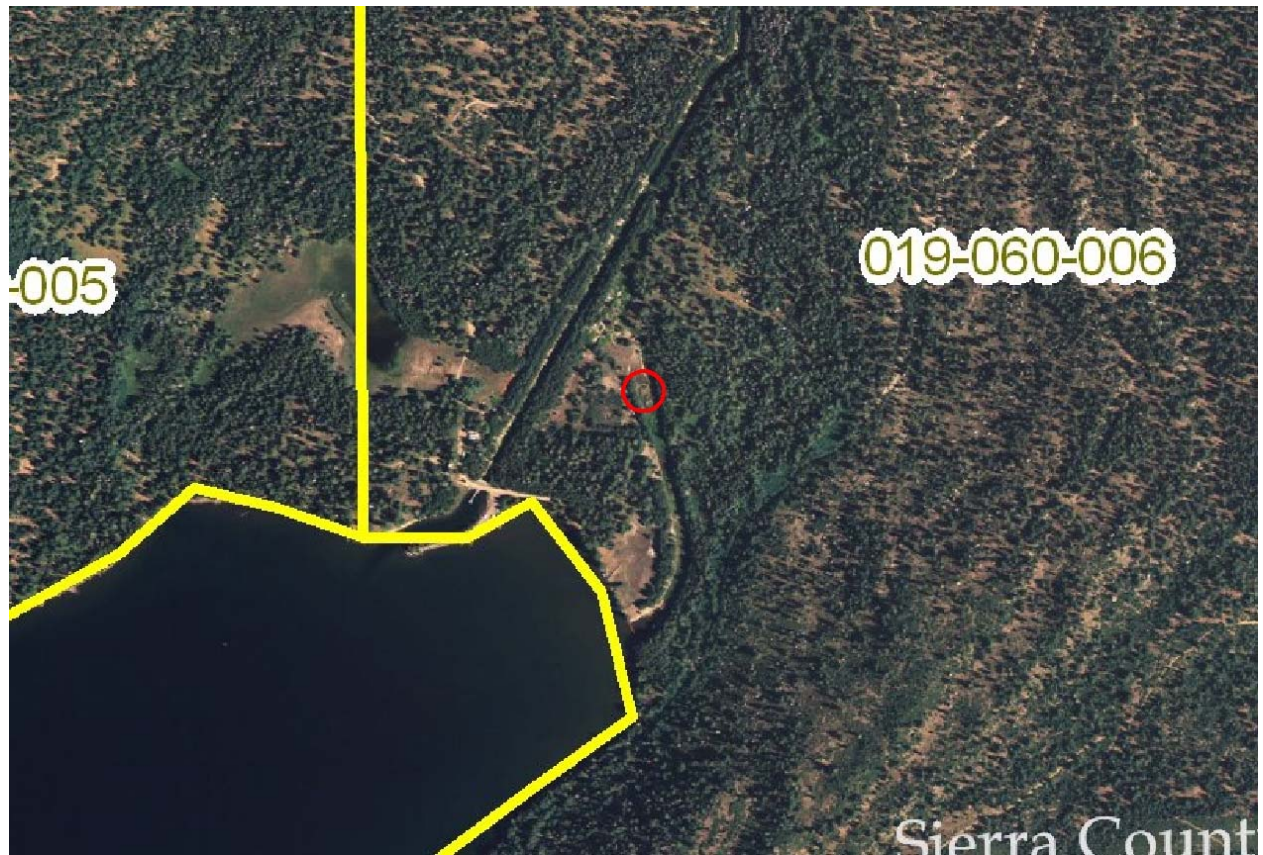


APPENDIX A
Independence Lake Spillway Fish Barrier
Aerial Photograph of project site



Appendix B
Independence Lake Spillway Fish Barrier

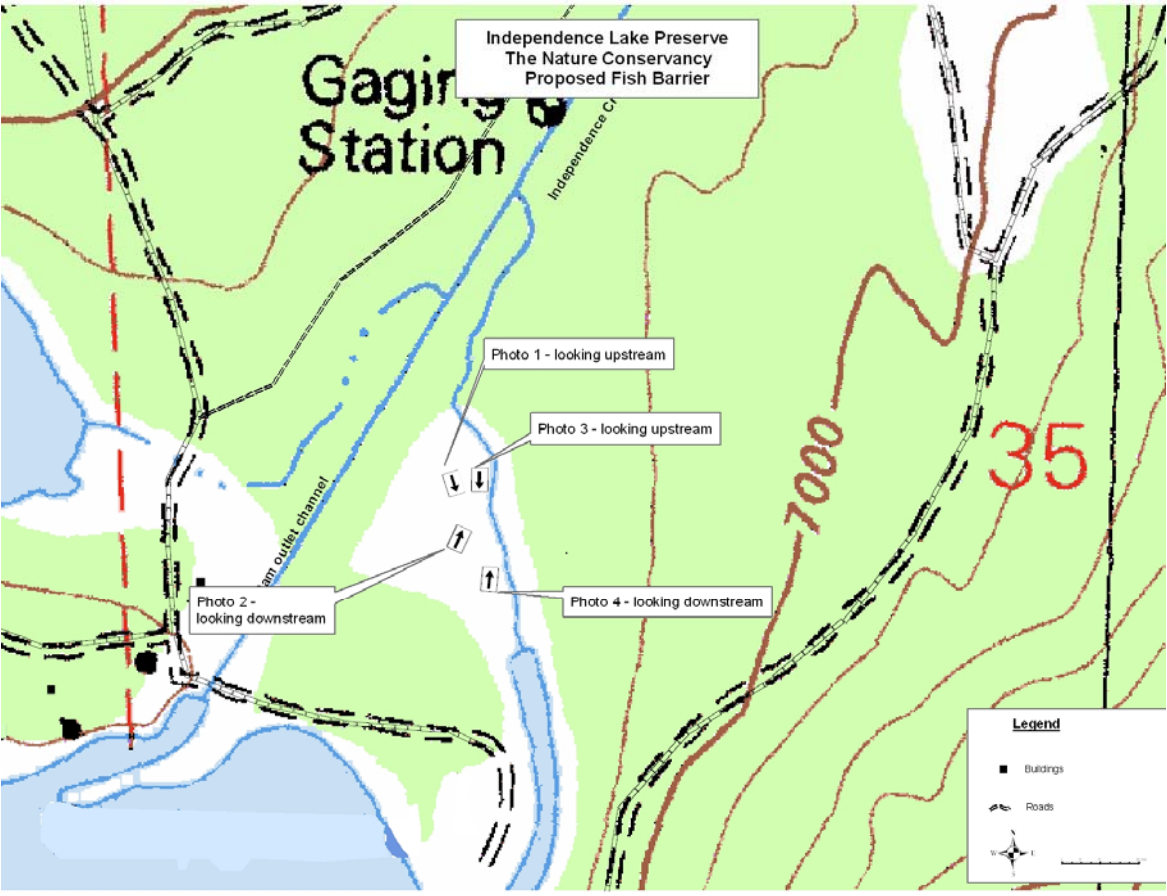


Photo 1



Photo 2

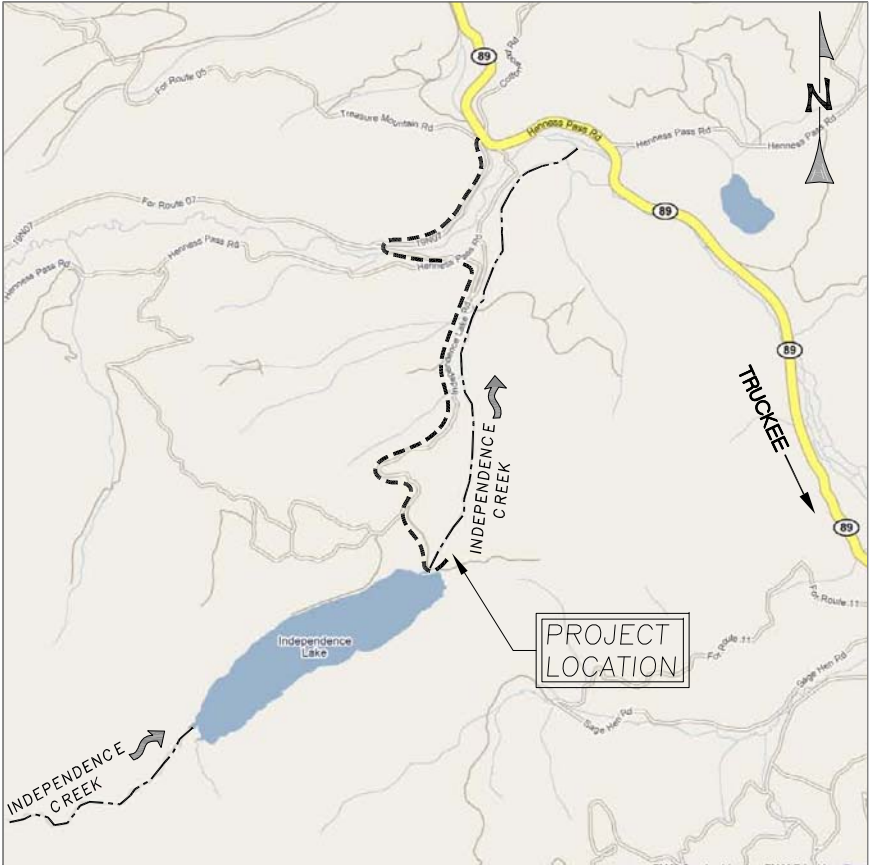


Photo 3



Photo 4

INDEPENDENCE LAKE
LAHONTAN CUTTHROAT TROUT ENHANCEMENT PLAN
SPILLWAY FISH BARRIER
100% SUBMITTAL



VICINITY MAP
N.T.S. (GOOGLE)



REGIONAL MAP
N.T.S. (GOOGLE)

SHEET INDEX

C1	COVER SHEET
C2	ACCESS AND DIVERSION/DEWATERING PLAN
C3	GRADING PLAN
C4	TYPICAL SECTIONS
C5	DETAILS
C6	NOTES
S1	FISH BARRIER REINFORCING DETAIL AND NOTES
R1	REVEGETATION PLAN
E1	EXISTING CONDITIONS (1 OF 2)
E2	EXISTING CONDITIONS (2 OF 2)

PROJECT DESCRIPTION

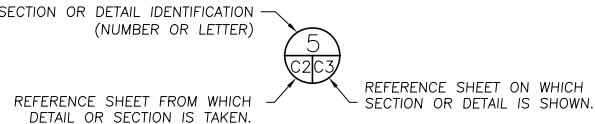
THESE PLANS PROVIDE DETAILS FOR THE CONSTRUCTION OF A CONCRETE FISH PASSAGE BARRIER IN THE INDEPENDENCE LAKE SPILLWAY CHANNEL IN SIERRA COUNTY, CALIFORNIA. WORK SHALL CONSIST OF:

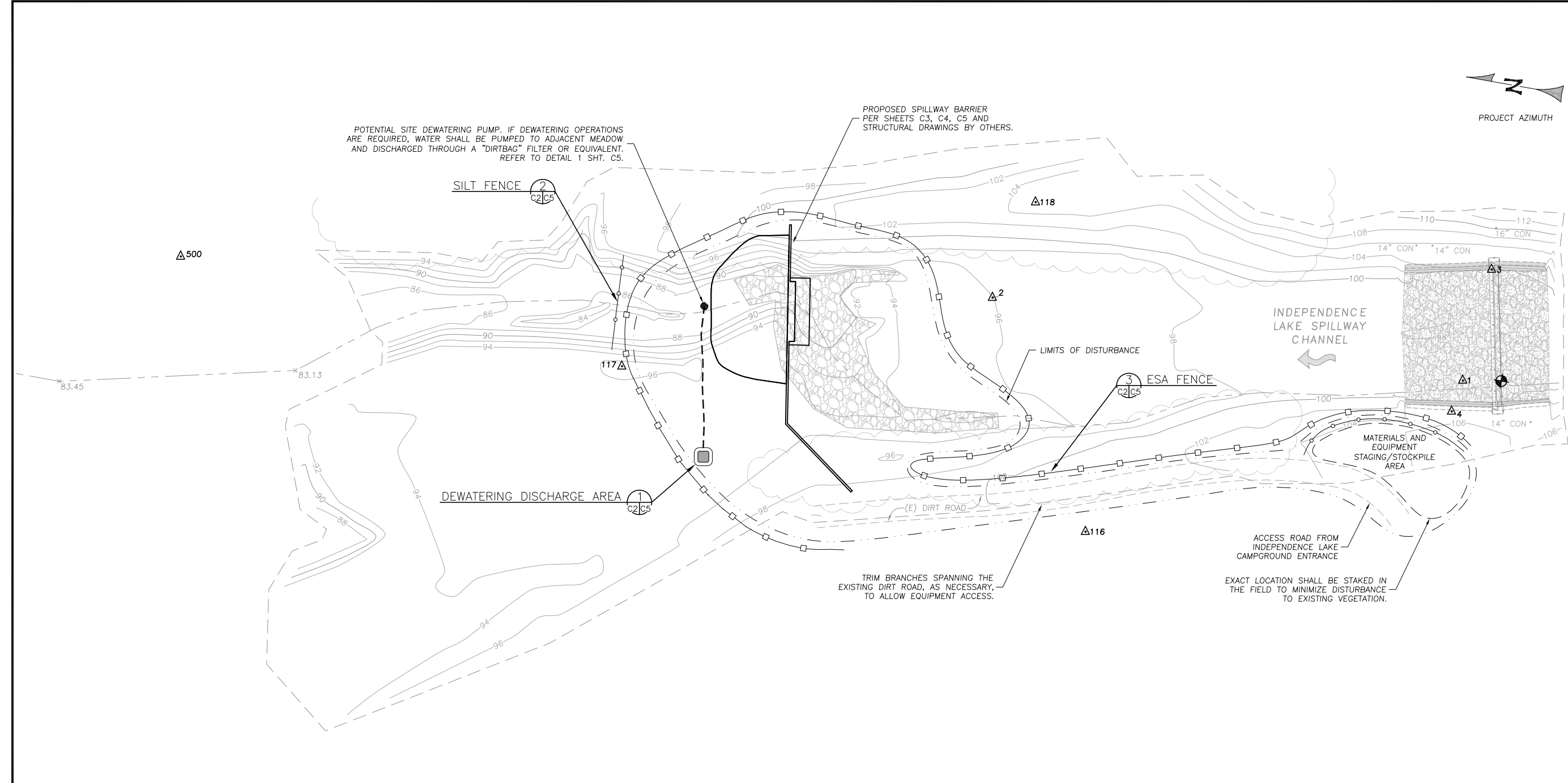
- SITE GRADING
- REPOSITIONING OF EXISTING IMPORTED ROCK SLOPE PROTECTION TO PROVIDE ENERGY DISSIPATION
- RE-GRADING OF THE SITE TO ACCOMMODATE NEW FISH BARRIER GEOMETRY
- FISH BARRIER CONSTRUCTION
- SOIL STABILIZATION AND REVEGETATION

ABBREVIATIONS

A	ALDER	LP	LIGHT POLE
AB	AGGREGATE BASE	M	MAPLE
AC	ASPHALT CONCRETE / ACRE	N	NEW / NORTHING
APN	ASSESSORS PARCEL NUMBER	NIC	NOT IN CONTRACT
AS	AGGREGATE SUB-BASE	NTS	NOT TO SCALE
BW	BASE OF WALL	O	OAK
CC	CONCRETE	OC	ON CENTER
CL	CENTER LINE	PL	PROPERTY LINE
CMP	CORRUGATED METAL PIPE	PNS	PAVEMENT NAIL AND SHINER
CON	CONIFER	PP	POWER POLE
CPP	CORRUGATED PLASTIC PIPE	PVC	POLYVINYL CHLORIDE
CP	CONTROL POINT	RC	RELATIVE COMPACTION
DESC	DESCRIPTION	RCP	REINFORCED CONCRETE PIPE
DBH	DIAMETER AT BREAST HEIGHT	RSP	ROCK SLOPE PROTECTION
DI	DROP INLET	SF	SQUARE FEET
DIA	DIAMETER	SHT	SHEET
E	EXISTING / EASTING	SPK	8" GALV. SPIKE SURVEY MONUMENT
EG	EXISTING GROUND	STA	STATION
EL	ELEVATION	TEMP	TEMPORARY
ELEV	ELEVATION	TBD	TO BE DETERMINED
EP	EDGE PAVEMENT	TP	TELEPHONE POLE
ER	END RETURN	TW	TOP OF WALL
FH	FIRE HYDRANT	TYP	TYPICAL
FG	FINISH GRADE	UNO	UNLESS NOTED OTHERWISE
FL	FLOW LINE	W	WATER / WILLOW
FNC	FENCE	WM	WATER METER
INV	INVERT	WV	WATER VALVE
LF	LINEAR FEET		

SECTION AND DETAIL CONVENTION





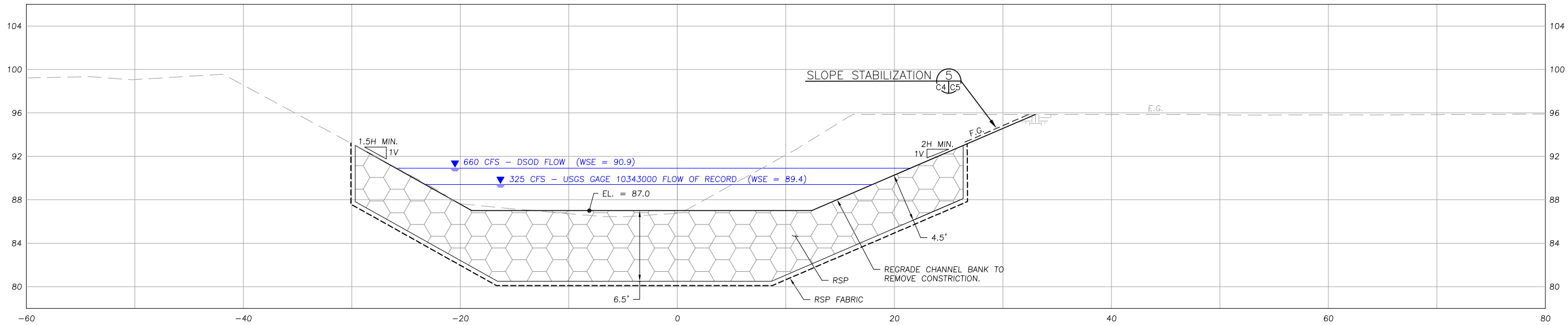
CONTROL POINTS

POINT	NORTHING	EASTING	ELEV.	DESC.
1	5000.00	5000.00	100.00	SPIKE
2	5263.39	5000.00	95.98	SPIKE
3	4994.99	5063.04	104.51	PNS
4	5003.10	4982.14	104.62	SPIKE
116	5190.46	4881.68	98.70	SPIKE
117	5458.17	4927.21	96.23	REBAR
118	5249.18	5055.99	104.41	REBAR
500	5708.28	4944.63	94.55	SPIKE

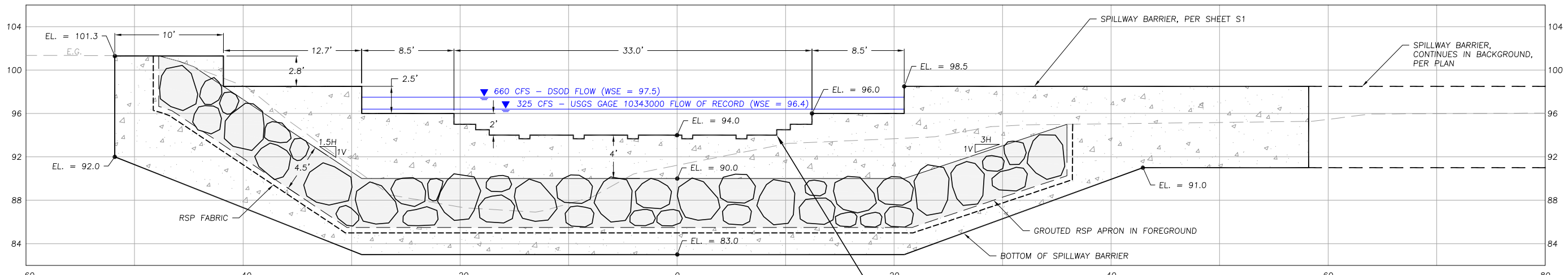
SITE OVERVIEW
SCALE: 1"=30'

LEGEND

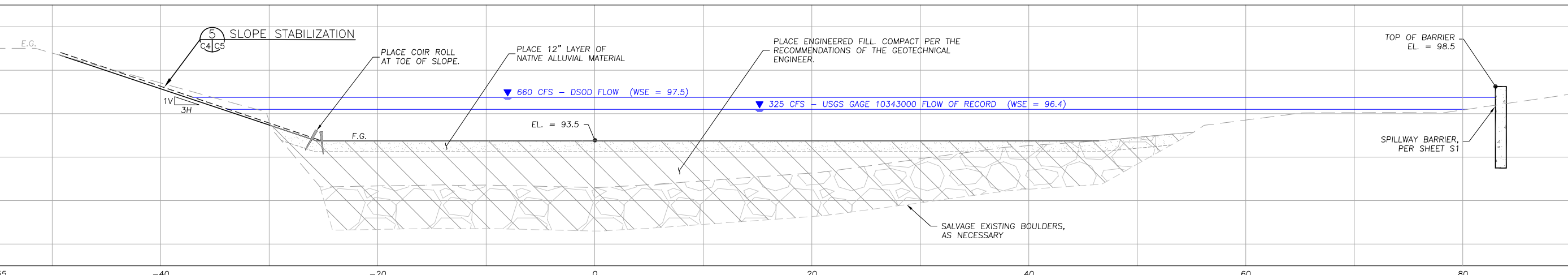
- △¹ SURVEY CONTROL POINT
- ⊕ STAFF PLATE
- x 97.47 SPOT ELEVATION
- TREE
- THALWEG
- 100---98--- CONTOURS
- CONCRETE AND STONE WALL
- FENCE
- RAILING
- TREE DRIPLINE (APPROXIMATE LIMITS)
- EXPOSED CHANNEL BOULDERS D50=3'(+/-) (APPROXIMATE LIMITS)
- GROUTED RIPRAP SPILLWAY (APPROXIMATE LIMITS)
- CONCRETE



SECTION 2+87
SCALE: 1"=5'



SECTION 3+24
SCALE: 1"=5'



SECTION 3+50
SCALE: 1"=5'

GENERAL NOTES

1. PREPARED AT THE REQUEST OF:
THE NATURE CONSERVANCY, NEVADA CHAPTER
ATTN: CHRIS FICHEL
ONE E. FIRST STREET, #1007
RENO, NV 89501
2. TOPOGRAPHIC MAPPING PROVIDED BY:
SWANSON HYDROLOGY AND GEOMORPHOLOGY
500 SEABRIGHT AVE, SUITE 202
SANTA CRUZ, CA 95060
PHONE: (831)421-9291
PROJECT No. 08-726
SURVEY DATE: SEPT. 24TH, 2008
- SUPPLEMENTAL TOPOGRAPHIC MAPPING CONDUCTED BY WATERWAYS CONSULTING IN AUGUST, 2009.
3. ELEVATION DATUM: ASSUMED ELEVATION OF 100.00 AT CONTRL POINT No. 1, AN 8" IRON SPIKE, LOCATED AS SHOWN ON THE DRAWINGS. SPILLWAY STAFF PLATE STAGE HEIGHT 6.0 = ELEVATION 100.54.
4. BASIS OF BEARINGS: A PROJECT AZIMUTH WAS ESTABLISHED FOR THE PURPOSES OF THIS SURVEY, WITH 0° BETWEEN POINTS No. 1 AND No. 2.
5. ELEVATIONS AND DISTANCES SHOWN ARE IN FEET AND DECIMALS THEREOF. CONTOUR INTERVAL IS 2 FEET.
6. THIS IS NOT A BOUNDARY SURVEY. PROPERTY BOUNDARY LINES ARE NOT SHOWN.
7. ALL CONSTRUCTION AND MATERIALS NOT ADDRESSED IN THE SPECIFICATIONS SHALL CONFORM TO THE CURRENT EDITION OF THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS FOR CONSTRUCTION OF LOCAL STREETS AND ROADS..
8. THE ENGINEER SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. A QUALIFIED CIVIL ENGINEER WITH EXPERIENCE IN THE INSTALLATION OF FEATURES OF THE TYPE SHOWN ON THESE PLANS, SHALL MONITOR THE CONSTRUCTION PROCESS, AS NECESSARY TO ENSURE PROPER INSTALLATION PROCEDURES.
9. EXISTING UNDERGROUND UTILITY LOCATIONS:

PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL CONTACT ALL LOCAL UTILITIES COMPANIES WITH REGARD TO WORKING OVER, UNDER, OR AROUND EXISTING FACILITIES AND TO OBTAIN INFORMATION REGARDING RESTRICTIONS THAT ARE REQUIRED TO PREVENT DAMAGE TO THE FACILITIES.

LOCATIONS SHOWN ARE COMPILED FROM FIELD MEASUREMENTS TO ABOVE GROUND FEATURES READILY VISIBLE AT THE TIME OF SURVEY. LOCATIONS SHOWN ARE APPROXIMATE. THE CONTRACTOR IS CAUTIONED THAT ONLY ACTUAL EXCAVATION WILL REVEAL THE DIMENSIONS, SIZES, MATERIALS, LOCATIONS, AND DEPTH OF UNDERGROUND UTILITIES.

PRIOR TO COMMENCING FABRICATION OR CONSTRUCTION, CONTRACTOR SHALL DISCOVER OR VERIFY THE ACTUAL DIMENSIONS, SIZES, MATERIALS, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES AND POTHOLE THOSE AREAS WHERE POTENTIAL CONFLICTS ARE LIKELY OR DATA IS OTHERWISE INCOMPLETE.

UPON LEARNING OF THE EXISTENCE AND/OR LOCATIONS OF ANY UNDERGROUND FACILITIES NOT SHOWN OR SHOWN INACCURATELY ON THE PLANS OR NOT PROPERLY MARKED BY THE UTILITY OWNER, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITY OWNER AND THE CITY BY TELEPHONE AND IN WRITING.
10. SHOULD THE CONTRACTOR DISCOVER ANY DISCREPANCIES BETWEEN THE CONDITIONS EXISTING IN THE FIELD AND THE INFORMATION SHOWN ON THESE DRAWINGS, HE SHALL NOTIFY THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.
11. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE FULLY INFORMED OF AND TO COMPLY WITH ALL LAWS, ORDINANCES, CODES, REQUIREMENTS AND STANDARDS WHICH IN ANY MANNER AFFECT THE COURSE OF CONSTRUCTION OF THIS PROJECT, THOSE ENGAGED OR EMPLOYED IN THE CONSTRUCTION AND THE MATERIALS USED IN THE CONSTRUCTION.
12. PROJECT SCHEDULE: PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL PROVIDE ENGINEER A DETAILED CONSTRUCTION SCHEDULE FOR APPROVAL. THE CONTRACTOR SHALL NOT BEGIN ANY CONSTRUCTION WORK UNTIL THE PROJECT SCHEDULE AND WORK PLAN IS APPROVED BY THE ENGINEER. ALL CONSTRUCTION SHALL BE CLOSELY COORDINATED WITH THE ENGINEER SO THAT THE QUALITY OF WORK CAN BE CHECKED FOR APPROVAL. THE CONTRACTOR SHALL PURSUE WORK IN A CONTINUOUS AND DILIGENT MANNER TO ENSURE A TIMELY COMPLETION OF THE PROJECT.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE GENERAL SAFETY DURING CONSTRUCTION. ALL WORK SHALL CONFORM TO PERTINENT SAFETY REGULATIONS AND CODES. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR FURNISHING, INSTALLING, AND MAINTAINING ALL WARNING SIGNS AND DEVICES NECESSARY TO SAFEGUARD THE GENERAL PUBLIC AND THE WORK, AND PROVIDE FOR THE PROPER AND SAFE ROUTING OF VEHICULAR AND PEDESTRIAN TRAFFIC DURING THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE PROVISIONS OF OSHA IN THE CONSTRUCTION PRACTICES FOR ALL EMPLOYEES DIRECTLY ENGAGED IN THE CONSTRUCTION OF THIS PROJECT.
14. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTION LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL. NEITHER THE PROFESSIONAL ACTIVITIES OF CONSULTANT NOR THE PRESENCE OF CONSULTANT OR HIS OR HER EMPLOYEES OR SUB-CONSULTANTS AT A CONSTRUCTION SITE SHALL RELIEVE THE CONTRACTOR AND ITS SUBCONTRACTORS OF THEIR RESPONSIBILITIES INCLUDING, NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND APPLICABLE HEALTH OR SAFETY REQUIREMENTS OF ANY REGULATORY AGENCY OR OF STATE LAW.
15. THE CONTRACTOR SHALL MAINTAIN A CURRENT, COMPLETE, AND ACCURATE RECORD OF ALL AS-BUILT DEVIATIONS FROM THE CONSTRUCTION AS SHOWN ON THESE DRAWINGS AND SPECIFICATIONS, FOR THE PURPOSE OF PROVIDING THE ENGINEER OF RECORD WITH A BASIS FOR THE PREPARATION OF RECORD DRAWINGS.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SITE IN A NEAT AND ORDERLY MANNER THROUGHOUT THE CONSTRUCTION PROCESS. ALL MATERIALS SHALL BE STORED WITHIN APPROVED STAGING AREAS, AS SHOWN ON THE DRAWINGS.
17. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING AND LAYOUT, UNLESS OTHERWISE SPECIFIED.

GENERAL NOTES (CONT'D)

18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND PRESERVATION OF ALL SURVEY MONUMENTS OR PROPERTY CORNERS. DISTURBED MONUMENTS SHALL BE RESTORED BACK TO THEIR ORIGINAL LOCATION AND SHALL BE CERTIFIED BY A REGISTERED CIVIL ENGINEER OR LAND SURVEYOR AT THE EXPENSE OF THE CONTRACTOR.
19. TREE DIMENSIONS: TRUNK DIAMETERS SHOWN REPRESENT DIAMETER AT BREAST HEIGHT (DBH), MEASURED IN INCHES. DBH IS MEASURED 4.5 FT ABOVE GROUND FOR SINGLE TRUNKS AND TRUNKS THAT SPLIT INTO SEVERAL STEMS CLOSE TO THE GROUND. THE DBH FOR TREES THAT SPLIT INTO SEVERAL STEMS CLOSE TO THE GROUND MAY BE CONSOLIDATED INTO A SINGLE DBH BY TAKING THE SQUARE ROOT OF THE SUM OF ALL SQUARED STEM DBH'S, UNLESS OTHERWISE NOTED. WHERE TREES FORK NEAR BREAST HEIGHT, TRUNK DIAMETER IS MEASURED AT THE NARROWEST PART OF THE MAIN STEM BELOW THE FORK. FOR TREES ON A SLOPE, BREAST HEIGHT IS REFERENCED FROM THE UPPER SIDE OF THE SLOPE. FOR LEANING TREES, BREAST HEIGHT IS MEASURED ON THE SIDE THAT THE TREE LEANS TOWARD. TREES WITH DBH LESS THAN 12" ARE TYPICALLY NOT SHOWN.
- 12"CON = 12" DBH CONIFER
20. TREE SPECIES ARE IDENTIFIED WHEN KNOWN. HOWEVER, FINAL DETERMINATION SHOULD BE MADE BY A QUALIFIED BOTANIST. REFER TO THE LEGEND FOR TREE SPECIES SYMBOLS.
21. TREE TRUNK DIMENSIONS MAY BE SHOWN OUT-OF-SCALE FOR PLOTTING CLARITY. CAUTION SHOULD BE USED IN DESIGNING NEAR TREE TRUNKS. THERE ARE LIMITATIONS ON FIELD ACCURACY, DRAFTING ACCURACY, MEDIUM STRETCH AS WELL AS THE "SPREAD" OR "LEANING" OF TREES. REQUEST ADDITIONAL TOPOGRAPHIC DETAIL WHERE CLOSE TOLERANCES ARE ANTICIPATED. INDIVIDUAL TREES ARE NOT TYPICALLY LOCATED WITHIN DRIPLINE CANOPY AREAS SHOWN.
22. INDIVIDUAL TREES WERE NOT LOCATED DOWNSTREAM OF THE SPILLWAY OUTLET STRUCTURE. IN GENERAL, THERE ARE DENSELY SPACED TREES WITHIN THE DRIPLINE SHOWN ON THE DRAWINGS.

EROSION CONTROL NOTES

1. PRIOR TO COMMENCING WORK, ALL AREAS TO REMAIN UNDISTURBED SHALL BE ADEQUATELY PROTECTED WITH TEMPORARY FENCING.
2. CONTRACTOR SHALL UTILIZE ONLY THE APPROVED ACCESS ROADS, AS SHOWN ON THE DRAWINGS.
3. ALL DISTURBED AREAS ARE TO BE STABILIZED AGAINST EROSION, PRIOR TO OCTOBER 15TH, USING MULCH OR SLOPE PROTECTION FABRIC AND NATIVE PLANTINGS, AS INDICATED ON THE REVEGETATION PLAN.
4. CONSTRUCT TEMPORARY EROSION CONTROL MEASURES AS SHOWN ON THIS PLAN AND/OR AS DIRECTED BY THE ENGINEER, TO CONTROL DRAINAGE WHICH HAS BEEN AFFECTED BY GRADING AND/OR TRENCHING OPERATIONS.
5. CONSTRUCT AND MAINTAIN EROSION CONTROL MEASURES TO PREVENT THE DISCHARGE OF EARTHEN MATERIALS TO THE STREAM FROM DISTURBED AREAS UNDER CONSTRUCTION AND FROM COMPLETED CONSTRUCTION AREAS. ALL DISTURBED AREAS OF BED AND BANK SHALL BE STABILIZED, WINTERIZED, AND VEGETATED WITH APPROPRIATE NATIVE VEGETATION PRIOR TO PROJECT COMPLETION.
6. ALL PROTECTIVE DEVICES TO BE INSTALLED SHALL BE IN PLACE AT THE END OF EACH WORK DAY WHEN THE FIVE-DAY RAIN PROBABILITY EXCEEDS 40 PERCENT.
7. AFTER A RAINSTORM, ALL SILT AND DEBRIS SHALL BE REMOVED FROM CHECK BERMS AND SEDIMENTATION BASIN AND THE BASINS PUMPED DRY.
8. THE ENGINEER OF RECORD OR HIS AUTHORIZED REPRESENTATIVE MAY REQUIRE THE CONTRACTOR AT ANY TIME TO INSTALL AND/OR CONSTRUCT ADDITIONAL DRAINAGE STRUCTURES AS NECESSARY TO PREVENT OR CONTROL EROSION.
9. THE EROSION CONTROL DEVICES ON THIS PLAN ARE A GENERAL CONCEPT OF WHAT MAY BE REQUIRED. EROSION CONTROL DEVICES MAY BE RELOCATED OR DELETED, OR ADDITIONAL ITEMS MAY BE REQUIRED, DEPENDING ON THE ACTUAL SOIL CONDITIONS ENCOUNTERED, AT THE DISCRETION OF THE ENGINEER.
10. THE CONTRACTOR IS RESPONSIBLE TO KEEP IN FORCE ALL EROSION CONTROL DEVICES AND TO MODIFY THOSE DEVICES AS SITE PROGRESS DICTATES.
11. THE CONTRACTOR SHALL MONITOR THE EROSION CONTROL DEVICES DURING STORMS AND MODIFY THEM IN ORDER TO PREVENT PROGRESS OF ANY ONGOING EROSION.
12. THE CONTRACTOR SHALL CONTACT THE ENGINEER IN THE EVENT THAT THE EROSION CONTROL PLAN AS DESIGNED REQUIRES ANY SUBSTANTIAL REVISIONS.
13. CONTRACTOR SHALL BE FAMILIAR WITH THE CONDITIONS OF APPROVAL OF ALL REQUIRED PROJECT PERMITS AND SHALL IMPLEMENT ALL REQUIRED BMP'S PRIOR TO COMMENCING GRADING OPERATIONS.

DEWATERING NOTES

1. THE STREAM IS EXPECTED TO BE DRY AT THE TIME OF CONSTRUCTION. IT IS ASSUMED THAT A DIVERSION WILL NOT BE NECESSARY. HOWEVER, IT IS ANTICIPATED THAT PUMPED DEWATERING OF EXCAVATIONS WILL BE REQUIRED AT TIMES.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DIVERSION AND DEWATERING, CONSISTING OF REMOVAL OF SURFACE WATER AND GROUND WATER AS NEEDED TO PERFORM THE REQUIRED CONSTRUCTION IN ACCORDANCE WITH THE SPECIFICATIONS.
3. THE DRAWINGS ARE DIAGRAMMATIC AND THE CONTRACTOR SHALL FURNISH TO THE ENGINEER IN WRITING, HIS PLAN FOR DIVERTING SURFACE WATER AND GROUND WATER, BEFORE BEGINNING THE CONSTRUCTION WORK FOR WHICH THE DIVERSION IS REQUIRED. ACCEPTANCE OF THIS PLAN WILL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR COMPLETING THE WORK AS SPECIFIED, AND FOR COMPLYING WITH ALL PERMITS.
4. DEWATERING SHALL BE CONDUCTED IN A MANNER WHICH DOES NOT RESULT IN AN EXCEEDANCE OF ANY WATER QUALITY REQUIREMENTS ESTABLISHED BY THE REGIONAL WATER QUALITY CONTROL BOARD.

EARTHWORK NOTES

- 1) ALL GRADING SHALL COMPLY WITH THE RECOMMENDATIONS OF THE ENGINEERING GEOLOGIC REPORT, BY:

HOLDREGE & KULL
10775 PIONEER TRAIL, STE 213
TRUCKEE, CA 96161
(530) 587-5156
PROJECT No.: 41343-01
- PRIOR TO PERFORMING ANY WORK, THE CONTRACTOR SHALL BE FAMILIAR WITH THE GEOTECHNICAL INVESTIGATION. IN THE EVENT OF DISCREPANCY BETWEEN THE REPORT AND THE NOTES HEREIN, THE REPORT SHALL PREVAIL. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VISIT THE SITE AND MAKE HIS OWN INTERPRETATIONS WITH REGARD TO MATERIALS, METHODS AND EQUIPMENT NECESSARY TO PERFORM THE WORK REQUIRED FOR THIS PROJECT.
2. GRADING SUMMARY:
TOTAL CUT VOLUME = 370 CY
TOTAL FILL VOLUME = 370 CY
OFFHAUL = 0 CY
- THE ABOVE QUANTITIES ARE APPROXIMATE IN-PLACE VOLUMES CALCULATED AS THE DIFFERENCE BETWEEN EXISTING GROUND AND THE PROPOSED FINISH GRADE. EXISTING GROUND IS DEFINED BY THE TOPOGRAPHIC CONTOURS AND/OR SPOT ELEVATIONS ON THE PLAN. PROPOSED FINISH GRADE IS DEFINED AS THE DESIGN SURFACE ELEVATION OF EARTH TO BE CONSTRUCTED.
- THE ABOVE QUANTITIES HAVE BEEN CALCULATED FOR PERMITTING PURPOSES ONLY AND HAVE NOT BEEN FACTORED TO INCLUDE ALLOWANCES FOR BULKING, CLEARING AND GRUBBING, SUBSIDENCE, SHRINKAGE, OVER EXCAVATION, AND RECOMPACTION, UNDERGROUND UTILITY AND SUBSTRUCTURE SPOILS AND CONSTRUCTION METHODS.
- THE CONTRACTOR SHALL PERFORM AN INDEPENDENT EARTHWORK ESTIMATE FOR THE PURPOSE OF PREPARING BID PRICES FOR EARTHWORK. THE BID PRICE SHALL INCLUDE COSTS FOR ANY NECESSARY IMPORT AND PLACEMENT OF EARTH MATERIALS OR THE EXPORT AND PROPER DISPOSAL OF EXCESS EARTH MATERIALS.
3. CLEARING AND GRUBBING, SUBGRADE PREPARATION AND EARTHWORK SHALL BE PERFORMED IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS.
4. UNSUITABLE SOIL OR MATERIALS, NOT TO BE INCLUDED IN THE WORK INCLUDE:

A.ORGANIC MATERIALS SUCH AS PEAT, MULCH, ORGANIC SILT OR SOD.
B.SOILS CONTAINING EXPANSIVE CLAYS.
C.MATERIAL CONTAINING EXCESSIVE MOISTURE.
D.POORLY GRADED COURSE MATERIAL, PARTICLE SIZE IN EXCESS OF 6 INCHES.
E.MATERIAL WHICH WILL NOT ACHIEVE SPECIFIED DENSITY OR BEARING.
5. FINE GRADING ELEVATIONS AND SLOPES NOT SHOWN SHALL BE DETERMINED BY THE CONTRACTOR IN THE FIELD TO OBTAIN DRAINAGE IN THE DIRECTION INDICATED. ALL FINAL GRADING SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.
6. FILL MATERIAL SHALL BE PLACED IN ACCORDANCE WITH THE RECOMMENDATIONS OF HOLDREGE AND KULL CONSULTING ENGINEERS AND GEOLOGISTS.

ROCK MATERIAL AND EQUIPMENT NOTES

1. ALL ROCK OBTAINED FROM OFF-SITE SOURCES AND TRANSPORTED TO THE SITE SHALL BE OBTAINED, TRANSPORTED AND STORED IN SUCH A WAY THAT NO NOXIOUS WEEDS ARE INTRODUCED TO THE PROJECT SITE. THE DETERMINATION OF NOXIOUS WEEDS SHALL BE AS DESIGNATED BY THE CALIFORNIA AND NEVADA DEPARTMENTS OF AGRICULTURE. CONTRACTOR SHALL SUPPLY, WITH THEIR BID, A NOXIOUS WEED CERTIFICATION REPORT FROM A QUALIFIED BOTANIST CERTIFYING THAT THE SOURCE OF MATERIALS TO BE USED BY THE CONTRACTOR IS FREE OF NOXIOUS WEEDS, AND THAT THE TRANSPORTATION OF MATERIALS PLANNED BY THE CONTRACTOR WILL NOT RESULT IN NOXIOUS WEEDS BEING INTRODUCED TO THE PROJECT AREA. AT A MINIMUM, THE NOXIOUS WEED CERTIFICATION REPORT SHALL INCLUDE A PLAN MAP OF THE SOURCE PIT, SHOWING THE LOCATION OF THE PROPOSED MATERIALS, THE LOCATION OF ANY NOXIOUS WEEDS, AND THE PROPOSED ROUTE OF ACCESS TO THE MATERIALS. THE REPORT SHALL ALSO CONTAIN SHORT WRITTEN DESCRIPTIONS OF THE SOURCE AREA, ANY NOXIOUS WEED PROBLEMS IN THE SOURCE AREA, AND PROPOSED ACCESS BY THE CONTRACTOR. BIDS MAY BE REJECTED IF THE NOXIOUS WEED CERTIFICATION REPORT DOES NOT CONTAIN THIS INFORMATION.
2. PRIOR TO HAULING MATERIALS FROM OFF-SITE SOURCES TO THE PROJECT SITE, THE CONTRACTOR SHALL CONTACT THE ENGINEER TO ALLOW FOR A SITE INSPECTION BY A QUALIFIED BOTANIST REPRESENTING THE OWNER. THIS INSPECTION MUST CONCLUDE THAT NOXIOUS WEEDS WILL NOT BE TRANSPORTED TO THE PROJECT SITE. IF THE INSPECTION CONCLUDES THAT NOXIOUS WEEDS MAY BE TRANSPORTED TO THE PROJECT SITE, CONTRACTOR SHALL UNDERTAKE MEASURES DESIGNED TO ENSURE THAT NOXIOUS WEEDS ARE NOT TRANSPORTED TO THE PROJECT SITE AS A RESULT OF CONTRACTOR'S OPERATIONS. THESE MEASURES MAY INCLUDE, BUT ARE NOT LIMITED TO: NOXIOUS WEED CONTROL IN THE SOURCE SITE; MODIFICATION OF ACCESS ROUTES TO AVOID AREAS OF NOXIOUS WEED INFESTATION; CLEANING OF EQUIPMENT LEAVING AREAS OF NOXIOUS WEED INFESTATION; OR REJECTION OF THE SOURCE. NO HAULING WILL BE ALLOWED UNTIL CONTRACTOR PROVIDES A PLAN FOR NOXIOUS WEED CONTROL DEEMED ADEQUATE BY THE OWNER. DURING HAULING OF OFF-SITE MATERIALS TO THE PROJECT SITE, A REPRESENTATIVE OF THE OWNER WILL INSPECT THE HAULING OPERATION WEEKLY FOR THE INTRODUCTION OF NOXIOUS WEEDS TO THE PROJECT SITE. HAULING OPERATIONS MAY BE SUSPENDED IMMEDIATELY IF THESE INSPECTIONS FIND THAT THE OPERATIONS POSE A SIGNIFICANT RISK OF NOXIOUS WEED INTRODUCTION TO THE PROJECT SITE.
3. ALL EQUIPMENT INCLUDING HAND TOOLS MUST BE STEAM CLEANED OR PRESSURE WASHED PRIOR TO USE ON SITE


WATERWAYS

CONSULTING INC.



4039 SWIFT ST.
SANTA CRUZ, CA 95060
PH: (831) 421-9291 / FAX: (888) 819-6847
WWW.WATWAYS.COM

DATE
3/28/11



MATT W. WELD

PREPARED AT THE REQUEST OF:

THE NATURE CONSERVANCY
NEVADA CHAPTER
ONE EAST FIRST STREET, #1007
RENO, NV 89501

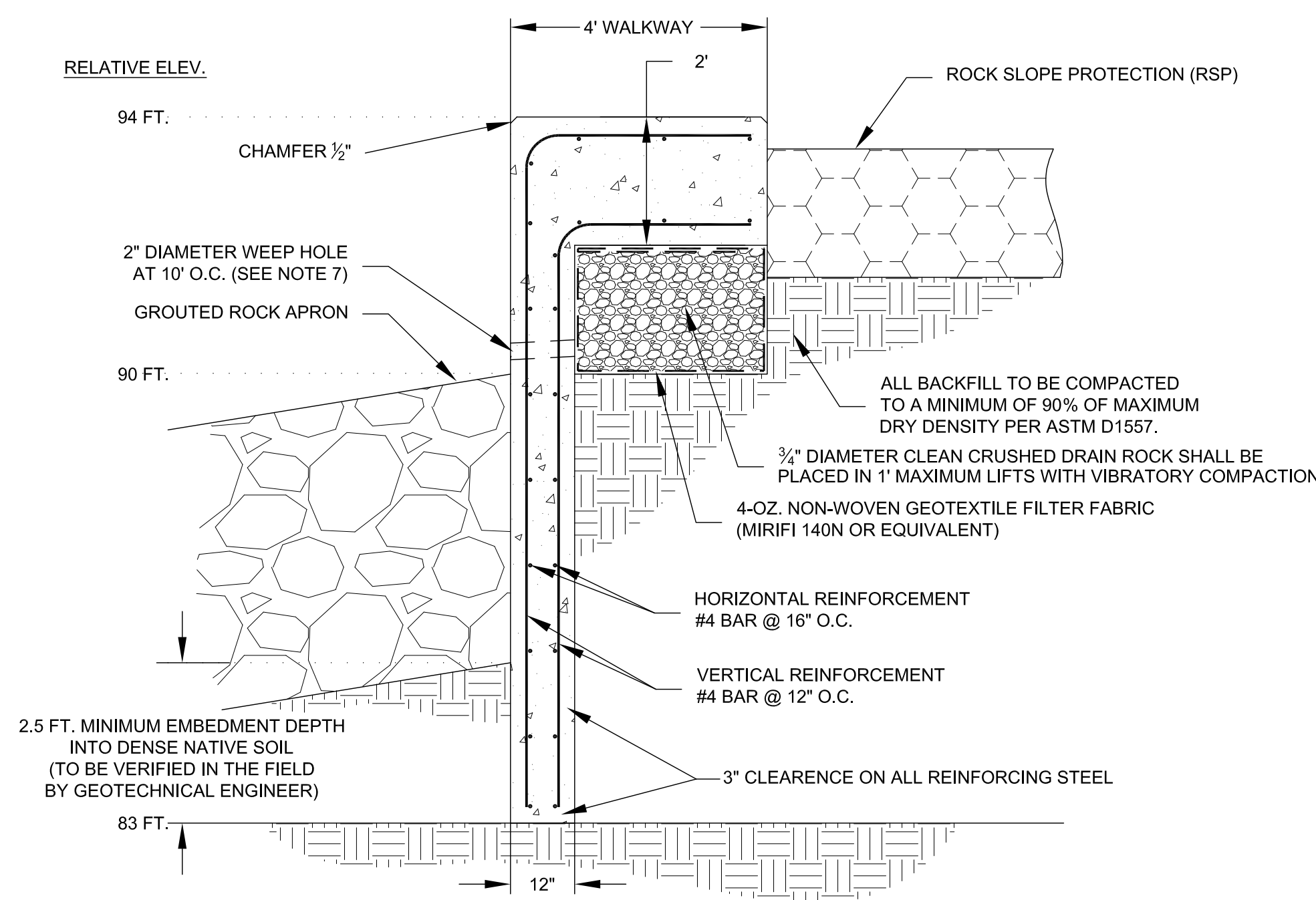
NOTES

INDEPENDENCE LAKE
LAHONTAN CUTHROAT TROUT
ENHANCEMENT PLAN
SPILLWAY FISH BARRIER
100% SUBMITTAL

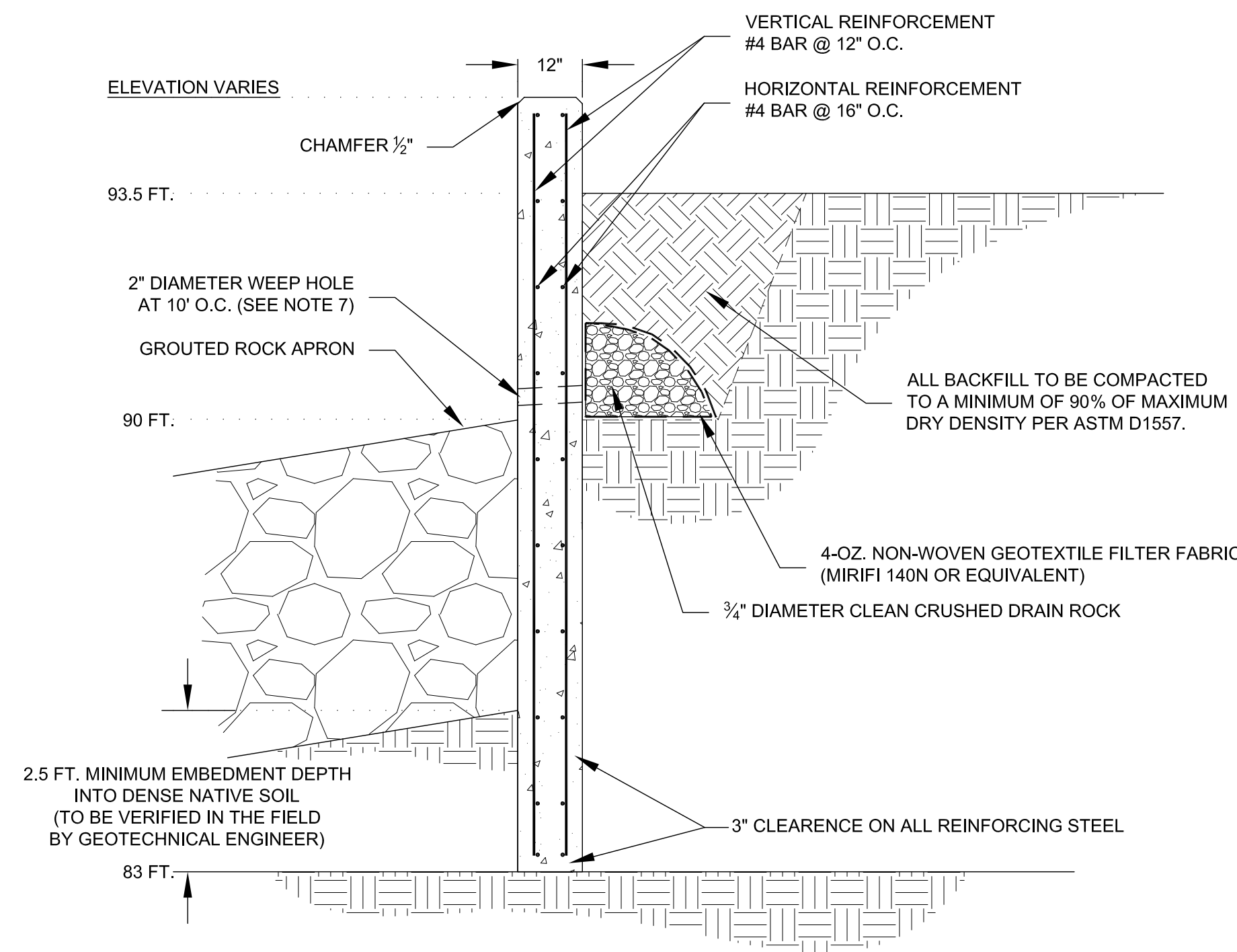
DESIGNED BY: M.W.W.
DRAWN BY: C.M.R.
CHECKED BY: M.W.W.
DATE: 3/28/11
JOB NO.: 08-726

BAR IS ONE INCH ON
ORIGINAL DRAWING
ADJUST SCALES FOR
REDUCED PLOTS
0 1"

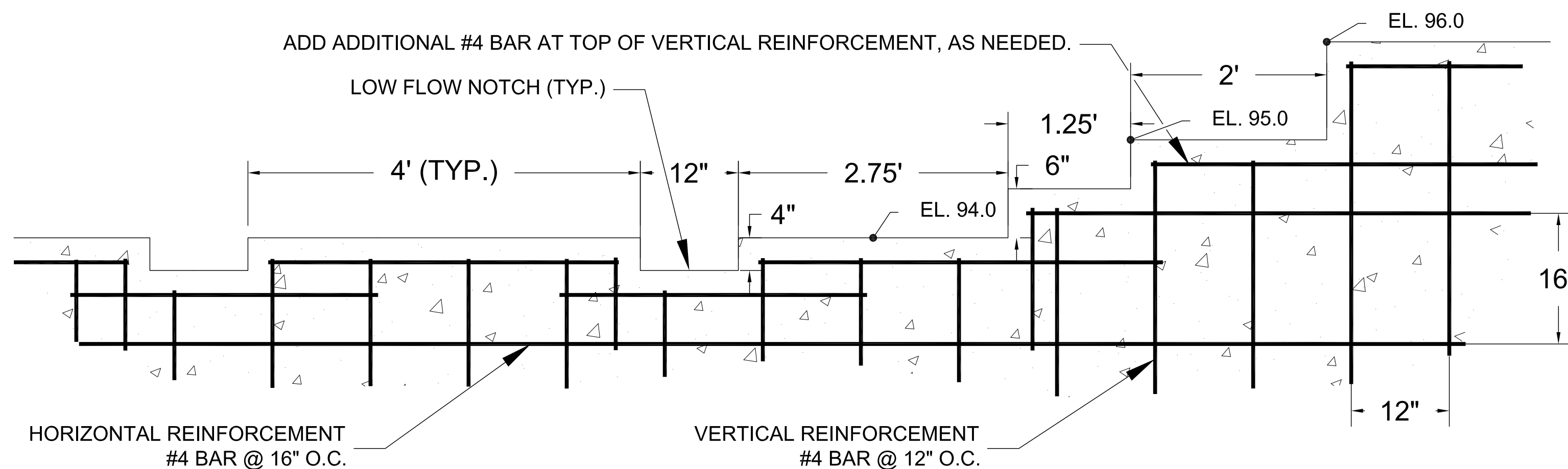
C6
6 OF 10



A FISH BARRIER REINFORCING DETAIL WITH WALKWAY
SCALE: 1" = 2'



B FISH BARRIER REINFORCING DETAIL WITHOUT WALKWAY
SCALE: 1" = 2'



C LOW FLOW NOTCH AND STEP REINFORCING DETAIL
SCALE: 1" = 1'

CONCRETE NOTES

- ALL CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3,000 PSI, UNLESS NOTED OTHERWISE. (U.N.O.).
- REINFORCEMENT SHALL BE PER ASTM A615 GRADE 60 KSI, U.N.O. CONCRETE AND REINFORCEMENT PLACEMENT SHALL BE IN GENERAL ACCORDNCE WITH ACI 318.
- LAP REINFORCING A MINIMUM OF 40 BAR DIAMETER AT SPLICES, U.N.O.
- REINFORCEMENT COVER IN CAST-IN-PLACE CONCRETE SHALL BE 3 INCHES FOR CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.
- CONCRETE SHALL BE AIR-ENTRAINED TO 6% \pm 1%. ALL CONCRETE SHALL BE DESIGNED AND PLACED WITH A MAXIMUM WATER:CEMENT RATIO OF 0.5.
- FOUNDATION EXCAVATION RECEIVING CONCRETE SHALL BE INSPECTED BY A GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF CONCRETE. THE SUBGRADE SHALL BE FREE OF LOOSE SOIL AND DEBRIS.
- WEEP HOLES ONLY REQUIRED IN SPILLWAY/ROCK APRON SECTION.

HK HOLDREGE & KULL
CONSULTING ENGINEERS GEOLOGISTS
10775 PIONEER TRAIL, SUITE 213
TRUCKEE, CA 96161
(530) 587-5156 FAX 587-5196

REV.	DATE	DESCRIPTION	BY
1	03/28/11	UPDATED DETAILS AND SECTION	MED

DESIGNED BY: J.K.H.
DRAWN BY: M.E.D.
CHECKED BY: J.K.H.
DATE: 3/28/11
JOB NO.: 08-726

BAR IS ONE INCH ON
ORIGINAL DRAWING.
ADJUST SCALES FOR
REDUCED PLOTS
0 1 2 3 4 5 6 7 8 9 10

S1
HK1
OF
10

WATERWAYS
CONSULTING INC.
403B SWIFT ST.
SANTA CRUZ, CA 95060
PH: (831) 421-3291 / FAX: (888) 819-6847
WWW.WATWAYS.COM

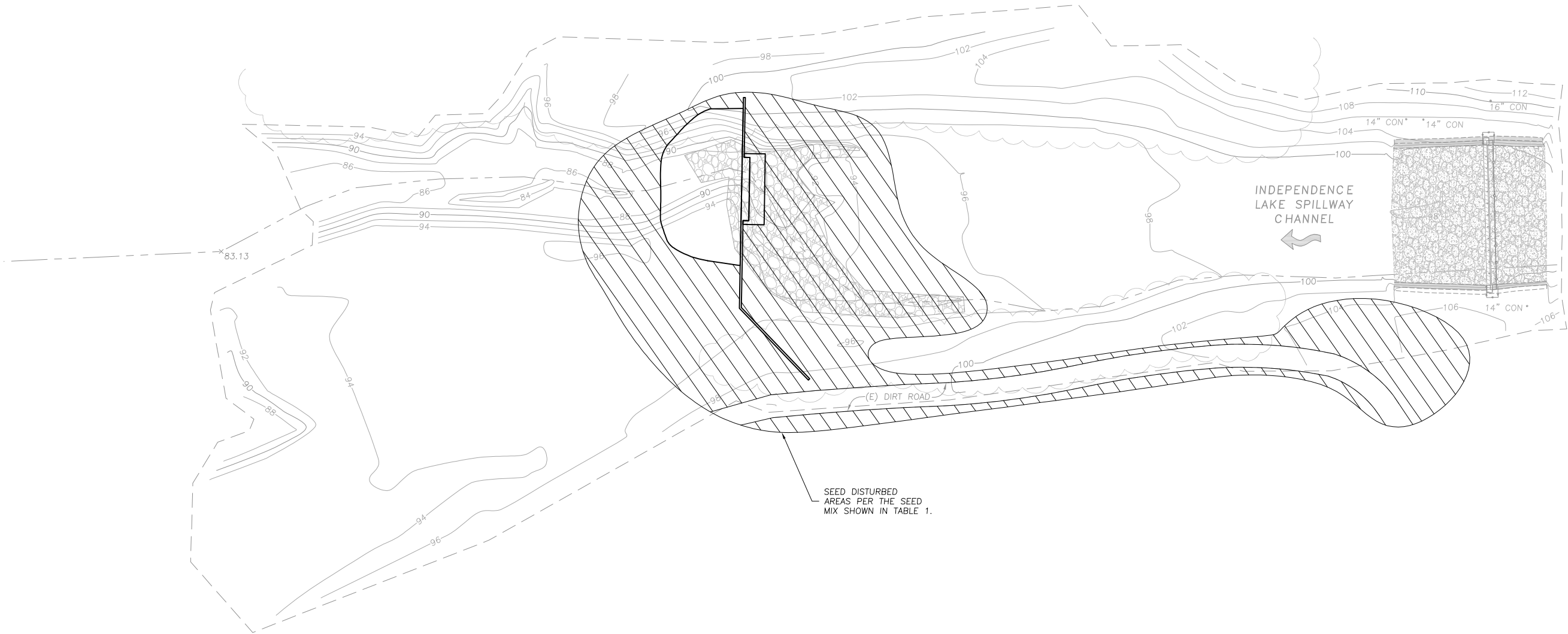
PREPARED BY: **HOLDREGE & KULL**
JOHN K. HUDSON, P.E., C.E.G.
No. C 50923
Exp. 09/30/11
March 29, 2011
DATE

PREPARED AT THE REQUEST OF:
THE NATURE CONSERVANCY
NEVADA CHAPTER
ONE EAST FIRST STREET, #1007
RENO, NV 89501

FISH BARRIER
REINFORCING
DETAILS AND
NOTES

INDEPENDENCE LAKE
LAHONTAN CUTTHROAT TROUT
ENHANCEMENT PLAN
SPILLWAY FISH BARRIER
100% SUBMITTAL

S:\PROJECTS DATA\1300-41399\41343-01 INDEPENDENCE LAKE FISH BARRIER\ACAD\FIG 4 & S1_032911.dwg 03/29/2011.



PROJECT AZIMUTH

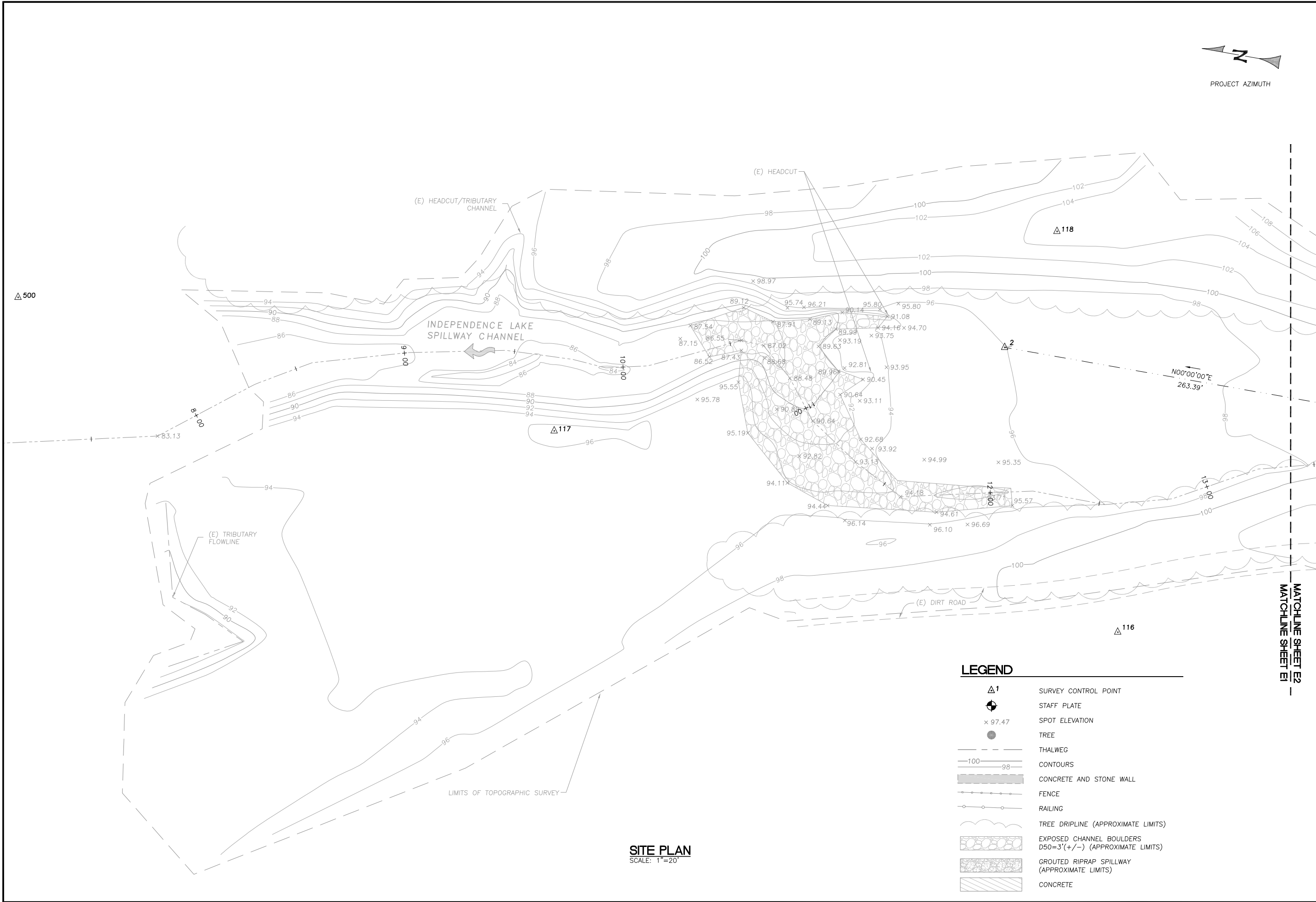
TABLE 1:

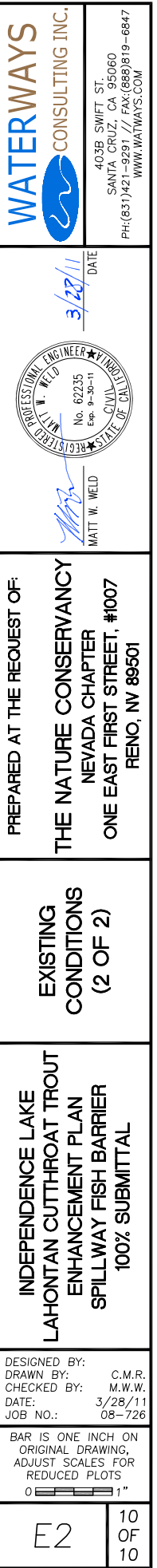
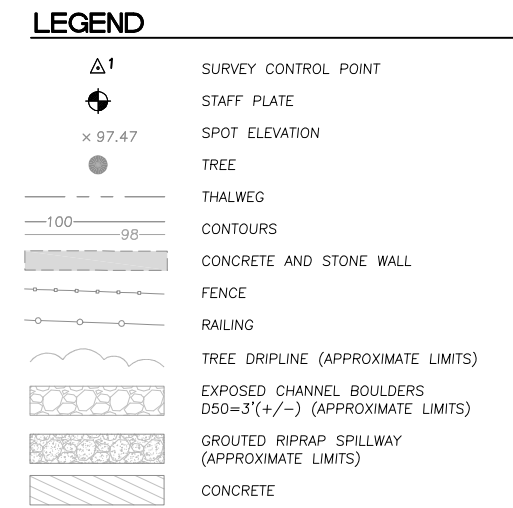
	Location/ Elevation	Botanical name	Common Name	Propagation Method	Size/Rate	Growth Form
Seed Mix	All Disturbed Areas	Artemisia tridentata ssp. vaseyana	mountain sagebrush	Broadcast seed	4	shrub
		Bromus carinatus	California brome	Broadcast seed	8	grass
		Chrysothamnus nauseosus ssp. viridulus	rubber rabbitbrush	Broadcast seed	4	shrub
		Elymus elymoides	squirreltail	Broadcast seed	8	grass
		Elymus glaucus	blue wildrye	Broadcast seed	8	grass
		Linum lewisii	Western blue flax	Broadcast seed	3	forb
		Lupinus lepidus	tidy lupine	Broadcast seed	3	forb
		Leymus cinereus	Basin wildrye	Broadcast seed	8	grass
		Penstemon speciosus	royal penstemon	Broadcast seed	3	forb
		Poa secunda	one-sided blue grass	Broadcast seed	8	grass
		Wyethia mollis	Mule's Ear	Broadcast seed	3	forb

REVEGETATION PLAN

SCALE: 1"=30'

NOTE:
SEED ALL DISTURBED AREA EXCEPT THE EXISTING DIRT ROAD AND AREAS RECEIVING ROCK SURFACE TREATMENTS, PER TABLE 1 AND THE SPECIFICATIONS.





APPENDIX D

Dewatering Plan – Independence Lake Spillway Fish Barrier Project

Subsurface water or moisture is expected at the spillway fish barrier construction site and dewatering for excavation would be required. The amount of subsurface water to be removed is expected to be low in volume and pumping would be short in duration.

Surface water flow at the fish barrier construction site is possible in 2011 because of an above-normal 2010-2011 winter snow pack which may result in late season flows in the spillway channel. Surface flows could also be caused or augmented by locally heavy thunderstorm activity or unusually heavy early fall precipitation. If flowing or ponded water is present, at the construction site TNC's representative will notify the construction contractor of the need for water diversion and possible fish salvage operations prior to the commencement of construction. If fish salvage is undertaken (see Appendix E- Fish Salvage Plan), TNC will notify the contractor when the fish salvage operation has been completed.

Prior to construction, the amount of water to be pumped for dewatering would be assessed. If the amount and duration of dewatering is low enough that the infiltration rate and storage capacity would not be exceeded, the water shall be pumped to an adjacent meadow/floodplain and discharged through a "dirtbag" filter bag or equivalent (see below for Dewatering Detail from Drawing C5, and Drawing C2 Dewatering and Erosion Plan). A temporary cofferdam of sandbags would be built across the channel. A gravity diversion pipe would convey water a short distance downstream to a sump pump. The water would be pumped and discharged into the discharge structure, which would be located at least 50 feet from the channel. The filter bag would be sized to meet the pumped flow and the infiltration would be monitored to assure the infiltration capacity is not exceeded. The soils at the preferred discharge site have limited capacity to absorb water and a tendency to pond, so on-site monitoring during pumping would be required.

If the amount of water that must be removed exceeds the capacity of the adjacent meadow/floodplain area, the groundwater would be kept below the work area by digging well points upstream of the construction area or at the construction area and placing vertical perforated pipes, with granular backfill. Sump pumps would be installed to intercept water before it gets turbid. Water would be piped and discharged into the stream channel downstream of the construction site. This method is preferred where groundwater flows are high, as the result is a clear water discharge from the dewatering that can be allowed to enter the spillway without further treatment.

Alternatives to the above actions are discharging water to an area where soils are more permeable (river right), in soils are classified as glacial drift or Tioga. Another contingency would be the use of a Baker tank or similar facility for on-site storage that would allow sediment to settle.

The construction contractor will be responsible for all dewatering, consisting of removal of surface water and groundwater as needed to perform the required construction in accordance with the specifications. It shall include:

1. Designing, building and maintaining all necessary temporary impounding works, channels, and diversions;
2. Furnishing, installing and operating all necessary pumps, piping and other facilities and equipment;
3. Removing all temporary works and equipment after they have served their purposes.

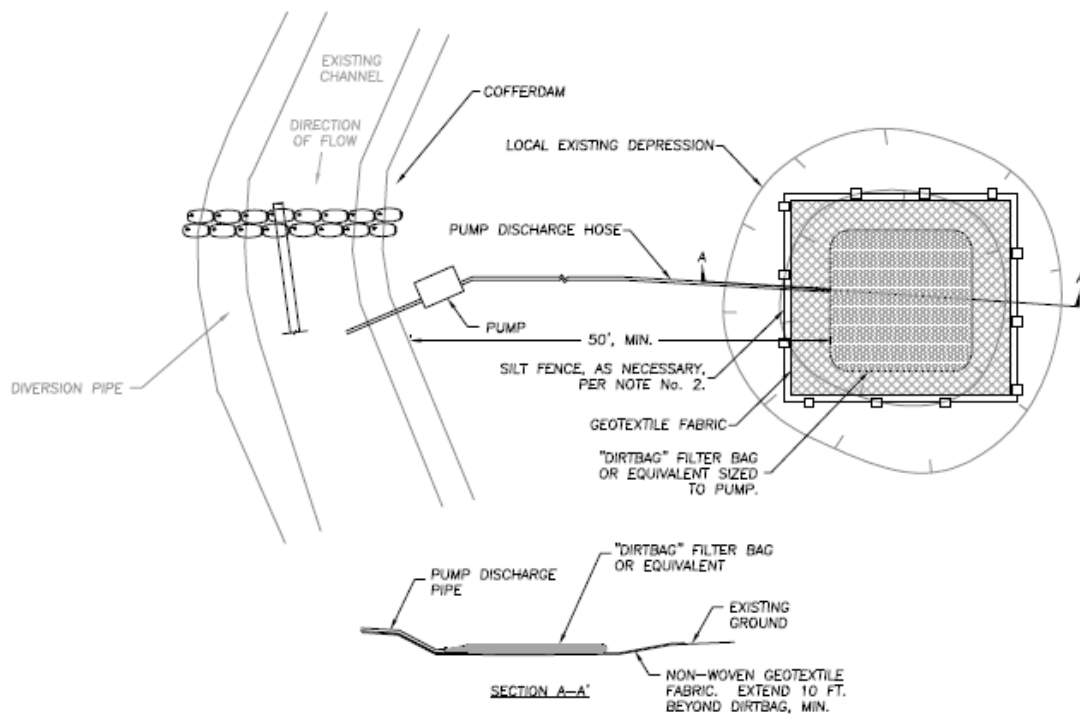
The contractor shall build, maintain and operate all coffer dams, channels, flumes, sumps, casings, well points and other temporary diversion and protective works needed to divert surface water and groundwater from the construction site and away from the construction work as needed for proper execution of the work.

The contractor shall furnish to the engineer in writing the contractor's plan for diverting surface water and groundwater before beginning the construction work for which the diversion is required. Acceptance of this plan shall not relieve the contractor of responsibility for completing the work as specified in the plans and for complying with all the permits.

The contractor shall install all erosion control devices, filters, stilling basins, or other structures needed to prevent turbid water from entering Independence Creek. The contract administrator will conduct water quality monitoring to monitor compliance with regulatory agency standards. The contractor will not be allowed to continue discharge unless water quality standards are met.

Dewatering areas shall be constructed per Drawing Sheet C5 (below). Non-woven geotextile fabric shall be removed such that deposited sediment is retained and disposed of properly.

Dewatering shall be conducted in a manner which does not result in an exceeding any water quality requirements established by the California Regional Water Quality Control Board.



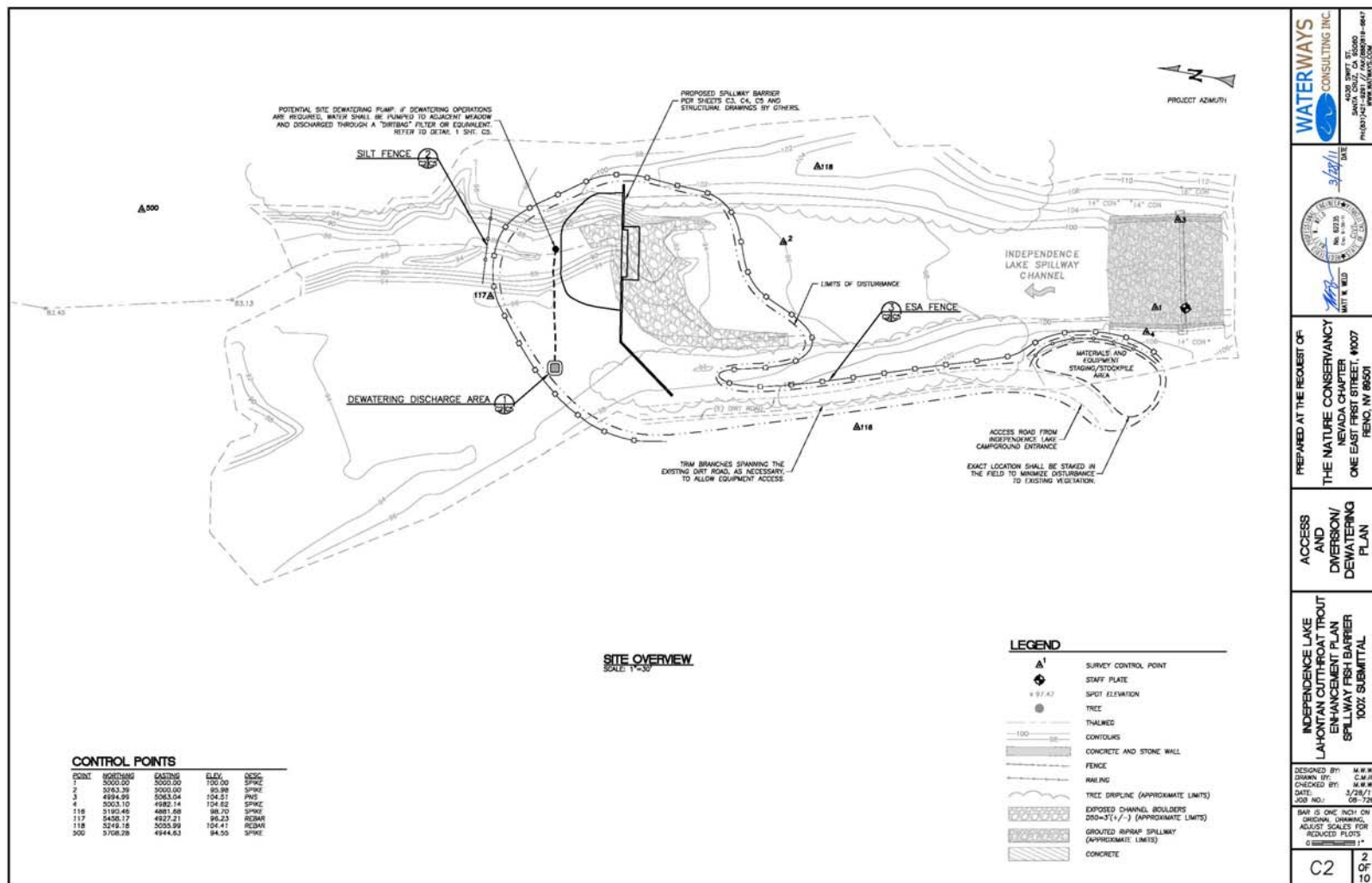
DEWATERING DISCHARGE AREA NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND REMOVAL OF "DIRTBAG" OR EQUIVALENT, HOSE, GEOTEXTILE FABRIC, AND PUMP.
2. FILTER BAG SHALL BE PLACED AT A LOCATION WHERE THERE IS AN EXISTING DEPRESSION AT A MINIMUM OF 50 FEET FROM THE EXISTING CHANNEL. EXACT LOCATION TO BE STAKED BY THE ENGINEER. WHERE NATURAL DEPRESSION CANNOT BE FOUND, FILTER BAG SHALL BE FULLY ENCLOSED WITH SILT FENCE.
3. NO OVERLAND FLOW SHALL BE ALLOWED TO DRAIN FROM FILTER BAG TO EXISTING OR PROPOSED CHANNEL.
4. REFER TO "DEWATERING NOTES", SHT. C6 AND SPECIFICATIONS FOR ALL DEWATERING OPERATIONS.
5. INSTALL FILTER BAG PER MANUFACTURER'S RECOMMENDATIONS. FILTER BAG AND GEOTEXTILE FABRIC MAY BE PLACED DIRECTLY OVER SANDS AND GRAVELS. WHERE NATIVE SANDS AND GRAVELS ARE NOT PRESENT, PLACE DIRTBAG AND GEOTEXTILE FABRIC OVER 6" OF DRAIN ROCK OR ON STRAW BALES, TO IMPROVE DRAINAGE.

DEWATERING DISCHARGE AREA

SCALE: N.T.S.

1
C2/C5



APPENDIX E

Fish Salvage Plan

The fish barrier construction would begin in mid-August when fish-supporting flows or ponds in the Independence Lake spillway are rare. However, unusually late seasonal flows are possible, which could be augmented by locally heavy rainstorms. These conditions could result in a situation where fish are present in the spillway at or near the construction site where they could be stranded or potentially affected by construction activities. In this situation a fish salvage operation would commence. Fish would be captured from the barrier construction site and released back into lower Independence Creek below the spillway and project site.

TNC's on-site representative will monitor and assess the spillway for fish presence two weeks before the beginning of construction. If fish are present at the construction site, TNC's representative will notify the construction contractor and the representatives from the Reno, Nevada office of the U.S. Geological Survey (USGS). See Appendix D - Dewatering Plan, for information on dewatering the construction site.

USGS, the entity designated for fish salvage operations on the fish barrier project, will assess and confirm the need for fish salvage. TNC and USGS will coordinate closely with California Department of Fish and Game and the U.S. Fish and Wildlife Service, agencies that are active partners in the fish conservation efforts at Independence Lake

Fish salvage operations will take place during cool periods of the day, such as early to mid-morning or early evening. USGS will utilize block nets as necessary to isolate fish upstream of the construction site. A portable electro fisher and dip nets will be used to capture fish. Captured fish will be relocated and released to lower Independence Creek, downstream of the barrier project site. Experienced and trained agency fish biologists or technicians will perform the electro fishing and relocation. Minimal data (species and total length) will be collected on captured fish to reduce handling and holding time. Following the initial electroshocking and relocation, the affected area will be visually assessed for the presence of additional fish. If fish are found, a second electro fishing and relocation effort will take place within 24 hours.

All electro fishing activities and fish handling will follow the protocol of the National Oceanic and Atmospheric Administration (NOAA) "Guidelines for Electro fishing Waters Containing Salmonids Listed Under the Endangered Species Act". All electro-fishing activities will follow the protocol identified in the Fish Salvage section of the U.S. Fish and Wildlife Service Biological Opinion. It is understood that the fish salvaging operations should take place during the coolest part of the day (*i.e.* early to midmorning, and/or evenings), and that fish should be returned to a safe location in lower Independence Creek with minimal handling. If water temperatures are at or exceed 18°C, or if it is anticipated that temperatures will exceed 18°C during the electro fishing process, then the fish salvaging will be postponed until conditions are

adequate. The fish salvage operation would target all species and life stages that could be safely captured and handled. Additionally, to avoid any injury to the fish captured, the electro fishing process will be initiated at a low wattage, and frequency. Pulsed direct current (PDC) will be utilized for electro fishing to minimize the harm to fish. Volts and hertz will be increased as necessary to effectively immobilize fish. The necessary increases or decreases in volts and/or hertz will be documented and recorded each time they are changed during electro fishing.

Fish that are captured will quickly be transported directly into a temporary holding tank to allow the fish to recover from the stress induced by electro fishing. These tanks will be a dark color, which aids in the recovery from electroshock stress, and will be placed in the shade to prevent the water temperature within the holding tanks from rising. Ice may be added to the water to maintain a temperature similar to that of the spillway at the time that the fish are captured. Larger fish will be placed in a separate holding tank to avoid predation on the smaller prey-size fish that are captured. Once the fish have completely recovered, their species and total length (cm) will be recorded and then the fish released into lower Independence Creek. Mortality or injuries to fish will be documented. To minimize handling, smaller fish (less than 10cm) will have metrics estimated rather than measured. Size estimates will be rounded off to the nearest cm for reporting purposes.

USGS will notify TNC when fish salvage operations are complete. TNC will notify the construction contractor that fish salvage is complete and that construction may begin. Results of the fish salvage operation will be communicated to TNC, California Department of Fish and Game, and the U.S. Fish and Wildlife Service

APPENDIX F

Weed and Noxious Weed Prevention Plan

1. Prevention/Cleaning: Require all off-road equipment and vehicles used for project implementation to be weed-free. Clean all equipment and vehicles of all attached mud, dirt and plant parts. This will be done at a vehicle washing station or steam cleaning facility before the equipment and vehicles enter the project area. Cleaning is not required for vehicles that will stay on the roadway. Also, all off-road equipment must be cleaned prior to leaving areas infested with noxious weeds.
2. Prevention/Road Construction, Reconstruction, and Maintenance: All earth-moving equipment, gravel, fill, or other materials need to be weed free. Use onsite sand, gravel, rock or organic matter where possible.
3. Prevention/Revegetation: Use weed-free equipment, mulches, and seed sources. Avoid seeding in areas where revegetation will occur naturally, unless noxious weeds are a concern. Save topsoil from disturbance and put it back to use in onsite revegetation, unless contaminated with noxious weeds. All activities that require seeding or planting will need to use only locally collected native seed sources. Plant and seed material should be collected from as close to the project area as possible, from within the same watershed and at a similar elevation whenever possible. Persistent non-natives such as timothy, cheatgrass, and ryegrass will be avoided. Local noxious and invasive to avoid include bull thistle, quackgrass, English plantain, orchard grass, dandelion and false salsify.
4. Prevention/Staging Areas: Do not stage equipment, materials, or crews in noxious weed infested areas where there is a risk of spread to areas of low infestation.
5. Small infestations identified during project implementation will be evaluated and hand treated or —flagged and avoided□ according to the species present and project constraints. If larger infestations are identified after implementation, they should be isolated and avoided with equipment (and equipment washed as in # 1 above).

Where mulch is needed for ground cover and slash or wood chips are not available, certified weed-free straw or rice straw will be used.

Utilize road surface gravel from weed-free sources. Pre-inspect gravel sources for the presence/absence of noxious weeds prior to utilization of gravel from those sources.

APPENDIX G

FIRE AND HAZARDOUS SUBSTANCES CONTINGENCY PLAN

TNC's Independence Lake property has few areas of natural or man-made disturbance. The property is characterized by dense vegetation and has been rank by Cal Fire as a Very High Fire Severity Zone based on inputs, such as fuel, slope, brush density (ladder), and tree density (crown cover). This means that if a fire were to start on the property, the fire would most likely develop into a crown fire preheated by the understory fuels.

The contractor: (1) shall abide by the requirements of this Fire Plan. (2) Shall take all steps necessary to prevent employees, subcontractors and their employees from setting fires not required in completion of the contract, shall be responsible for preventing the escape of fires set directly or indirectly as a result of contract operations, and shall extinguish all such fires which may escape.

The following requirements will be followed unless agreed upon in writing:

Tools and Equipment

Contractor shall comply with the following requirements:

At a central location in the construction area there will be sufficient number of shovels so that each employee at the operation can be equipped to fight fire, fully charged fire extinguishers, and one backpack 5-gallon water-filled tank with pump with each welder. All tools and equipment shall be in good workable condition.

Shall equip all diesel and/or gasoline-operated engines, both stationary and mobile, and all flues used in any operations with spark arresters that meet U.S. Forest Service standards set forth in the National Coordinating Group publication for Multi position Small Engines, #430-4, or General Purpose and Locomotive, #430-2. Spark arresters are not required on equipment powered by exhaust-driven turbo-charged engines or motor vehicles equipped with a maintained muffler as defined in California Public Resources Code (CPRC), Section 4442 and 4443.

EMERGENCY RESPONSE PLAN

The following provisions apply during the normal fire season. Additional fire restrictions may be imposed if extreme circumstances occur.

Reporting Fires: The Contractor will report all fires requiring an emergency response to "911". Additionally, all fires will be reported by the Contractor to the Forest Service Fire Dispatcher at the Grass Valley Emergency Command Center, phone (530) 477-7237, regardless of the need for assistance or regardless of the cause.

GENERAL

- A. **State Law.** Contractor shall comply with all applicable federal, state and local laws, in particular, the California Public Resource Codes. Contractor must secure any written permits required under any of these laws for work being performed.
- B. **Regulations for Burning.** No burning is permitted for this project.
- C. **Smoking and Fire Rules.** Smoking shall not be permitted during fire season, except in a barren area or in an area cleared to mineral soil at least three feet in diameter (CPRC 4423.4). In areas closed to smoking, the permit administrator may approve special areas to be used for smoking. Contractor's supervisory personnel shall require compliance with these rules. Under no circumstances shall smoking be permitted during fire season while employees are operating light or heavy equipment, or walking or working in grass and woodlands.
- D. **Storage and Parking Areas.** Equipment service areas, parking areas, and gas and oil storage areas shall be cleared of all inflammable material for a radius of at least 50 feet. Small mobile or stationary engine sites shall be cleared of inflammable material for a radius of at least 15 feet from such engine.
- E. **Welding.** Contractor shall confine welding activity to cleared areas having a minimum radius of ten feet measured from place of welding.
- F. **Oil Filter and Glass Jugs.** Contractor shall remove from project area all oily rags and used oil filters. Contractor shall prohibit use of glass bottles and jugs on operations.
- G. **Reporting Fires.** As soon as feasible, after initial control action is taken, Contractor shall notify Forest Service of any fires in the work area.

4. **EMERGENCY MEASURES**

The table set forth below establishes work restrictions and fire precautions that Contractor must observe at each activity level.

Contractor shall conform to the limitations or requirements of Project Activity Level (PAL) obtained from Forest Service before starting work each day. If practicable, Forest Service will determine the following day's activity level by 4:00 p.m. each afternoon. Activity level may be changed at any time if, in the judgment of the Forest Service, fire danger is higher or lower than predicted and such change is consistent with forest management objectives. The decision to change the activity level, and when, and how to take weather observations for that purpose, are within the discretion of Forest Service.

PAL applicable to this project shall be for Fuel Model G, National Fire Danger Rating System, at the Duncan Peak weather station.

5. **PROJECT ACTIVITY LEVELS**

<u>LEVEL</u>	<u>PROJECT ACTIVITY</u>
A-C.	As required by Sections 1 through 4 above.
D.	<p>The following operations are prohibited from 1 p.m. until 8 p.m. local time.</p> <p>Felling green or recently dead material. Welding or cutting of metal except by special permit. Any other spark-emitting operation except by special permit. Mechanized slash disposal.</p> <p>The following operations are <u>prohibited</u>: a. Road clearing and pioneering in uncleared areas.</p>
E.	<p>Operations are prohibited except:</p> <p>Equipment at the construction area may be serviced. Roads: dust abatement or rock/aggregate installation.</p>

All of the precautions listed above apply unless the TNC authorized representative agrees to changes in writing. Such written agreement, or substitute precautions, shall prescribe measures to be taken by Contractor to reduce the risk of ignition, and/or the spread of fire.

Contractor can obtain the Predicted Activity level for the following day at telephone number: **(530) 587-2158 after 4:30 p.m. daily.**

Contractor will be required to furnish communications equipment.

HAZARDOUS SUBSTANCES CONTINGENCY PLAN

1.1 Initial Spill Response Actions

- ⇒ Evaluate the health hazards in the area before proceeding.
- ⇒ As appropriate, evacuate the area and establish a security zone around the spill.
- ⇒ Stop the release when it is safe to do so:
 - Implement safety-related measures.
 - Mobilize fire control equipment, if needed.
 - Use appropriate personal protective equipment before entering the spill area.
 - Remove all ignition sources from the security zone.

- ⇒ Contain the spill by isolating and immobilizing the spill. Construct containment ditches and berms, or place absorbent material in front of flowing material, or use.
- ⇒ Estimate the volume of material that was spilled.

1.2 Spill Cleanup Procedures

- ⇒ If a large spill occurs or the spill reaches a waterway, call a cleanup contractor who can provide additional equipment such as booms to control and clean up the spill. Contact information is located in the table below.
- ⇒ **DO NOT** use water to clear the spill. Water will mobilize the spill and require additional cleanup efforts.
- ⇒ Pick up free liquid that has collected in sumps or containment areas with absorbent material. Place free liquid that has been collected in a tank or drums for temporary storage.
- ⇒ Clean up liquid that has spread over a non-porous surface with absorbent material such as oil-dry or absorbent socks or booms. Collect oil-soaked cleanup materials (*e.g.*, oil-dry, absorbent socks, or booms) and place them in leak-proof containers.
- ⇒ For spills on gravel or soil, absorb as much of the liquid as possible with absorbent material and then excavate the oil-contaminated gravel or soil down to visibly clean material. Place the excavated material in piles for temporary storage.

1.4 Disposal Procedures

An oil spill is not considered cleaned up until all wastes produced during the cleanup activities are properly disposed of. The contractor is responsible for disposing of oil-contaminated cleanup materials in accordance with federal, state, and local regulations. General guidelines are listed below; however, the exact means of disposal will depend on the nature and volume of contaminated material and whether the material is contaminated with other substances. The Contractor will be responsible for overseeing disposal in accordance with appropriate regulations.

Liquid oil that has been collected should be recycled at an offsite facility, if possible, or disposed of at a regulated and licensed facility.

Ship oily soil that has been excavated to a landfill or land farm that is permitted to dispose of or treat oil-contaminated soil.

Dispose of oil-soaked absorbent material in a landfill permitted for this type of industrial waste.

1.5 Follow-up Response Actions

The Contractor is responsible for notifying TNC's authorized representative, Dave Mandrella, about all spills.

SUMMARY OF SOURCE CONTROL MEASURES

Spill notification procedure. In the event of a hazardous materials spill, the following parties will be notified:

Call 911:

- For spills that involve injury requiring medical treatment
- For spills that involve fire or explosion hazards
- For spills that are potentially life threatening
- For spills that occur after work hours

Call Sierra County Environmental Health at: (530) 993-6716

- For chemical spill situations which do not require 911 assistance
- For spills that cannot be cleaned up by personnel on site

Call Lahontan Regional Water Quality Control Board at: (530) 542-5400

- Immediately for a major spill
- Within 24 hours for a minor spill

Notify TNC's designated representative Dave Mandrella (775.527.8772) as soon as possible for all spills.

Contain spills. Strict onsite handling rules will be implemented to minimize spills and keep potentially contaminated materials out of the drainage waterways.

Control fueling sites. Equipment will not be refueled within stream zones. Specify fueling and fuel storage areas in a safe location.

Prevent discharges of hazardous substances from refueling and maintenance. All equipment refueling and maintenance activities will occur outside wetland areas to minimize the potential to negatively affect water quality. The equipment will be inspected daily for leaks.

CONTACT NAME	CONTACT INFORMATION
TNC representative Dave Mandrella	(775) 527-8772
TNC Contract Administrator Chris Fichtel	(775) 322-4990
Construction Supervisor (complete when contract is awarded)	
Sierra County Environmental Health (emergency #)	(530) 289-3700
Local Emergency Response (fire, paramedic)	911
Lahontan Regional Water Quality Control Board	(530) 542-5400
CA Dept. of Fish and Game	(916) 358-1300
U.S. Fish and Wildlife Service	(775) 861-6337
Tahoe National Forest	
Business Hours	(530) 265-4531
Grass Valley Command Center	(530) 477-7237
Spill Response/Cleanup/Disposal Contractors:	
· H2O Environmental, Reno, NV	(775) 351-2237
· PSC, Fernley, NV	(775) 575-2760
· Universal Environmental Nevada, Sparks, NV	(775) 351-2500

APPENDIX H

Monitoring and Mitigation Plan - Independence Lake Spillway Fish Barrier

1. Introduction

The Independence Lake spillway fish barrier construction project provides important protection to the Lahontan cutthroat trout (LCT) population and the populations of other native fish in Independence Lake by eliminating the risk of upstream migration and subsequent colonization by non-native fish. The project goals are:

1. Stop all fish species from passing the barrier in the upstream direction.
2. Avoid any hydraulic or hydrologic impact to the upstream spillway structure or operations.
3. Minimize changes to the hydraulic or fluvial geomorphic conditions below the barrier structure. To the extent some changes are unavoidable, appropriate measures are incorporated to ensure long-term stability to the channel downstream of the barrier.
4. Avoid the risk of a new channel forming around the new barrier during future high-flow events.

The area directly affected by the construction project is 0.78 acres in the Independence Lake spillway channel. Construction is expected to begin in mid-August, 2011 and conclude approximately 8 weeks later. TNC will have a designated representative on-site during construction.

2. Mitigation

During construction of the fish barrier structure there will be direct impacts to the spillway channel, including disturbance to soils, vegetation, and riparian and aquatic habitats at the construction site. Fish or wildlife, if present at the construction site, could be impacted. Construction traffic and noise may affect some recreationists.

2.1 Native Vegetation Impacts

About half the vegetation on the 0.78 acre construction site is riparian/wetland species. Construction limits per the drawings will be adhered to. Trees and shrubs on the margins of the construction limits will be trimmed to avoid damage from equipment. Topsoil will be stockpiled and used during the site restoration phase so that seed, rhizomes, etc. will naturally revegetate the site. If needed, additional plants will be relocated by TNC from nearby areas in 2012 to complete 100% revegetation of the construction site.

2.2 Weed Impacts

A weed prevention plan (Appendix F) will be implemented during construction. The plan includes

- pre-inspection of equipment to ensure it has been steam-cleaned prior to entry onto the construction site;
- use of on-site materials (sand, boulders, topsoil, etc.) as much as possible;
- requiring certified weed-free materials (gravel, mulch, etc) if brought from off-site;
- avoidance of any weeds or non-native plants in staging areas.

2.3 Erosion and Sedimentation Impacts

Erosion control notes on the drawings will be followed, as well as any permit requirements and engineer requirements.

- The contractor will use only approved access routes and will stay within the specified limits of clearing.
- All areas to remain undisturbed will be designated with temporary fencing.
- If dewatering is necessary, the dewatering plan (Appendix D) will be followed.
- Temporary erosion control and drainage structures specified in the drawings or as required by the engineer, will be used and maintained by the contractor.
- During grading or trenching operations the contractor will use temporary drainage control measures per the final drawings or as approved by the engineer.
- All protective devices will be in place at the end of each work day when the five-day rain probability exceeds 40%.
- After a rainstorm, all silt and debris will be removed from check berms and sedimentation basins, and the basins pumped out.
- During a rain event, the contractor will monitor the erosion control devices and modify them to prevent the progress of any ongoing erosion.
- Prior to October 15 (or at the conclusion of construction, if earlier), all disturbed areas will be stabilized and winterized using mulch or slope protection fabric.

2.4 Fish Salvage

The presence of fish will be monitored two weeks prior to the beginning of construction. Fish located within the project area shall be mitigated through adherence to the Fish Salvage Plan (Appendix E). Fish salvage will be done by the U.S. Geological Survey using electroshocking during cooler periods of the day. Salvaged fish will be returned to lower Independence Creek after minimal handling.

2.5 MYLF Frog Impacts

The project area and adjacent areas will be surveyed for mountain yellow-legged frogs by a qualified aquatic biologist prior to commencement of construction. If MYLF are detected, the U.S. Fish and Wildlife Service will be notified. In coordination with U.S. Fish and Wildlife Service biologist, MYLF in the project area will be relocated to nearby suitable habitat. The project area will continue to be surveyed until construction is complete or the U.S. Fish and Wildlife Service determine no further surveys are necessary.

2.6 Hazardous Materials and Wildfire Impacts

The contractor will follow the written hazardous materials and fire plan (Appendix G) at all times. TNC will provide 24-hour on-site supervision of the overall construction project and will have communication equipment. In case of a spill or a fire, the written plan has a comprehensive contact and notification list.

2.7 Recreational Visitor Impacts

Access routes from SR 89 to the construction site will be posted to alert travelers to the presence of construction traffic. Construction will take place on weekdays when visitation at Independence Lake is lowest. Construction will not extend into early morning or evening hours. Roads and the construction site will be watered to reduce dust.

3. Monitoring Parameters

Monitoring Parameters fall into one of three categories, pre-construction (baseline), during construction (implementation), and post-construction (effectiveness). Table 3.1 provides a summary of the parameters. It is anticipated that monitoring will be required for up to five (5) years.

3.1 Water Quality during and post-Construction

3.1.1. Need for Monitoring

Water quality is critical to human usage and fish and invertebrate species within lower Independence Creek. Water quality monitoring is necessary to ensure project construction does not impact the creek ecosystem.

3.1.2. Method of Monitoring

If surface flow is present during construction, the following constituents will be monitored: turbidity and pH. Monitoring will be conducted following protocols outlined in the Truckee River Watershed Council's (TRWC) Quality Assurance and Protection Plan (QAPP). Field monitoring will be conducted by TRWC personnel or TNC personnel trained by TRWC.

3.1.3. Frequency / Timing of Monitoring

If surface water is present in the spillway channel during construction, water quality will be monitored upstream and downstream of the construction site on a daily basis during construction activities. Monitoring will be repeated in 2012 to ensure that the project does not have any long term water quality impacts.

3.1.4. Monitored Location(s)

Monitoring locations will be established upstream and downstream of the construction site. Precise location will depend upon flow during project implementation.

3.1.5. Monitoring Parameter(s)

Turbidity and pH measurements will be taken from above and below the project site and compared.

3.1.6 Method of Documentation

Water quality monitoring results will be included in the annual monitoring report submitted to the Lahontan Regional Water Quality Control Board.

3.2 Structure Stability

3.1.1. Need for Monitoring

Fish barrier structural stability is monitored to ensure project goals are met.

3.1.2. Method of Monitoring

Monitoring will be by visual inspection and/or field survey of the structure for obvious instability and comparison of as-built photos and survey data in order to detect physical movement, deterioration, or shifting of the proposed new diversion structures.

3.1.3. Frequency / Timing of Monitoring

Visual inspection would be performed minimum annually after spring runoff. Cross-sectional survey to be performed if instability is indicated by visual inspection results, and would be performed during base flow. Additionally, as-built survey shall be performed upon completion of implementation.

3.1.4. Monitored Location(s)

Location of monitoring would be at the fish barrier structure itself. Visual inspection will be at as many angles as possible. Cross-section survey shall be along the main cross-section of the structure, and top/toe of the upstream and downstream edges.

3.1.5. Monitoring Parameter(s)

Monitoring parameters shall be deemed “met” when upon inspection the structural stability of the diversion structure is competent and is functioning as intended.

3.1.6. Method of Documentation

Visual inspection shall be documented via written report and photo documentation. Cross-sectional survey data shall be compared to as-built data and previous post-construction surveys.

3.3 Elimination of Fish Passage

3.3.1. Need for Monitoring

Monitoring is needed to ensure fish migration in the spillway no longer occurs and that the fish barrier structure is effective in preventing any fish passage.

3.3.2. Method of Monitoring

Fish passage will be visually monitored. Cooperating agencies include U.S. Geological Survey, California Department of Fish and Game, and the U.S. Fish and Wildlife Service.

3.3.3. Frequency / Timing of Monitoring

Monitoring will occur each year for 5 years starting in 2012 in the spring/early summer at high flow events during seasonal emigration periods. Monitoring will continue on an as-needed basis in subsequent years during unusual high flow events or if new fish species are detected in Independence Lake.

3.3.4. Monitored Location(s)

Monitoring will take place at the fish barrier structure and/or upstream of the fish barrier in the spillway channel.

3.3.5. Monitoring Parameter

Presence of any fish that arrived by upstream migration in the spillway channel or were suspected of arriving by upstream migration.

3.3.6. Method of Documentation

Documentation shall be by written report to LCT recovery partners.

3.4 Revegetation

3.4.1. Need for Monitoring

Desired native vegetation will stabilize the construction site and provide habitat for aquatic, riparian and terrestrial species. Invasive or noxious plants can impede the restoration of desired native plants and spread to previously unoccupied areas.

3.4.2. Method of Monitoring

Vegetation plots and/or transects will be taken for 3 years following construction. A report summarizing the ground cover and vegetation composition trends will be kept on file with TNC. If planting or seeding is undertaken sampling will determine survival rates for 3 years or until plants are established.

3.4.3. Frequency / Timing of Monitoring

Monitoring frequency shall be annually, performed during the spring growing season for 3 years.

3.4.4. Monitored Location(s)

Monitoring shall be performed at the former construction site.

3.4.5. Monitoring Parameter(s)

Revegetation success of the stream banks and disturbed sites is determined by achieving plant survival adequate to achieve combined cover of 70% as per the Lahontan Regional Water Quality Control Board’s definition for stabilization which states, “the goal for stabilization should be 70% of the natural vegetation coverage. For example if 100% of ground is naturally vegetated then 70% of it should be vegetated. If 50% of ground is naturally vegetated then 35% (0.70%) of it should be vegetated.

3.4.6. Method of Documentation

Written documentation report shall be prepared.

Table 3.1 - Monitoring Plan for Independence Lake Fish Barrier Project

Monitoring Parameter	Performance Indicator	Baseline Monitoring	Implementation Monitoring	Effectiveness Monitoring
	pH	X	X	
	Turbidity	X	X	
Structure Stability	Cross-section survey		X	X
	Visual		X	X
Elimination of Fish Passage	Visual			X
Revegetation	Vegetation Cover	X		X
	Composition	X		X
	Survival			X

4. Monitoring Documentation

Water Quality documentation will be provided on the annual monitoring report submitted to the LRQWCB.

As-built documentation will be provided by the contractor and design engineer. This will include final cross-sectional surveys and establishment of the locations of these surveys, and documentation of such for future re-establishment as needed.

An annual report will be prepared each year documenting annual surveys and inspections for ultimate submittal to the permitting agencies.

5. Contingency

At a minimum, the following parameters set guidelines for future contingency.

5.1 Fish Passage

Elimination of fish passage is one of the primary objectives of this project. In the event that fish passage is detected structure modification may/will be required. This decision shall be made in coordination with all responsible regulatory agencies.

5.2 Structure Stability

Structure stability is necessary to ensure hydrologic function of the spillway and safe operation of Independence Lake dam. If structure instability is noted, mitigation may be required in the form of structure reconstruction, repairs, rock replacement, etc.

5.3 Hydrologic Changes to the Spillway

Avoiding adverse hydraulic or hydrologic impacts to the upstream spillway structure or spillway operations is a critical objective of the project and a major factor in the design of the fish barrier structure. This objective involves long-term stability and proper functioning of the spillway channel, including not allowing a new channel to form around the new barrier during future high-flow events.

If any significant changes to the proper functioning of the spillway are noted, TNC will coordinate with TMWA engineers on stabilization work that will correct the situation.

5.4 Vegetation and Aquatic Habitat

Restoration of habitat is an important goal for this project. If habitat loss or degradation is identified through the monitoring protocol, mitigation may be required. Mitigation will consist of additional riparian planting at the project site to meet mitigation criteria as described in Section 3.4.

APPENDIX I

**DELINEATION OF WETLANDS AND
WATERS OF THE UNITED STATES
INDEPENDENCE LAKE SPILLWAY FISH BARRIER,
TRUCKEE, CALIFORNIA**

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Attachment B	Project Disturbance Area and Wetland Delineation Map

LIST OF ACRONYMS & ABBREVIATIONS

ACOE	U.S. Army Corps of Engineers
CFR	Code of Federal Regulations
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
TNC	The Nature Conservancy
NI	No Indicator
NL	Not listed
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
OBL	Obligate
OHWM	Ordinary High Water Mark
RGL	Regulatory Guidance Letter
UPL	Upland
WOUS	Waters of the U.S.

1.0 INTRODUCTION

The Nature Conservancy (TNC) acquired Independence Lake in 2010. This property, located in Sierra County, is currently held in conservation and is managed by the Nature Conservancy. At present Independence Lake has few non-native aquatic species, which has allowed the native Lahontan Cutthroat Trout, a Federally Listed threatened species, to thrive. As part of their “Independence Lake Lahontan Cutthroat Trout Enhancement Plan” TNC is proposing to replace the current overflow spillway with a spillway that will also serve as a fish barrier thus preventing non-native fish from accessing the lake.

Independence Lake is located in the Sierra Nevada Mountains, approximately 18 miles north of Truckee off of Highway 89, (Attachment A, Project Location Map). Based on this information the area would be considered within the Western Mountains Region and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (ACOE, 2010) would be used to determine the jurisdiction of wetlands.

The overflow spillway is located at the far eastern end of Independence Lake. The total area of project area is 0.78 acres, Attachment B, Proposed Project Design and Wetland Delineation Map.

2.0 DEFINITIONS

2.1 WATERS OF THE U.S.

WOUS are defined by 33 Code of Federal Regulations (CFR) 328.3 as:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
 - i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
 - ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - iii. Which are used or could be used for industrial purpose by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the U.S. under the definition;

5. Tributaries of waters identified in paragraphs (a)(1)-(4) of this section;
6. The territorial seas;
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (1)-(6) of this section.

The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other WOUS by man-made dikes or barriers, natural river berms, beach dunes and the like are "adjacent wetlands." In the absence of adjacent wetlands, the limits of ACOE's jurisdiction extend to the ordinary high water mark (OHWM).

According to ACOE regulation 33 CFR 328.3(e), the OHWM is defined as: "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas".

Regulatory Guidance Letter (RGL) 05-05 provides additional guidance to ACOE districts in making OHWM determinations. The RGL recommended physical characters such as the following should be considered, to the extent they can be identified and are deemed reasonably reliable:

- Clear, natural line impressed on the bank;
- Shelving;
- Changes in the character of soil;
- Destruction of terrestrial vegetation;
- The presence of litter and debris;
- Wracking (debris lines);
- Vegetation matted down, bent, or absent;
- Sediment sorting;
- Leaf litter disturbed or washed away;
- Scour;
- Deposition;
- Multiple observed flow events;
- Bed and banks;
- Water staining; and
- Change in plant community.

In determining the appropriate field characters to use, CSESA reviewed the list of OHWM characters in 33 CFR 328.3(e) and in RGL 05-05 and determined the list of indicators from both sources was reasonably reliable and appropriate for this survey.

2.2 WETLANDS

Wetlands are defined by the ACOE and the Environmental Protection Agency in 40 CFR 230.3 and 33 CFR 328.3 as:

Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

As noted in the WOUS discussion, if wetlands are present adjacent to a WOUS, ACOE jurisdiction extended beyond the high water mark of the waters to the limit of the adjacent wetlands.

3.0 METHODOLOGY

Before conducting field work for the Wetland Delineation, an online query of the Natural Resources Conservation Service (NRCS) Web Soil Survey was conducted (USDA-NRCS, 2010). The resulting soil type map was overlaid onto Google earth aerial imagery to identify soil types present within the project area, **Error! Reference source not found..**

3.1 DRAINAGES

The excavated overflow spillway channel is the only channel within the project. Evidence of flow and presence of a defined bed and bank for this channel were investigated. These characteristics are considered to be indicative of a potential WOUS. The width of the channel with these characteristics was measured at the OHWM. The connection or “significant nexus” with a traditional navigable water was also investigated. The “significant nexus” with a traditional navigable water is ultimately the determining factor in deciding whether a non-navigable tributary or wetlands constitutes a WOUS.

3.2 WETLANDS

Representative locations in wetland vegetation types found within the survey area were examined for wetland characteristics in accordance with the criteria contained in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (ACOE, 2010). Sample sites were established in hydrophytic plant communities in the area. Sample sites were also established in adjacent vegetation communities or at boundaries of community types. At each site, the vegetation, soils, and hydrology were examined for wetland characteristics.

3.2.1 Wetland Vegetation

Wetland (hydrophytic) vegetation is defined as any macrophyte that grows in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water. The Western Mountains

Supplement requires that, in most cases, more than 50 percent of the dominant vegetation includes plants that meet the wetland plant technical criteria. Vegetation was visually surveyed in the vicinity of the soil sample site to estimate the absolute percent cover of each species present in each stratum, or vegetative layer, and to characterize the plant communities.

The wetland indicator status for each species was recorded to aid in making jurisdictional wetland determinations. According to the *National List of Plant Species that Occur in Wetlands: California (Region 0) - Biological Report 88 (26.10)*, (Reed, 1988), the indicator categories are defined as:

Obligate Wetland (OBL): Occur almost always (estimated probability >99%) under natural conditions in wetlands.

Facultative Wetland (FACW): Usually occur in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.

Facultative (FAC): Equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).

Facultative Upland (FACU): Usually occur in non-wetlands (estimated probability 67%-99%), but occasionally found in wetlands (estimated probability 1-33%).

Upland (UPL): Occur almost always (estimated probability >99%) under natural conditions in non-wetlands in the region specified.

No Indicator (NI): Insufficient information is available to determine an indicator status.

3.2.2 Hydric Soils

Hydric soils are defined as soils that "...formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (SCS, 1994). Hydric soil indicators are found in the major portions of the herbaceous plant rooting zone, generally between 6 to 12 inches from the soil surface, although an examination of the first 20 inches or more is required. Common hydric soil indicators include low chroma (depleted matrix) color; mottling; gleying; iron or manganese concretions; organic matter streaking; reddish staining or streaks; hydrogen sulfide odor; and/or a muck or peat layer (histic epipedon). Hydric soil indicators presented in the Western Mountain Supplement were used as a guide to identify and delineate hydric soils in the field.

3.2.3 Wetland Hydrology

Wetland hydrology is the driving force behind wetland formation. The term "wetland hydrology" encompasses all hydrologic characteristics of areas that are periodically inundated or have soil saturated to the surface at some time during the growing season. During the survey, several indicators were used to determine wetland hydrology. Some of

these indicators are: visual observation of saturated soils; visual observation of flooding or ponding; soil permeability and texture; evidence of anaerobic conditions within the upper root zone; root staining; and the amount and type of plant cover. Other indicators of wetland hydrology are: drainage patterns (i.e., situation in topographical depressions or channels); drift lines; sediment deposits; water marks; oxidized root zones; location in an annual floodplain; water-stained leaves; surface scoured areas; morphological plant adaptations; and algae growth or remnants.

4.0 FINDINGS

4.1 WETLANDS

The site was visited on July, 23rd 2010. The overflow spillway channel had flow from May thru August and the ordinary high water mark, as defined as a break in slope on the bank was noted. Based on the location of the OHWM the average width of the channel is 5 feet. To the east of the overflow channel the bank is deeply incised preventing overflow from the channel towards the east, thus the limits of the wetland/WOUS are defined by the steep incised bank on the eastern side of the channel. There are contiguous wetlands on the west bank of the overflow channel.

No wetland sampling sites were established on the lower terrace which is adjacent to the OHWM, Figure 1. It was assumed that these inset terraces are wetlands due to their proximity to the channel and obvious wetland vegetation, Figure 1 and Appendix A. The first soil sampling site (SS1) was located on the western upper bank approximately 6-8 feet above the OHWM of the current channel, Figure 2 and Figure 3. This site was once connected with the channel and received overflow during high flow events but erosion has left it disconnected from the active channel. Soils, hydrology and vegetation indicated that this site still receives seasonal surface water. The depleted matrix of the soil at 6 to 20 inches depth indicates a high water table in the past and the mottles present within the soil matrix indicate that this water table fluctuated seasonally, Figure 2 and Appendix A. The vegetation is dominated by Baltic rush (*Juncus balticus*) which is rated as a facultative wetland plant (FACW). Several other wetland species were also present at sample site 1, Appendix A. The surface soil exhibits cracking in the concave areas which suggests that water ponds on the site, Appendix A and Figure 3.

Adjacent to wetland sampling site 1 (SS1) the vegetation becomes more sparse and other species co-dominate with Baltic rush. Wetland sampling site 2, (SS2), was placed within this sparser vegetation type, Figure 5 and Appendix A. The soil at both SS1 and SS2 had a heavy clay layer at approximately 14 inches depth, which may prevent drainage in

the spring. At sampling site 2 the soil at 14 inches depth exhibits a depleted matrix and a few indistinct mottles, Figure 4. The vegetation at sample site 2 is dominated by Baltic rush, Nebraska sedge (*Carex nebrascensis*), woolly pyrocoma (*Haplopappus hirta*) and Rydberg's penstemon (*Penstemon rydbergii*), Figure 5 and Appendix A.

Sampling site 3, (SS3), is outside the wetland area and on the edge of the proposed project area. The area is dominated in the overstory by lodgepole pine (*Pinus contorta*), and in the understory by Kentucky bluegrass (*Poa pratensis*), Figure 7 and Appendix A. The soil at this site does not exhibit a depleted matrix nor does it have mottles within the soil matrix, Figure 6. This site is not classified as a wetland and it serves to delineate the wetland/upland boundary.

4.2 SOILS

Soils in the project area have been mapped by the Soil Conservation Service (now the NRCS). Soil descriptions are taken from the online interactive Web Soil Inventory, (USDA-NRCS, 2010). The soil map unit for the project area is TBE—Tallac-Cryumbrepts, wet complex. The Tallac component makes up 60 percent of the map unit. Slopes are 2 to 30 percent. This component is found on moraines, mountains. The parent material consists of glaciofluvial deposits. Depth to a root restrictive layer, duripan, is 41 to 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 51 inches during March, April, May.

The Cryumbrepts, wet component makes up 25 percent of the map unit. Slopes are 2 to 30 percent. This component is found on moraines and mountains. The parent material consists of alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded.

None of the hydric soil characteristics found at the project site during the wetland delineation are noted to occur in the mapped soil units. The soil mapping units in this area are not detailed enough to include the riparian or wetland soils associated with the project area, which have most likely been formed by fluvial deposits overflowing the channel when the channel was still hydrologically connected to the outflow channel.

4.3 HYDROLOGY

The current excavated spillway channel at Independence Lake receives overflow from the lake for 2-4 months during the growing season between May and August. This flow is mostly contained within the

OHWL and only accesses the lower inset terraces. Higher flows may occur in the spring during snowmelt runoff, these flows may access some of the higher terraces to the west of the current excavated channel.

Prior to construction of the main spillway, and overflow spillway, outflow from Independence Lake most likely exited the lake through a braided and/or meandering channel at grade with the open meadow areas, thus providing a source of water for these areas. Currently the source of hydrology for these higher terraces is overflow during high flow events and snowmelt, which shows evidence of ponding on the clay soils associated with these mesic meadow areas.

5.0 SUMMARY

On July 23rd, 2010 a wetland delineation was conducted by Catherine Schnurrenberger for TNC to determine the extent of wetlands in the vicinity of the proposed replacement Spillway Fish Barrier project. There will be temporary disturbance to 0.39 acres of wetlands of this only 0.07 acres of WOUS/wetland will be permanently impacted by this project. The permanent disturbance areas include the concrete foundation of the proposed fish barrier and the surrounding areas. All other disturbance will temporary, natural topography and hydrology will be retained and these areas will be revegetated with local wetland species. The WOUS/wetlands to be affected include the current channel, the lower inset terraces and the upper terrace to the west of the current channel. The wetland area extends beyond the project area, Attachment B, such that only a small portion, (less than 10 percent) of the WOUS/wetland will be affected by the Spillway Fish Barrier project.

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Figure 1: Upstream view of incised channel, the lower terrace is the same level as the OHWM. The upper terrace is west of the channel and is represented by sample sites 1 and 2.



Figure 2: Sample site 1 soil profile showing dark layer at 3 - 6 inches depth and depleted matrix with mottles at 6 - 20 inches depth.



Figure 3: Sample site 1 vegetation dominated by Baltic rush with surface cracks in clay soil.



Figure 4: Sampling site 2 soils. At 14 inches depth the soil has a depleted matrix with a few indistinct mottles.



Figure 5: Vegetation at Sampling site 2, showing sparse vegetation and clay soils with cracks.



Figure 6: Sampling site 3 soils, outside of wetland.

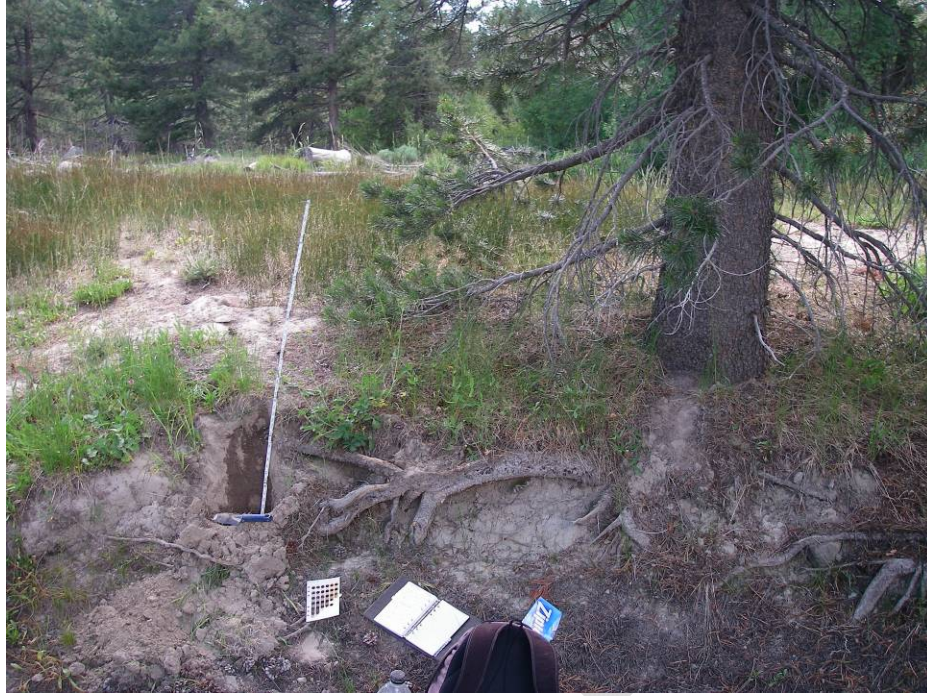


Figure 7: Sampling site 3 vegetation, outside wetland area.

