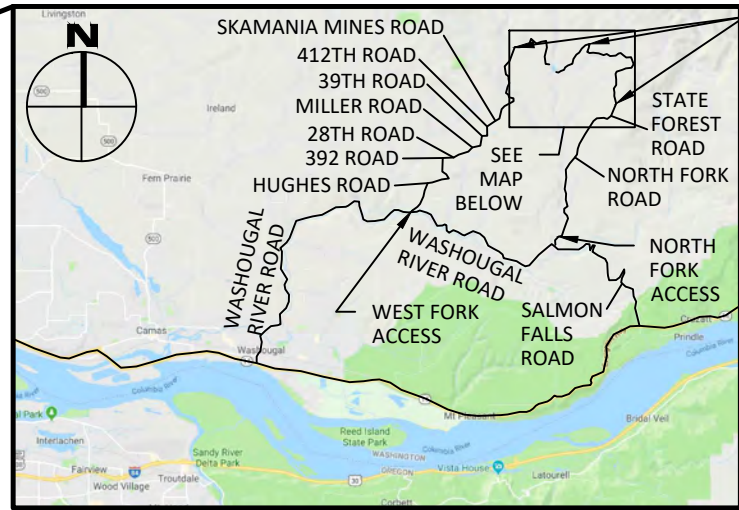
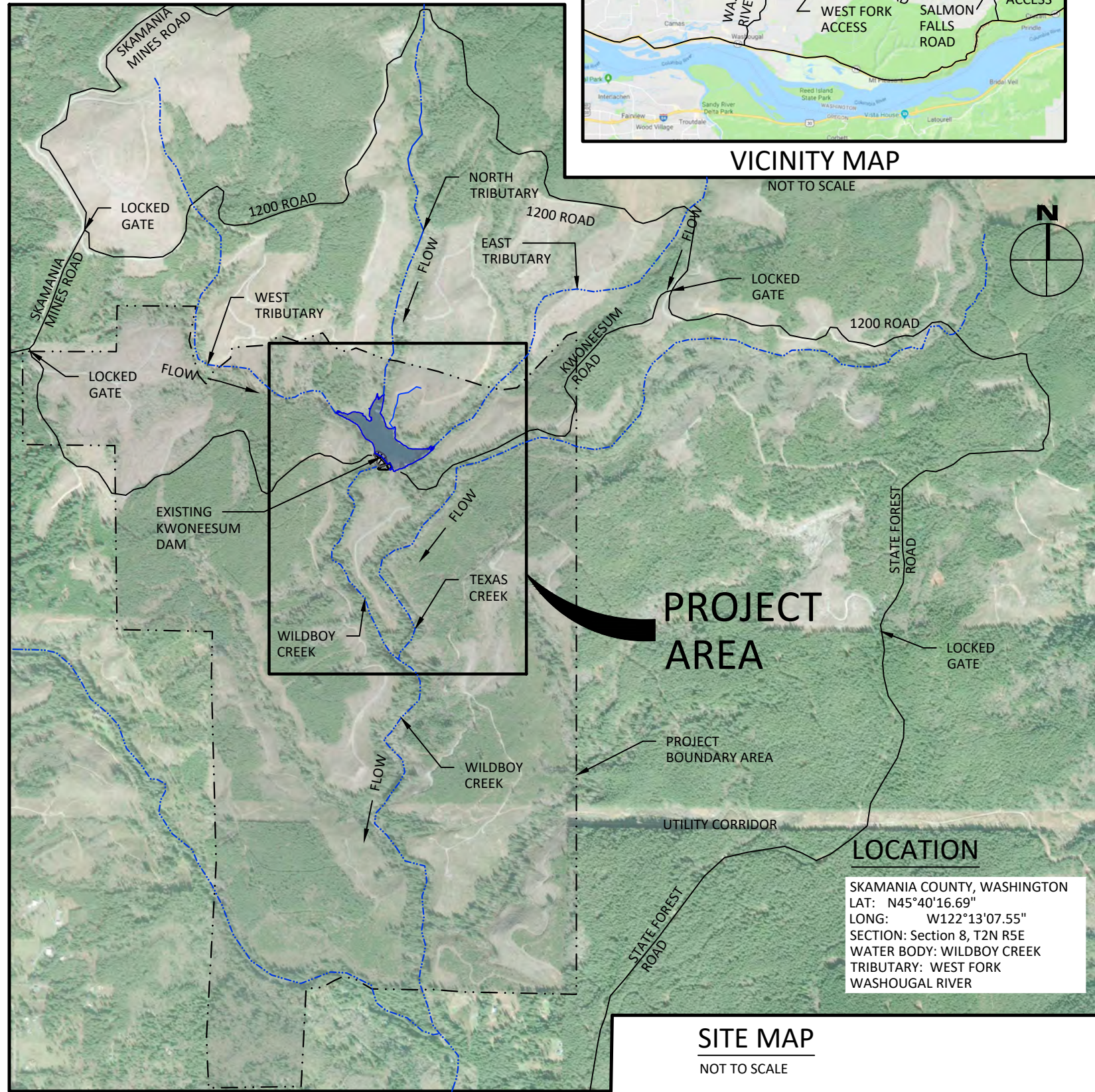


STATE OF WASHINGTON



VICINITY MAP

NOT TO SCALE



PROJECT AREA

LOCATION

SKAMANIA COUNTY, WASHINGTON
 LAT: N45°40'16.69"
 LONG: W122°13'07.55"
 SECTION: Section 8, T2N R5E
 WATER BODY: WILDBOY CREEK
 TRIBUTARY: WEST FORK WASHOUGAL RIVER

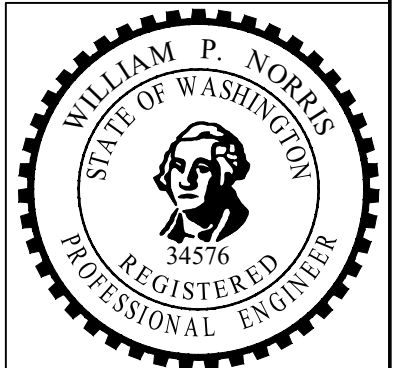
SITE MAP

NOT TO SCALE

LOCKED GATE

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3	-	-	-
2	-	-	-
1	-	-	-
REV:	DESCRIPTION:	BY:	DATE:
STATUS: PRELIMINARY DESIGN			



SITE: KWONEESUM DAM REMOVAL DESIGN

TITLE: COVER, SHEET INDEX, AND PROJECT LOCATION

SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO: -	DRAWING NO: 1	Total Sheets: 80	

GENERAL NOTES

THE CONTRACTOR SHALL ATTEND A MANDATORY PRE-BID SITE MEETING.

THE CONTRACTOR SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH OWNER AND OWNER'S REPRESENTATIVE PRIOR TO BEGINNING CONSTRUCTION.

ALL WORK SHALL CONFORM TO THE CURRENT EDITIONS OF STANDARD PLANS AND SPECIFICATIONS OF THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT), AND LOCAL STANDARDS UNLESS INDICATED OTHERWISE BY THE CONTRACT DOCUMENTS. IN CASE OF A CONFLICT BETWEEN THE REGULATORY STANDARDS OR SPECIFICATIONS, THE MORE STRINGENT WILL PREVAIL.

WDFW IN-WATER WORK PERIODS

IN-WATER WORK SHALL OCCUR DURING THE PERMITTED IN-WATER WORK PERIOD STATED IN THE HYDRAULIC PROJECT APPROVAL.

EXISTING DATA

TOPOGRAPHIC DATA COLLECTED BY ERS, INC USING RTK, TOTAL STATION, HYDROLITE AND DRONE BASED SFM FROM OCTOBER TO NOVEMBER 2018; GIS DATA PROVIDED BY VARIOUS AGENCIES INCLUDING AERIAL PHOTOGRAPHY, LIDAR, FISH USE, SURFACE SOILS INFORMATION, LAND OWNERSHIP, AND TRANSPORTATION ROUTES.

EXISTING DAM INFORMATION INCLUDED IN DEPARTMENT OF ECOLOGY DAM SAFETY REPORT (2006) INCLUDED SCANS OF DESIGN PLANS AND CH2M HILL SKETCH OF PRE-DAM TOPOGRAPHY.

HORIZONTAL DATUM: NAD83 WASHINGTON STATE PLANES, SOUTH ZONE, US FOOT
VERTICAL DATUM: NAVD88

HISTORICAL PHOTOS PROVIDED AS SUPPLEMENTAL INFORMATION. SEE GEODESIGN REPORT PROVIDED AS SUPPLEMENTAL INFORMATION.

SOILS

RESERVOIR SOILS WERE HIGHLY DISTURBED DURING DAM CONSTRUCTION, SEE HISTORICAL PHOTOS PROVIDED AS SUPPLEMENTAL INFORMATION. SEE GEODESIGN REPORT PROVIDED AS SUPPLEMENTAL INFORMATION.

SUBSURFACE SOILS ARE EXPECTED TO BE SILT, CLAY, SAND AND GRAVEL. CONTRACTOR SHALL CONDUCT OWN INVESTIGATIONS IF ADDITIONAL DATA IS REQUIRED AT NO ADDITIONAL COST.

NON-SOIL DEBRIS MAY BE PRESENT IN EXCAVATION AREAS.

UTILITIES

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR HAVING UTILITIES LOCATED PRIOR TO CONSTRUCTION ACTIVITIES.

THE CONTRACTOR SHALL CALL (800-424-5555) FOR UTILITY LOCATE PRIOR TO CONSTRUCTION.

THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE AFFECTED UTILITY SERVICE TO REPORT ANY DAMAGED OR DESTROYED UTILITIES.

THE CONTRACTOR SHALL PROVIDE EQUIPMENT OR LABOR TO AID THE AFFECTED UTILITY SERVICE IN REPAIRING DAMAGED OR DESTROYED UTILITIES AT NO ADDITIONAL COST.

CONSTRUCTION ACCESS

ALL SAPLINGS AND TREES TO BE TRANSPLANTED OR REMOVED SHALL BE CLEARLY MARKED AND APPROVED BY THE OWNER AND OWNER'S REPRESENTATIVE.

ALL EQUIPMENT, MATERIALS AND PERSONNEL SHALL REMAIN WITHIN THE LIMITS OF DISTURBANCE.

THE CONTRACTOR SHALL KEEP THE WORK AREAS IN NEAT CONDITION, FREE OF DEBRIS AND LITTER FOR THE DURATION OF THE PROJECT.

ALL DISTURBED AREAS INCLUDING ROADS, DRIVEWAYS AND ACCESS ROUTES SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER AND RE-VEGETATED PER PLANS.

ALL DISTURBED AREAS OUTSIDE THE LIMITS OF DISTURBANCE SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST.

EROSION CONTROL

CONTRACTOR SHALL BE SOLELY RESPONSIBLE AT OWN EXPENSE FOR PROVIDING AND MAINTAINING ALL NECESSARY EROSION CONTROL FACILITIES TO COMPLY WITH APPLICABLE EROSION CONTROL REGULATIONS AND TO MAINTAIN CLEAN ACCESS ROUTES.

CONSTRUCTION STAKING

OWNER'S REPRESENTATIVE WILL PROVIDE STAKING, GRADE STAKES, AND ELEVATION CONTROL POINTS. SOME FIELD ADJUSTMENTS TO THE LINES AND GRADES ARE TO BE EXPECTED.

THE CONTRACTOR SHALL REPLACE DAMAGED OR DESTROYED CONSTRUCTION STAKES AT NO ADDITIONAL COST.

CONSTRUCTION MATERIALS

CONTRACTOR SHALL ALLOW FOR EXPANSION OF EXCAVATED MATERIAL AND COMPACTION OF PLACED MATERIAL AT NO ADDITIONAL MEASURE OR COST. MEASUREMENT AND PAYMENT SHALL NOT BE BASED ON WEIGHT TICKETS OR TRUCK MEASURE WITHOUT PRIOR WRITTEN APPROVAL.

LOCATION, ALIGNMENT, AND ELEVATION ARE SUBJECT TO ADJUSTMENT BASED ON FIELD CONDITIONS, ENCOUNTERED BEDROCK, AND MATERIAL SIZE.

ANY EXCESS MATERIAL SHALL BE STOCKPILED NEATLY IN AN APPROVED LOCATION OF THE STOCKPILE AND STAGING AREA. CONCRETE FROM DAM DEMOLITION SHALL BE BURIED IN THE EXISTING SPILLWAY AREA AND COVERED WITH NATIVE SOILS.

TREE SALVAGE

REMOVED VEGETATION, INCLUDING TREES UP TO 12" DBH SHALL BE INCORPORATED INTO LARGE WOOD STRUCTURES AS SLASH AT NO ADDITIONAL COST. VEGETATION LARGER THAN 12" DIAMETER AND 30' LENGTH SHALL BE USED AS STRUCTURAL ELEMENTS. SMALLER MATERIAL SHALL BE USED AS SLASH.

SELECT SALVAGED, SMALL TREES REMOVED WITHIN CLEARING LIMITS SHALL BE REMOVED WHOLE WITH ROOT WAD AND USED IN RESTORATION CONSTRUCTION. SELECT, LARGE SALVAGED TREES ARE LISTED IN THE FELLED LOG LIST AND SHALL BE REMOVED WHOLE WITH ROOT WAD AND USED IN RESTORATION CONSTRUCTION. TREES WILL BE FLAGGED FOLLOWING STAKING AND PRIOR TO CONSTRUCTION.

LIVE TREES

ALL TREES NOT MARKED FOR REMOVAL SHALL BE LEFT STANDING UNDISTURBED. CONSTRUCTION ACTIVITY SHALL NOT DEBARK OR DAMAGE LIVE TREES.

KEEP OUT OF DRIP LINE OF EXISTING TREES TO REMAIN.

CONTRACTOR

THE CONTRACTOR SHALL SUBMIT THE FOLLOWING PLANS, INCLUDING THEIR MEANS AND METHODS OF PERFORMANCE FOR THEIR TESC PLAN OWNERS REVIEW AND APPROVAL:

1. SURFACE WATER DIVERSION PLAN FROM TRIBUTARIES AND AROUND RESERVOIR, INCLUDING PUMPING. REMOVAL OF ALL EQUIPMENT AND PIPING FOLLOWING SURFACE WATER DIVERSIONS.
2. INITIAL DRAW DOWN PLAN, INCLUDING SILT TURBIDITY CURTAIN, FLOATING INTAKES, SECURING AND MOVING SILT TURBIDITY CURTAIN AND FLOATING INTAKES, PIPING, PUMPING, SPRAYERS AND SPRAYER PLATFORMS.
3. FISH SALVAGE AND EXCLUSION PLAN. REMOVAL OF ALL EQUIPMENT AND PIPING FOLLOWING INITIAL DRAWDOWN.
4. STORM WATER POLLUTION PROTECTION PLAN (SWPPP).
5. EVAPORATIVE DEWATERING, INCLUDING SUMP PUMPS, SUMP PUMP POWER SUPPLIES, HIGH HEAD PUMP, PIPING, PUMPING, SPRAYERS AND SPRAYER PLATFORMS. REMOVAL OF ALL EQUIPMENT AND PIPING FOLLOWING EVAPORATIVE DEWATERING.
6. DAM MATERIAL HANDLING AND DISPOSAL.
7. VEGETATION ESTABLISHMENT PLAN.

BID QUANTITIES

Bid Item	Units	Quantity
MOBILIZATION	LS	1
TESC, SPOC PLAN AND IMPLEMENTATION	LS	1
SURFACE WATER DIVERSION	LS	1
INITIAL DRAWDOWN	LS	1
EVAPORATIVE DEWATERING	LS	1
CLEARING AND GRUBBING	AC	7
REMOVAL OF DAM AND SPILLWAY	LS	1
COMMON BORROW INCLUDING HAUL	CY	10260
SELECT BORROW INCLUDING HAUL	CY	9840
GRAVEL BORROW INCLUDING HAUL	CY	3000
EMBANKMENT COMPACTION	CY	13000
CHANNEL EXCAVATION AND HAUL	CY	1000
UNSUITABLE FOUNDATION EXCAVATION INCL. H	LS	1
SMALL SALVAGED TREES	EA	50
LARGE SALVAGED TREES	EA	55
IMPORTED LOGS	EA	550
GRAVEL BASE, METHOD C COMPACTION	CY	70
SEEDING	AC	17
RED-OSIER DOGWOOD, CUTTING	EA	1500
SITKA WILLOW, CUTTING	EA	1500
SCOULER'S WILLOW, CUTTING	EA	1500
SALMONBERRY, 1-GALLON CONTAINER	EA	1000
RED ALDER, 1-GALLON CONTAINER	EA	1000
BIG LEAF MAPLE, 1 GALLON CONTAINER	EA	1000
MERTEN'S SEDGE, PLUG	EA	1000
SMALLWING SEDGE, PLUG	EA	1000
DAGGERLEAF RUSH, PLUG	EA	1000
DOUGLAS FIR, 1-GALLON CONTAINER	EA	1500
WESTERN RED CEDAR, 1-GALLON CONTAINER	EA	1500
THIMBLEBERRY, 1-GALLON CONTAINER	EA	1000
SALAL, 1-GALLON CONTAINER	EA	1000
WESTERN SWORDFERN, 1 GALLON CONTAINER	EA	1000
WESTERN BRACKENFERN, 1-GALLON CONTAINER	EA	1000
DIVERSION OVERTOPPING ALLOWANCE	EA	2

FISH SALVAGE AND EXCLUSION PLAN

FISH SALVAGE WILL INCLUDE ASSISTANCE FROM WDFW AND COWLITZ TRIBE STAFF.

THE CONTRACTOR SHALL PLAN OPERATIONS TO ANTICIPATE AND ALLOW FOR FISH EXCLUSION.

WHEN PUMPING IS REQUIRED, THE CONTRACTOR SHALL INSTALL ISOLATE THE WORK AREA(S) WHEN FISH ARE PRESENT, AND PROVIDE A PUMP INTAKE FISH SCREEN THAT MEETS NMFS'S FISH SCREEN CRITERIA (NMFS 2011, OR MOST CURRENT). WIDER MESH SCREENS MAY BE USED AFTER ALL FISH HAVE BEEN REMOVED FROM THE ISOLATED AREA. WORK AREA ISOLATION AND FISH CAPTURE ACTIVITIES SHALL TAKE PLACE DURING PERIODS OF THE COOLEST AIR AND WATER TEMPERATURES POSSIBLE, NORMALLY EARLY IN THE MORNING VERSUS LATE IN THE DAY, AND DURING CONDITIONS APPROPRIATE TO MINIMIZE STRESS TO FISH SPECIES PRESENT.

TRIBUTARY DIVERSIONS

DURING INITIAL DRAW DOWN OF THE RESERVOIR AND PUMPING OF DIVERTED FLOWS, TRIBUTARY INTAKES MUST BE SCREENED. THE CONTRACTOR SHALL SCREEN TRIBUTARY DIVERSION INLETS WITH SEINE NETS. THE CONTRACTOR SHALL CLEAR FISH UPSTREAM OF THE DIVERSION N DAM USING SEINE NETS AND SCARE RESPONSE. THIS CLEARING PROCESS WILL PROCEED TO A LOCATION WHERE ONE SIDE OF THE SEINE NET CAN BE SEALED AND SECURED TO THE TRIBUTARY STREAM BANK. AFTER ONE SIDE OF THE SEINE NET IS SECURED AND SEALED, THE OTHER END OF THE SEINE NET WILL BE ADVANCED UPSTREAM TO APPROXIMATELY 45 DEGREES TO FLOW. THE SEINE NET SHALL THEN BE SEALED TO THE STREAMBED USING A CONTINUOUS LINE OF SANDBAGS AND THE UPSTREAM SIDE OF THE SEINE NET SHALL BE SEALED TO THE OPPOSITE BANK.

THE CONTRACTOR SHALL CONTINUALLY MONITOR THE SEINE NETS AND CLEAR DEBRIS FROM THE SEINE NETS AS NECESSARY.

ALL FISH TRAPPED IN RESIDUAL POOLS WITHIN THE PROJECT AREA WILL BE CAREFULLY COLLECTED BY SEINE AND/OR DIP NETS AND PLACED IN CLEAN TRANSFER CONTAINERS WITH ADEQUATE VOLUME OF FRESH RIVER WATER.

CAPTURED FISH SHALL BE IMMEDIATELY RELEASED INTO RIVER AT AREAS SELECTED BY A COWLITZ TRIBE BIOLOGIST.

FISH SHALL BE EXCLUDED FROM THE WORK AREA WITH SEINE NET OR OTHER METHOD APPROVED BY WDFW AND COWLITZ TRIBE PERSONNEL.

LARGE SALVAGED TREE LIST

Salvaged Tree #	Approx. DBH (Inches)	Notes	Large Wood Structure ID	Salvaged Tree #	Approx. DBH (Inches)	Notes	Large Wood Structure ID
1	20	Downed	A	26	26	Standing	P
2	24	Standing	A	27	26	Standing	P
3	24	Standing	B	28	36	Standing	P
4	24	Standing	B	29	36	Standing	P
5	24	Standing	C	30	34	Standing	Q
6	24	Standing	C	31	30	Standing	Q
7	20	Standing	D	32	36	Standing	R
8	24	Standing	D	33	36	Standing	R
9	28	Standing	E	34	36	Standing	S
10	26	Standing	E	35	24	Standing	T
11	30	Standing	F	36	30	Standing	U
12	30	Standing	F	37	30	Standing	V
13	30	Standing	G	38	36	Standing	W
14	24	Standing	G	39	30	Standing	X
15	24	Standing	H	40	30	Standing	Y
16	30	Standing	I	41	30	Standing	Z
17	22	Standing	J	42	30	Downed	Z
18	36	Standing	K	43	30	Standing	Z
19	32	Standing	K	44	30	Standing	AA
20	36	Standing	L	45	30	Standing	AB
21	26	Standing	M	46	36	Standing	AC
22	34	Standing	N	47	40	Standing	AC
23	34	Standing	N				
24	28	Standing	O				
25	26	Standing	O				

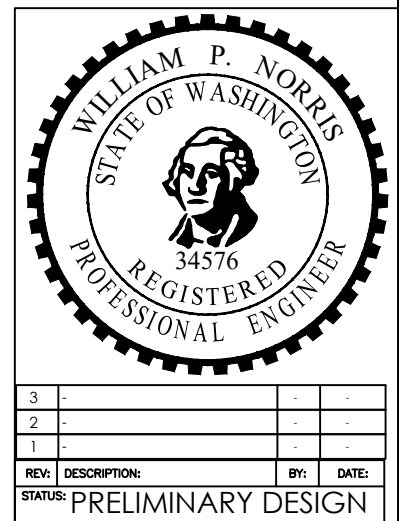
RESERVOIR

FISH SALVAGE IN THE RESERVOIR SHALL OCCUR AFTER THE INITIAL DRAW DOWN OF THE RESERVOIR TO CONCENTRATE FISH IN A REDUCED AREA.

WDFW WILL ASSIST WITH THEIR ELECTRO-FISHING BOAT. THE CONTRACTOR SHALL REMOVE SOFT SOILS IN THE DRAW DOWN RESERVOIR AND ASSIST WDFW STAFF IN LAUNCHING AND TRAILORING ELECTRO-FISHING BOAT. ELECTRO-FISHING WILL CONTINUE UNTIL AS LONG AS A REASONABLE EFFORT YIELDS REASONABLE RESULTS.

WILDBOY CREEK

THE CONTRACTOR SHALL PERFORM FISH EXCLUSION IN WILDBOY CREEK WITH ASSISTANCE FROM THE COWLITZ INDIAN TRIBE FISHERIES BIOLOGIST. FISH SALVAGE SHALL INCLUDE THE CONTRACTOR PROVIDING SCREENED INTAKE PUMPS AND OPERATING THE PUMPS TO CONCENTRATE FISH IN POOLS. THE POOLS SHALL BE PUMPED DOWN TO ALLOW FOR SYSTEMATIC SEINE NETTING THROUGH THE WORK AREAS. FOLLOWING SEINE NETTING, THE WORK AREAS WILL BE ISOLATED TO EXCLUDE FISH WITH SEINE NETS THAT MUST BE KEPT CLEAN OF DEBRIS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SKIMMING DEBRIS OFF SEINE NETS THROUGHOUT CONSTRUCTION. ANY SEINE NETS DAMAGED BY THE CONTRACTOR SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.



SITE: KWONEESUM DAM REMOVAL DESIGN			
TITLE: GENERAL NOTES			
SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO: -	DRAWING NO: 2		Total Sheets: 80

EROSION/SEDIMENTATION CONTROL (ESC) PLAN

THE EROSION AND SEDIMENT CONTROL (ESC) PLAN PROVIDED IS FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PROVIDING EROSION CONTROL MEASURES TO COMPLY WITH APPLICABLE REGULATIONS.

THE RECOMMENDATIONS FOR AN ESC PLAN INCLUDED HEREIN WILL PROVIDE A GUIDELINE FOR THE CONTRACTOR TO DEVELOP AND IMPLEMENT AN ESC PLAN.

- A. THE IMPLEMENTATION OF AN ESC PLAN AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.
- B. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
- C. ESC FACILITIES AS APPROXIMATELY SHOWN ON THIS PLAN ARE TO BE CONSTRUCTED PRIOR TO CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT ENTER SURFACE WATERS, THE DRAINAGE SYSTEM, OR VIOLATE APPLICABLE WATER STANDARDS.
- D. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED AT NO ADDITIONAL COST FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.
- E. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.
- F. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 24 HOURS FOLLOWING A STORM EVENT.
- G. STABILIZED CONSTRUCTION ENTRANCES AND ADDITIONAL MEASURES MAY BE REQUIRED AND SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT TO ENSURE ALL ACCESS ROADS ARE KEPT CLEAN AT NO ADDITIONAL COST.

INSPECTION AND MAINTENANCE

ALL ESC FACILITIES SHALL BE INSPECTED, MAINTAINED, AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. ALL ESC FACILITIES SHALL BE INSPECTED DAILY AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES OF RAIN PER 24 HOUR PERIOD AND AFTER EVENTS EXCEEDING 2 HOURS DURATION.

CONTRACTOR'S ESC RECORD

WEEKLY REPORTS SUMMARIZING THE SCOPE OF INSPECTIONS, THE PERSONNEL CONDUCTING THE INSPECTION, THE DATE(S) OF THE INSPECTION, MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE CONTRACTOR'S EROSION AND SEDIMENT CONTROL PLAN, AND ACTIONS TAKEN AS A RESULT OF THESE INSPECTIONS SHALL BE PREPARED AND RETAINED ON SITE BY THE CONTRACTOR. IN ADDITION, A RECORD OF THE FOLLOWING DATES SHALL BE INCLUDED IN THE REPORTS:

1. WHEN MAJOR GRADING ACTIVITIES OCCUR.
2. DATES OF RAINFALL EVENTS EITHER EXCEEDING 2 HOURS DURATION OR MORE THAN 0.5 INCHES/24 HOURS.
3. WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON SITE, OR ON A PORTION OF THE SITE.
4. WHEN STABILIZATION MEASURES ARE INITIATED FOR PORTIONS OF THE SITE.
5. ESC RECORDS SHALL BE MADE AVAILABLE TO THE OWNER AND OWNER'S REPRESENTATIVE ON REQUEST AND SHALL BE PROVIDED FOR REVIEW AND APPROVAL PRIOR TO APPLICATION FOR PAYMENT.

STABILIZE SOILS AND PROTECT SLOPES

FROM MAY 1 THROUGH SEPTEMBER 30, ALL EXPOSED SOILS SHALL BE PROTECTED FROM EROSION BY MULCHING, HYDROSEED COVERING, OR OTHER APPROVED MEASURES WITHIN THREE DAYS OF GRADING. FROM OCTOBER 1 THROUGH APRIL 30, ALL EXPOSED SOILS MUST BE PROTECTED WITHIN 2 DAYS OF GRADING. SOILS SHALL BE STABILIZED BEFORE A WORK SHUTDOWN, HOLIDAY OR WEEKEND IF NEEDED BASED ON THE WEATHER FORECAST. SOIL STOCK PILINGS MUST BE STABILIZED AND PROTECTED WITH SEDIMENT TRAPPING MEASURES. MULCH AS SOON AS PRACTICAL ALL DISTURBED AREAS NOT INDICATED IN THE CONTRACT DOCUMENTS FOR OTHER PERMANENT STABILIZATION. MEASURES. HAY, STRAW, AND MULCH USED ON SITE SHALL BE 99.9% WEED FREE.

DESIGN, CONSTRUCT, AND PHASE CUT AND FILL SLOPES IN A MANNER THAT WILL MINIMIZE EROSION. REDUCE SLOPE VELOCITIES ON DISTURBED SLOPES BY PROVIDING TEMPORARY BARRIERS. STORMWATER FROM OFF SITE SHOULD BE HANDLED SEPARATELY FROM STORMWATER GENERATED ON SITE.

AFTER FINAL SITE STABILIZATION

ALL TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY BEST MANAGEMENT PRACTICES (BMPS) ARE NO LONGER NEEDED. TRAPPED SEDIMENT SHALL BE REMOVED FROM THE SITE OR INCORPORATED INTO FINISHED GRADING. DISTURBED SOIL AREAS RESULTING FROM REMOVAL SHALL BE PERMANENTLY STABILIZED.

CONSTRUCTION DEWATERING

CONTRACTOR SHALL PERFORM CONSTRUCTION DEWATERING IN SUCH A MANNER AS TO AVOID THE RELEASE OF SEDIMENT-LADEN WATER TO SURFACE WATERS. SEDIMENT LADEN WATER MAY BE PUMPED TO AN UPLAND DISCHARGE LOCATION AND ALLOWED TO INFILTRATE INTO THE GROUND. IF SURFACE RUNOFF IS OCCURRING AS A RESULT OF DEWATERING OPERATIONS, THE CONTRACTOR MAY BE REQUIRED TO THROTTLE DOWN PUMPS AS NECESSARY TO COMPLY WITH LAWS AND PERMIT REQUIREMENTS AT NO ADDITIONAL COST TO THE OWNER.

SPECIAL PROVISIONS

INTRODUCTION

THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION 2020 (WSDOT STANDARD SPECIFICATIONS) SHALL APPLY UNLESS OTHERWISE NOTED IN THE FOLLOWING SPECIAL PROVISIONS. THE "CONTRACTING AGENCY" OR "OWNER" SHALL BE THE COWLITZ INDIAN TRIBE. ADDITIONAL SPECIFICATIONS IN THE FOLLOWING CONTRACT SECTIONS ARE INCLUDED FOR ITEMS NOT COVERED BY THE WSDOT STANDARD SPECIFICATIONS.

SECTIONS 1-02, 1-03, AND 1-08 (EXCEPT 1-08.6, 1-08.7, 1-08.8) OF THE STANDARD SPECIFICATIONS DO NOT APPLY.

ITEM 001- TESC, SPCC PLAN AND IMPLEMENTATION

DESCRIPTION

THIS WORK SHALL PROVIDE FOR PREPARATION, IMPLEMENTATION, AND REMOVAL OF A TEMPORARY EROSION SEDIMENT CONTROL (TESC) PLAN AND FOR THE PREPARATION AND IMPLEMENTATION OF A SPILL PREVENTION CONTROL AND COUNTERMEASURE (SPCC) PLAN IN ACCORDANCE WITH SECTION 1-07.15 OF THE STANDARD SPECIFICATIONS, AND AS AMENDED BY THESE SPECIAL PROVISIONS.

1. THE CONTRACTOR SHALL SUBMIT A TESC FOR THE PROJECT TO THE OWNER FOR APPROVAL. THE TESC MUST SATISFY THE REQUIREMENTS OF THE WASHINGTON DEPARTMENT OF ECOLOGY NPDES STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY AND ALL OTHER APPLICABLE PERMITS. THE TESC INCLUDED IN THE DRAWINGS AND DESCRIBED HEREIN IS INTENDED TO PROVIDE A

BASELINE FOR SEDIMENT AND EROSION CONTROL AND DOES NOT ENSURE THAT THE STANDARDS ESTABLISHED BY ANY APPLICABLE PERMITS WILL BE MET. THE CONTRACTOR MAY USE THESE MEASURES OR ALTERNATIVE MEASURES OF HIS OWN DESIGN TO ENSURE SATISFACTORY PERFORMANCE AND THAT THE EROSION CONTROL REQUIREMENTS OF ALL APPLICABLE PERMITS ARE MET. THE CONTRACTOR SHALL BE NAMED AS THE PERMIT HOLDER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING, INSPECTING AND FILING REPORTS, MAINTAINING, REPLACING, AND REMOVING TESC AND SPCC MEASURES. THE PLAN SHALL INCLUDE THE NAME, ADDRESS AND 24-HOUR CONTACT NUMBER OF THE PERSON RESPONSIBLE FOR EROSION PREVENTION AND SEDIMENT CONTROL MEASURES. ELEMENTS OF THE TESC PLAN HAVE BEEN BROKEN OUT FOR MEASUREMENT AND PAYMENT AS DESCRIBED BELOW.

2. THE CONTRACTOR SHALL INCLUDE THE FOLLOWING IN THE TESC PLAN:
 - a. SURFACE WATER DIVESION PLAN FROM TRIBUTARIES AND RESERVOIR, INCLUDING PUMPING, AND GRAVITY FLOW. REMOVAL OF ALL EQUIPMENT AND PIPING FOLLOWING SURFACE WATER DIVERSIONS.
 - b. INITIAL DRAWDOWN PLAN, INCLUDING SILT TURBIDITY CURTAIN, FLOATING INTAKES, SECURING AND MOVING SILT TURBIDITY CURTAIN AND FLOATING INTAKES, PIPING, PUMPING, SPRAYERS AND SPRAYER PLATFORMS.
 - c. FISH SALVAGE AND EXCLUSION PLAN. REMOVAL OF ALL EQUIPMENT AND PIPING.
 - d. STORM WATER POLLUTION PROTECTION PLAN (SWPPP)
 - e. EVAPORATIVE DEWATERING, INCLUDING SUMP PUMPS, SUMP PUMP POWER SUPPLIES, HIGH HEAD PUMPS, PIPING, PUMPING, SPRAYERS AND SPRAYER PLATFORMS INCLUDING GRANULAR FILL. REMOVAL OF ALL EQUIPMENT AND PIPING FOLLOWING EVAPORATIVE DEWATERING.
 - f. DAM MATERIAL HANDLING AND DISPOSAL PLAN.
 - g. VEGETATION ESTABLISHMENT PLAN
3. A SPILL CONTAINMENT KIT SHALL BE ON SITE AND CREWS SHALL BE TRAINED IN ITS USE.
4. BIODEGRADABLE HYDRAULIC FLUID SHALL BE INSTALLED INTO EACH PIECE OF HEAVY MACHINERY WORKING WITHIN 50 FEET OF THE RIVER.

MEASUREMENT

"TESC, SPCC PLAN AND IMPLEMENTATION," INCLUDING FISH RESCUE AND EXCLUSION, WILL BE MEASURED BY LUMP SUM. "SURFACE WATER DIVERSION", HDPE PIPING, DIVERSION DAMS, TEMPORARY PUMPING, GRAVITY DIVERSION AND REMOVAL OF HDPE PIPING WILL BE MEASURED BY LUMP SUM. "INITIAL DRAWDOWN", INCLUDING SILT TURBIDITY CURTAIN, FLOATING INTAKES, HDPE PIPING TO AND FROM PUMPS, HIGH-HEAD PUMPS, SPRAYERS AND SPRAYER PLATFORMS AND REMOVAL OF ALL EQUIPMENT AND PIPING WILL BE MEASURED BY LUMP SUM. "EVAPORATIVE DEWATERING", INCLUDING SUMP PUMPS AND THEIR POWER SUPPLIES, HDPE PIPING TO AND FROM PUMPS, HIGH-HEAD PUMPS, SPRAYERS AND SPRAYER PLATFORMS AND REMOVAL OF ALL EQUIPMENT AND PIPING PLATFORMS WILL BE MEASURED BY LUMP SUM.

PAYMENT

PAYMENT SHALL BE CONSIDERED FULL COMPENSATION FOR ALL EQUIPMENT, LABOR, TOOLS, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK AS SPECIFIED. PAYMENT WILL BE MADE IN ACCORDANCE WITH SECTION 1-04.1 FOR THE FOLLOWING BID ITEMS: "TESC, SPCC PLAN AND IMPLEMENTATION", "SURFACE WATER DIVERSION", "INITIAL DRAWDOWN", AND "EVAPORATIVE DEWATERING" PER LUMP SUM.

ITEM 002 - MOBILIZATION

THIS ITEM SHALL CONSIST OF PREPARATION WORK AND OPERATIONS PERFORMED BY THE CONTRACTOR IN ACCORDANCE WITH THE PROVISIONS OF SECTION 1-09.7 OF THE WASHINGTON DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS (STANDARD SPECIFICATIONS). TEMPORARY SITE ACCESS SHALL BE ALONG ALIGNMENTS SHOWN IN THE PLANS. MINOR DEVIATIONS TO THE ALIGNMENTS MAY OCCUR AS DIRECTED BY THE OWNER TO PRESERVE SENSITIVE AREAS OR TREES, OR OTHER FEATURES IDENTIFIED IN THE FIELD. DEVIATIONS FROM THE ALIGNMENTS SHOWN IN THE PLANS SHALL BE APPROVED BY OWNER PRIOR TO USE. SITE ACCESS ROUTES SHALL BE MAINTAINED AND RESTORED TO ORIGINAL OR BETTER CONDITION.

MEASUREMENT AND PAYMENT

PAYMENT FOR MOBILIZATION SHALL BE BY THE LUMP SUM CONTRACT PRICE FOR, 'MOBILIZATION', PARTIAL PAYMENTS WILL BE MADE AS IN ACCORDANCE WITH SECTION 1-09.9 OF THE STANDARD SPECIFICATIONS. PAYMENT SHALL BE CONSIDERED FULL COMPENSATION FOR ALL EQUIPMENT, LABOR, TOOLS, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK AS SPECIFIED.

ITEM 003 - CLEARING AND GRUBBING

DESCRIPTION

THIS ITEM CONSISTS OF CLEARING, AND GRUBBING, AND SALVAGING MATERIAL IN ACCORDANCE WITH SECTION 2-01 OF THE STANDARD SPECIFICATIONS, AND AS AMENDED BY THESE SPECIAL PROVISIONS.

1. GRUBBING IS NECESSARY AT ACCESS ROADS, STAGING AND STOCKPILE AREAS AND AT SPRAYER PLATFORM LOCATIONS, WHERE SHOWN ON THESE DRAWINGS.
2. CLEARING AND GRUBBING SHALL TIP OVER TREES TO BE REMOVED AND SALVAGED AS SLASH, SALVAGED SMALL TREES OR SALVAGED LARGE TREES. OPEN BURNING OF RESIDUE FROM LAND CLEARING IS NOT ALLOWED.
3. SLASH SHALL BE CONSIDERED ANY NATIVE VEGETATION WITH TRUNKS LESS THAN 10 INCHES DIAMETER.

MEASUREMENT

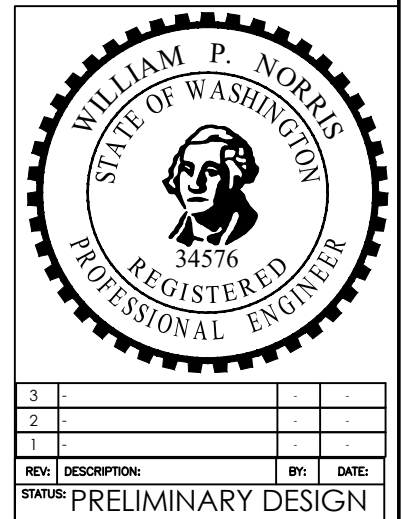
"CLEARING AND GRUBBING" WILL BE MEASURED PER ACRE.

PAYMENT

"CLEARING AND GRUBBING", PER ACRE.

ABBREVIATIONS

APPROX	APPROXIMATE
BMP	BEST MANAGEMENT PRACTICES
CMP	CORRUGATED METAL PIPE
CY	CUBIC YARDS
DIA	DIAMETER
DBH	DIAMETER BREAST HEIGHT
EA	EACH
ELEV	ELEVATION
FT	FEET
GIS	GEOGRAPHICAL INFORMATION SYSTEM
HORIZ	HORIZONTAL
IN	INCHES
INV	INVERT
LCFEG	LOWER COLUMBIA FISH ENHANCEMENT GROUP
LWM	LARGE WOODY MATERIAL
MAX	MAXIMUM
MIN	MINIMUM
NMFS	NATIONAL MARINE FISHERIES SERVICE
OHW	ORDINARY HIGH WATER
%	PERCENT
RM	RIVER MILE
RTK	REAL TIME KINEMATICS
SFM	STRUCTURE FROM MOTION
STA	STATION
TESC	TEMPORARY EROSION AND SEDIMENT CONTROL
TBD	TO BE DETERMINED
TYP	TYPICAL
VERT	VERTICAL
WDFW	WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
WSE	WATER SURFACE ELEVATION
YR	YEAR



SITE: KWONEESUM DAM REMOVAL DESIGN			
TITLE: GENERAL NOTES			
SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO: -	DRAWING NO: 3	Total Sheets: 80	

ITEM 004 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS

DESCRIPTION

THIS ITEM CONSISTS OF REMOVAL OF THE KWONEESUM DAM AND ITS APPURTENANCES, INCLUDING SPILLWAY.

1. DAM AND SPILLWAY REMOVAL WILL BE INCLUDED IN THE REQUIREMENTS OF SECTION 2.02 REMOVAL OF STRUCTURES AND OBSTRUCTIONS.
2. DAM REMOVAL AS SHOWN ON THESE DRAWINGS.
3. REUSE OF EXISTING ROCK LOCATED IN THE DAM AND THE SPILLWAY FOR ROCK EMBANKMENT AND CHANNEL EXCAVATION.
4. REMOVE AND DISPOSE, OFF SITE, OF ALL DEMOLISHED REINFORCED CONCRETE MATERIALS.

MEASUREMENT

“REMOVAL OF DAM AND SPILLWAY” APPROXIMATELY 20,000 CY (IN PLACE) INCLUDING 6,000 CY (IN PLACE) OF REINFORCED CONCRETE WILL BE MEASURED BY LUMP SUM.

PAYMENT

“REMOVAL OF DAM AND SPILLWAY”, LUMP SUM.

ITEM 005 ROADWAY EXCAVATION AND EMBANKMENT

DESCRIPTION

THIS ITEM CONSISTS OF EXCAVATING, LOADING, HAULING, PLACING, AND EMBANKMENT COMPACTING, OR OTHERWISE PLACEMENT OF THE MATERIAL IN ACCORDANCE WITH SECTION 2-03 OF THE STANDARD SPECIFICATIONS, AND AS AMENDED BY THESE SPECIAL PROVISIONS.

1. PORTIONS OF WORK WILL BE IN WATER. THE CONTRACTOR IS ADVISED THAT WATER WILL BE ENCOUNTERED THROUGHOUT EXCAVATION AREA.
2. THIS ITEM INCLUDES DETAIL GRADING TO SHAPE OF EXCAVATION AS SHOWN IN THESE DRAWINGS.
3. THE FOLLOWING PROVISION IN SECTION 2-03.3(3) "ROCK EXCAVATION - WHEN THE CONTRACTOR FINDS ROCK OR OTHER HARD MATERIAL AT THE SUBGRADE ELEVATION, IT SHALL BE EXCAVATED THE FULL WIDTH OF THE ROADBED TO AT LEAST 6 INCHES BELOW SUBGRADE, THEN BACKFILLED WITH ROCK FRAGMENTS, GRAVEL, OR OTHER FREE-DRAINING MATERIAL NOT MORE THAN 4 INCHES IN DIAMETER." SHALL BE REMOVED.
4. ADD THE FOLLOWING PROVISIONS TO SECTION 2-03.3(14), “ACCESS ROADS IN THE FOOTPRINT OF THE EXISTING RESERVOIR SHALL BE CONSIDERED ROCK EMBANKMENTS. ALL OTHER FILL IN THE RESERVOIR SHALL BE CONSIDERED EARTH EMBANKMENT.”
5. ADD THE FOLLOWING PROVISION TO SECTION 2-03.3(14)C, “EARTH EMBANKMENTS SHALL USE COMPACTION METHOD A.
6. ADD THE FOLLOWING PROVISION TO SECTION 2-03.3(14)E, “THE SLURRY LOCATED AT THE BOTTOM OF THE RESERVOIR SHALL BE CONSIDERED UNSUITABLE FOUNDATION EXCAVATION.” THE FINE SOILS (SILTS AND CLAYS) LOCATED AT THE BOTTOM OF THE RESERVOIR SHALL BE INITIALLY DEWATERED THROUGH THE EVAPORATIVE DEWATERING PROCESS INDICATED ON THE DRAWINGS. THE FINE SOILS (SILTS AND CLAYS) SHALL BE FURTHER DEWATERED BY PLACING THEM WITHIN CONTAINMENT AREAS ALONG THE EDGE OF THE DRAINED RESERVOIR AND ALLOWING THEM TO DRAIN FOR A PERIOD OF TIME. THE DEWATERED FINE SOILS SHALL BE MIXED WITH COMMON BORROW MATERIALS AND THEN SPREAD WITHIN PROPOSED UPLAND AND RIPARIAN AREAS IN THE FORMER RESERVOIR FOOTPRINT TO PROVIDE A GROWING MEDIUM FOR NATIVE VEGETATION."
7. ADD THE FOLLOWING PROVISION TO SECTION 2-03.3(14)J, “SALVAGE OF DELTAIC MATERIALS LOCATED WHERE TRIBUTARY CHANNELS ENTER THE EXISTING RESERVOIR SHALL BE CONSIDERED GRAVEL BORROW INCLUDING HAUL.
8. ADD THE FOLLOWING PROVISION TO SECTION 2-03.3(14)K, “SALVAGE OF EARTH AND ROCK MATERIALS LOCATED IN THE DAM CONSTRUCTION SPOILS PILE SHALL BE CONSIDERED SELECT OR COMMON BORROW INCLUDING HAUL. THE SORTING, STOCKPILE, HAUL AND PLACEMENT OF STREAMBED COBBLES AND STREAMBED BOULDERS SHALL BE INCLUDED IN IN THE VOLUME OF SELECT AND COMMON BORROW. MATERIALS FROM THE ORIGINAL DAM CONSTRUCTION SPOILS PILE SHALL BE FURTHER SORTED IN 12-INCH

MINUS COBBLE, AS DEFINED IN 9.03.11(2) AND STREAMBED BOULDERS,AS DEFINED IN 9.03.11(3). PLACING FILL SOURCED FROM SELECT AND COMMON BORROW, INCLUDING COBBLE AND STREAMBED BOULDERS SHALL BE CONSIDERED INCIDENTAL TO “SELECT BORROW INCLUDING HAUL”, “COMMON BORROW INCLUDING HAUL”, AND “DAM AND SPILLWAY DEMOLITION”.

9. REPLACE SECTION 2-03.3(14)M WITH THE FOLLOWING, “CHANNEL EXCAVATION WILL INCLUDE PLACEMENT OF COBBLES AND STREAMBED BOULDERS, GRAVEL BORROW INCLUDING HAUL AND SELECT BORROW INCLUDING HAUL, INCLUDING COBBLES AND SREAMBED BOULDERS, IN EXISTING AND PROPOSED CHANNELS. THESE MATERIALS SHALL BE SOURCED FROM DELTAIC DEPOSITS, THE DAM CONSTRUCTION SPOILS PILE AND DAM AND SPILLWAY DEMOLITION. CHANNEL EXCAVATION SHALL BE CONSIDERED INCIDENTAL TO “SELECT BORROW INCLUDING HAUL”, “COMMON BORROW INCLUDING HAUL”, “GRAVEL BORROW INCLUDING HAUL”, AND “DAM AND SPILLWAY DEMOLITION.” CHANNEL EXCAVATION INCLUDING HAUL SHALL INCLUDE PROVIDING AND INSTALLING IMPORTED STREAMBED GRAVEL. IMPORTED STREAMBED GRAVEL SHALL CONSIST OF 50% BY WEIGHT STREAMBED SEDIMENT DEFINED IN 9-03.11(1) AND 50% (BY WEIGHT) 4" COBBLES DERINED IN 9-03.11(2)."
10. REPLACE THE FIRST PARAGRAPH IN SECTION 2-03.4, WITH THE FOLLOWING, “COMMON BORROW, SELECT BORROW AND GRAVEL BORROW ITEMS WILL BE MEASURED BY THE CUBIC YARD. COMMON BORROW, SELECT BORROW AND GRAVEL BORROW MATERIALS WILL BE MEASURED IN THE POSITION THEY OCCUPIED BEFORE THE EXCAVATION WAS PERFORMED. AN ORIGINAL GROUND MEASUREMENT WILL BE TAKEN USING CROSS-SECTION OR DIGITAL TERRAIN MODELING SURVEY TECHNIQUES. FOR ROADWAY EXCAVATION THE ORIGINAL GROUND WILL BE COMPARED WITH THE PLANNED FINISHED SECTION SHOWN IN THE PLANS. SLOPE/GROUND INTERCEPT POINTS DEFINING THE LIMITS OF THE MEASUREMENT WILL BE AS STAKED. CHANNEL EXCAVATION WILL ONLY INCLUDE ROCK FILLS PLACED IN EXISTING AND PROPOSED CHANNELS AND SHALL BE INCIDENTAL TO OBTAINING THEIR SOURCE MATERIALS FROM EITHER, “SELECT BORROW INCLUDING HAUL”, “COMMON BORROW INCLUDING HAUL”, “GRAVEL BORROW INCLUDING HAUL”, OR “DAM AND SPILLWAY DEMOLITION.”. FOR COMMON BORROW, SELECT BORROW AND GRAVEL BORROW ITEMS, THE ORIGINAL GROUND WILL BE COMPARED WITH A SURVEY OF THE EXCAVATION AREA TAKEN AFTER THE WORK IS COMPLETED. WHEN THE CONTRACTING AGENCY REQUIRES EXCAVATED MATERIAL TO BE STOCKPILED, RE-EXCAVATED AND MOVED AGAIN, A SECOND MEASUREMENT WILL BE MADE, ADDING QUANTITY FOR THE SAME ITEM USED IN THE ORIGINAL EXCAVATION. THE SECOND MEASUREMENT WILL BE A COMPARISON OF THE ORIGINAL CROSS-SECTION OF THE STOCKPILE WITH A CROSS-SECTION OF THE STOCKPILE AREA AFTER THE SECOND EXCAVATION IS COMPLETED. FOR UNSUITABLE FOUNDATION EXCAVATION, THE WET VOLUME OF THE SLURRY AT THE BOTTOM OF THE RESERVOIR IS ESTIMATED TO BE 30,000 CY. UNSUITABLE FOUNDATION EXCAVATION VOLUME IS ANTICIPATED TO BE LESS THAN 10,000 CY FOLLOWING DEWATERING. UNSUITABLE FOUNDATION EXCAVATION WILL NOT BE MEASURED AS IT WILL BE PAID AS A LUMP SUM AND SHALL INCLUDE SUBGRADE EXCAVATION FOR SPRAYER PLATFORMS.”
11. THE FOLLOWING PROVISIONS IN SECTION 2-03.4 "GRAVEL BORROW AND SELECT BORROW WILL BE MEASURED BY THE CUBIC YARD OR TON. MEASUREMENT BY CUBIC YARD WILL BE MADE IN THE HAULING VEHICLE." SHALL NOT APPLY.
12. THE FOLLOWING PROVISIONS IN SECTION 2-03.5 "WHEN THE ENGINEER ORDERS WORK ACCORDING TO SECTION 2-03.3(3), UNIT CONTRACT PRICES SHALL APPLY UNLESS THE WORK DIFFERS MATERIALLY FROM THE EXCAVATION ABOVE SUBGRADE, THEN PAYMENT WILL BE IN ACCORDANCE WITH Section 1-04.4." SHALL NOT APPLY.
13. THE FOLLOWING PROVISIONS IN SECTION 2-03.5 "UNSUITABLE FOUNDATION EXCAVATION INCL. HAUL, PER CUBIC YARD" SHALL BE REPLACED BY THE FOLLOWING: "UNSUITABLE FOUNDATION EXCAVATION INCL. HAUL, LUMP SUM.
14. THE FOLLOWING PROVISIONS IN SECTION 2-03.5 "UNSUITABLE FOUNDATION EXCAVATION, PER CUBIC YARD", “SELECT BORROW INCL. HAUL, PER TON”, AND “GRAVEL BORROW INCL. HAUL, PER TON” SHALL NOT APPLY.
15. NO WORK SHALL OCCUR OUTSIDE OF THE LIMITS OF DISTURBANCE SHOWN IN THE PLANS UNLESS AUTHORIZED BY THE OWNER.

MEASUREMENT

COMMON BORROW, SELECT BORROW, STREAMBED GRAVEL INCLUDING HAUL, AND GRAVEL BORROW ITEMS WILL BE MEASURED BY THE CUBIC YARD. PLACEMENT OF SALVAGED ROCK AND EARTH EMBANKMENTS SHALL BE INCIDENTAL TO DAM DEMOLITION, COMMON BORROW, SELECT BORROW AND GRAVEL BORROW ITEMS. COMMON BORROW,

SELECT BORROW AND GRAVEL BORROW MATERIALS WILL BE MEASURED IN THE POSITION IT OCCUPIED BEFORE THE EXCAVATION WAS PERFORMED. COMMON, SELECT AND GRAVEL BORROW MATERIALS SHALL BE SORTED AND STOCKPILED PRIOR TO PLACEMENT. AN ORIGINAL GROUND MEASUREMENT WILL BE TAKEN USING CROSS-SECTION OR DIGITAL TERRAIN MODELING SURVEY TECHNIQUES. SLOPE/GROUND INTERCEPT POINTS DEFINING THE LIMITS OF THE MEASUREMENT WILL BE AS STAKED. FOR COMMON BORROW, SELECT BORROW AND GRAVEL BORROW ITEMS, THE ORIGINAL GROUND WILL BE COMPARED WITH A SURVEY OF THE EXCAVATION AREA TAKEN AFTER THE WORK IS COMPLETED. WHEN THE CONTRACTING AGENCY REQUIRES EXCAVATED MATERIAL TO BE STOCKPILED, RE-EXCAVATED AND MOVED AGAIN, A SECOND MEASUREMENT WILL BE MADE, ADDING QUANTITY FOR THE SAME ITEM USED IN THE ORIGINAL EXCAVATION. THE SECOND MEASUREMENT WILL BE A COMPARISON OF THE ORIGINAL CROSS-SECTION OF THE STOCKPILE WITH A CROSS-SECTION OF THE STOCKPILE AREA AFTER THE SECOND EXCAVATION IS COMPLETED. FOR UNSUITABLE FOUNDATION EXCAVATION, THE WET VOLUME OF THE SLURRY AT THE BOTTOM OF THE RESERVOIR IS ESTIMATED TO BE 30,000 CY. UNSUITABLE FOUNDATION EXCAVATION VOLUME IS ANTICIPATED TO BE 5,000 TO 10,000 CY FOLLOWING DEWATERING. UNSUITABLE FOUNDATION EXCAVATION INCLUDING. HAUL WILL NOT BE MEASURED AS IT WILL BE PAID AS A LUMP SUM AND SHALL INCLUDE SUBGRADE EXCAVATION FOR SPRAYER PLATFORMS.

PAYMENT

PAYMENT SHALL BE CONSIDERED FULL COMPENSATION FOR ALL EQUIPMENT, LABOR, TOOLS, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK AS SPECIFIED. PAYMENT WILL BE MADE IN ACCORDANCE WITH SECTION 1-04.1 FOR THE FOLLOWING BID ITEMS: “COMMON BORROW INCLUDING. HAUL”, “SELECT BORROW INCLUDING. HAUL”, “GRAVEL BORROW INCLUDING. HAUL”, STREAMBED GRAVEL INCLUDING HAUL, AND “EMBANKMENT COMPACTION” ITEMS WILL BE PAID PER CUBIC YARD. "UNSUITABLE FOUNDATION EXCAVATION INCLUDING HAUL" WILL BE PAID AS A LUMP SUM.

ITEM 006 SMALL SALVAGED TREES

DESCRIPTION

THIS ITEM CONSISTS OF REMOVING TREES 10 TO 20 DBH, INCLUDING ROOTWADS. TOPS AND BROKEN BRANCHES SHALL BE SALVAGED AS SLASH. THIS ITEM SHALL INCLUDE DIGGING AROUND ROOTS AND PUSHING OVER EXISTING TREES, TRANSPORTING SMALL SALVAGED TREES AND PLACING SMALL SALVAGED TREES. SALVAGED TREES SHALL BE LEFT AT THEIR FULL LENGTH, EXCEPT TOPS LESS THAN 6 INCHES IN DIAMETER. STRAW BALES PLACED WITH LARGE WOOD STRUCTURES AND EXCAVATION TO PLACE LARGE WOOD IN THE RESERVOIR AND DAM FOOTPRINT SHALL BE INCIDENTAL TO “SMALL SALVAGED TREES.”

MEASUREMENT

“SMALL SALVAGED TREES” WILL BE MEASURED BY EACH TREE.

PAYMENT

“SMALL SALVAGED TREES” WILL BE PAID FOR ON A PER EACH BASIS.

ITEM 007 LARGE SALVAGED TREES

DESCRIPTION

THIS ITEM CONSISTS OF REMOVING TREES OVER 20 DBH, INCLUDING ROOTWADS. TOPS AND BROKEN BRANCHES SHALL BE SALVAGED AS SLASH. THIS ITEM SHALL INCLUDE DIGGING AROUND ROOTS AND PUSHING OR PULLING OVER EXISTING TREES, TRANSPORTING LARGE SALVAGED TREES AND PLACING LARGE SALVAGED TREES INCLUDING ANCHORING MATERIALS (CHAIN, THREADED REBAR, EPOXY, NUTS AND WASHERS. SALVAGED TREES SHALL BE LEFT AT THEIR FULL LENGTH, EXCEPT TOPS LESS THAN 6 INCHES IN DIAMETER. STRAW BALES PLACED WITH LARGE WOOD STRUCTURES AND EXCAVATION TO PLACE LARGE WOOD IN WILDBOY CREEK DOWNSTREAM OF THE DAM SHALL BE INCIDENTAL TO “LARGE SALVAGED TREES.”

MEASUREMENT

“LARGE SALVAGED TREES” WILL BE MEASURED BY EACH TREE. LARGE SALVAGED TREES WILL BE USED AS KEY PIECES IN CHANNEL SPANNING LARGE WOOD STRUCTURES. LARGE SALVAGED TREES MAY BE CUT, AS

APPROVED BY THE ENGINEER, AND USED AS SILL LOGS, ROOT WADS, SLASH OR OTHER CLASSIFICATION USED IN THESE DRAWINGS. NO SEPARATE MEASUREMENT WILL BE MADE FOR HOW LARGE SALVAGED TREES ARE INSTALLED.

PAYMENT

“LARGE SALVAGED TREES” WILL BE PAID FOR ON A PER EACH BASIS.

ITEM 008 IMPORTED LOGS

DESCRIPTION

THIS ITEM CONSISTS OF PROVIDING AND INSTALLING LOGS OVER 14 DBH. LOGS USED FOR FLOATING INTAKES AND REUSED AS LARGE WOOD SHALL ONLY BE PAID FOR ONCE.

MEASUREMENT

“IMPORTED LOGS” WILL BE MEASURED BY EACH LOG.

PAYMENT

“IMPORTED LOGS” WILL BE PAID FOR ON A PER EACH BASIS.

ITEM 009 OWNER PROVIDED LARGE WOOD

DESCRIPTION

THIS ITEM CONSISTS OF INSTALLING LARGE WOOD PROVIDED BY THE OWNER. LARGE WOOD SHALL BE OVER 14 DBH. LOGS USED FOR FLOATING INTAKES AND REUSED AS LARGE WOOD SHALL ONLY BE PAID FOR ONCE.

MEASUREMENT

“OWNER PROVIDED LARGE WOOD” WILL BE MEASURED BY EACH PIECE OF LARGE WOOD.

PAYMENT

“OWNER PROVIDED LARGE WOOD” WILL BE PAID FOR ON A PER EACH BASIS.

ITEM 010 SEEDING

DESCRIPTION

THIS ITEM CONSISTS OF FURNISHING AND PLACING PERMANENT SEED IN ACCORDANCE WITH SECTION 8-01 OF THE STANDARD SPECIFICATIONS, AND AS AMENDED BY THESE SPECIAL PROVISIONS. ANY TEMPORARY SEEDING SHALL BE INCLUDED IN ITEM 001 TESC, SPCC PLAN AND IMPLEMENTATION.

MEASUREMENT

“SEEDING” WILL BE MEASURED PER ACRE.

PAYMENT

“NATIVE SEED MIX” PER ACRE ACTUALLY PLACED AT THE CUMULATIVE, AND SPECIES SPECIFIC, LBS/ACRE RATE SPECIFIED ON THE DRAWINGS.

ITEM 011 PLANTING

DESCRIPTION

THIS ITEM CONSISTS OF FURNISHING AND PLANTING CUTTINGS, LIVE POLES, AND CONTAINER PLANTS IN ACCORDANCE WITH SECTION 8-02 OF THE STANDARD SPECIFICATIONS, AND AS AMENDED BY THESE SPECIAL PROVISIONS.

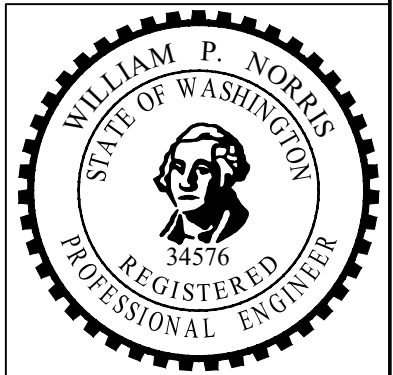
1. THE CONTRACTOR SHALL SUBMIT A WEED AND PEST CONTROL PLAN IN ACCORDANCE WITH SECTION 8-02.3(2)B.
2. THE CONTRACTOR SHALL SUBMIT A PLANT ESTABLISHMENT PLAN IN ACCORDANCE WITH SECTION 8-02.3(2)C.

MEASUREMENT

THE PAY QUANTITIES FOR PLANT MATERIALS WILL BE DETERMINED BY COUNT OF THE NUMBER OF SATISFACTORY PLANTS IN EACH CATEGORY ACCEPTED BY THE ENGINEER.

PAYMENT

“RED-OSIER DOGWOOD, CUTTING” PER EACH. "SITKA WILLOW, CUTTING" PER EACH. "SCOULER'S WILLOW, CUTTING" PER EACH. "SALMONBERRY, 1-GALLON CONTAINER" PER EACH. "RED ALDER, 1-GALLON CONTAINER" PER EACH. "BIG LEAF MAPLE, 1-GALLON CONTAINER" PER EACH. "MERTEN'S SEDGE, PLUG" PER EACH. "SMALLWING SEDGE, PLUG" PER EACH. "DAGGERLEAF RUSH, PLUG" PER EACH. "DOUGLAS FIR, -GALLON CONTAINER" PER EACH. "WESTERN RED CEDAR, 1-GALLON CONTAINER" PER EACH. "THIMBLEBERRY, 1-GALLON CONTAINER" PER EACH. "SALAL, 1-GALLON CONTAINER" PER EACH. "WESTERN SWORDFERN, 1-GALLON CONTAINER" PER EACH. "WESTERN BRACKENFERN, 1-GALLON CONTAINER" PER EACH.



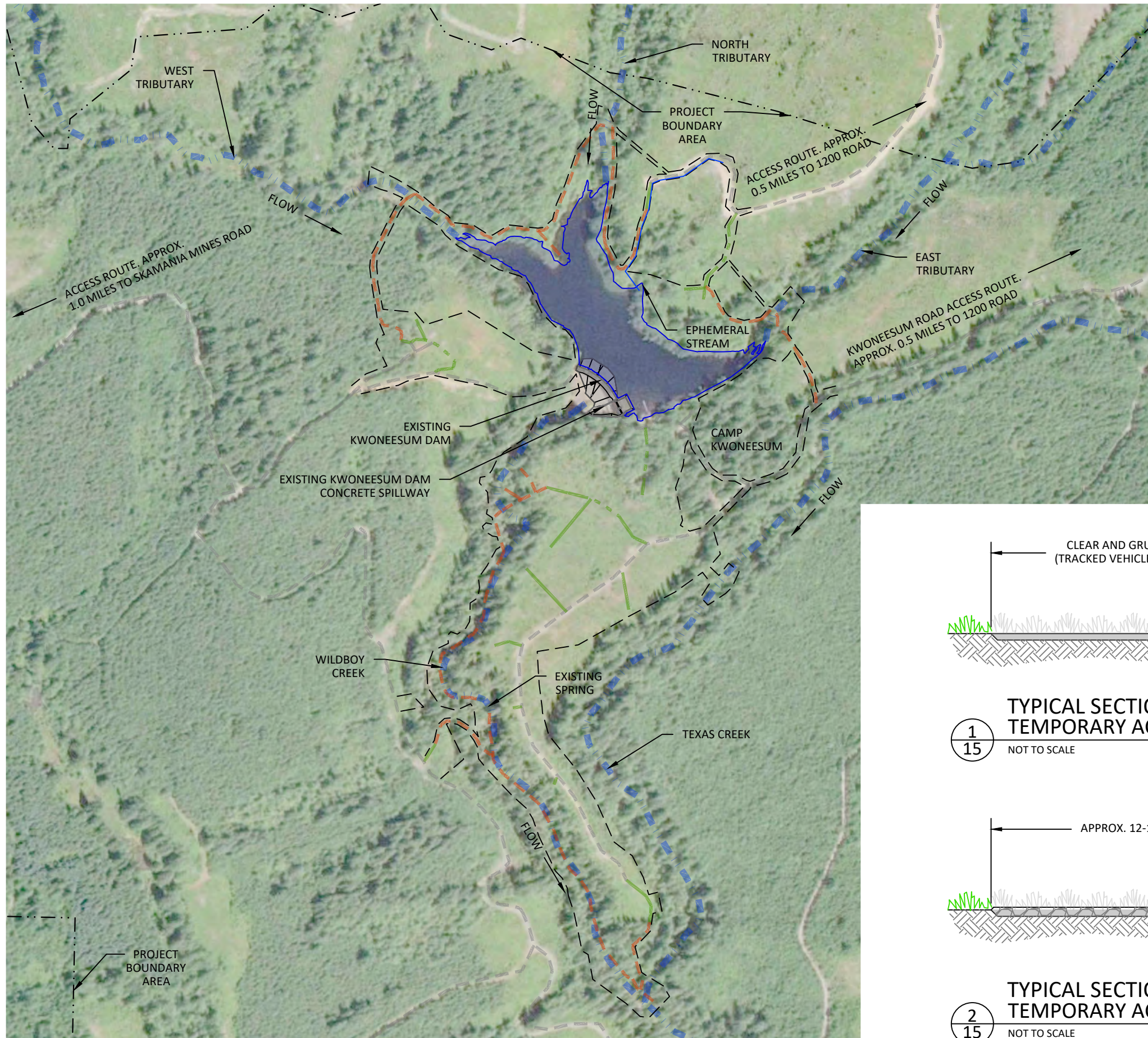
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STATUS: PRELIMINARY DESIGN			

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excellence

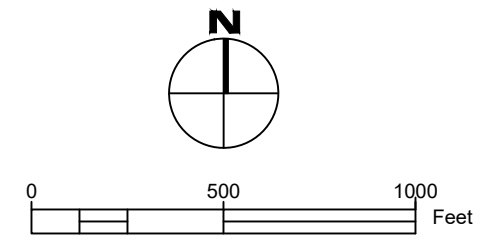
302 W. Steuben St. #6
Bingen, WA 98605 www.ers4life.com

CLIENT: **COWLITZ INDIAN TRIBE**
7700 26TH AVE
VANCOUVER, WA, 98665

SITE:	KWONEESUM DAM REMOVAL DESIGN		
TITLE:	GENERAL NOTES		
SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO: -	DRAWING NO: 4	Total Sheets: 80	

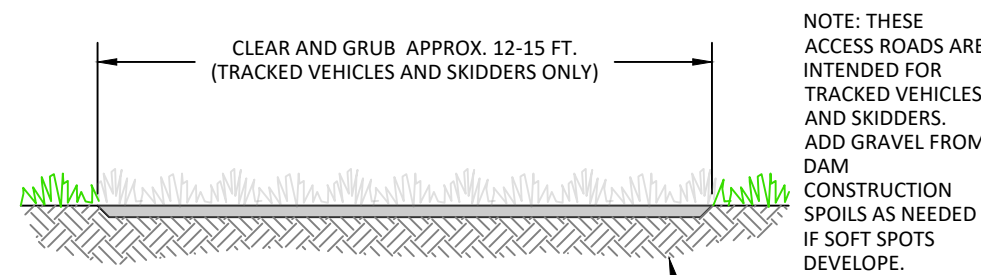


SITEMAP



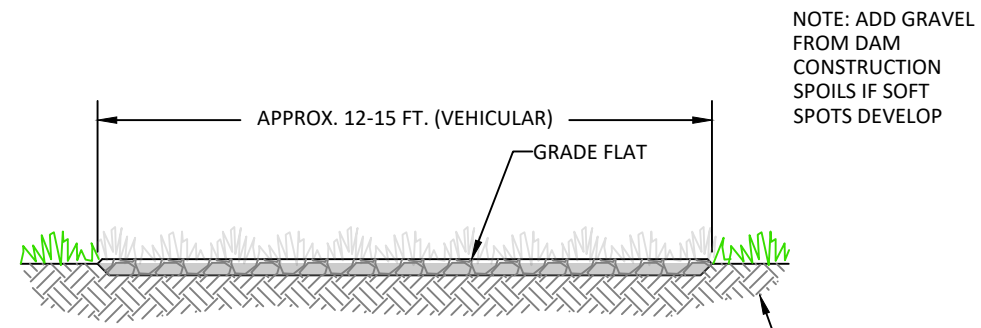
LEGEND

- EXISTING RIVER PATHWAYS
- EXISTING RESERVOIR
- EXISTING DAM AND SPILLWAY
- EXISTING FOREST ROAD
- PROPOSED TEMPORARY ACCESS ROADS (VEHICLES)
- PROPOSED TEMPORARY ACCESS ROADS (OFF ROAD)
- PROJECT BOUNDARY AREA
- LIMITS OF DISTURBANCE



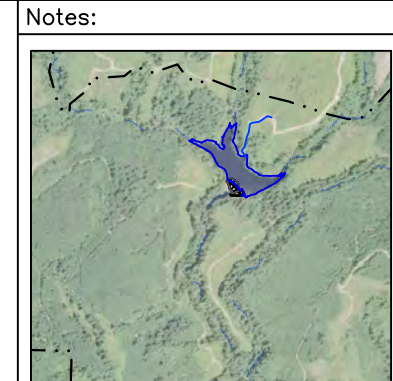
NOTE: THESE ACCESS ROADS ARE INTENDED FOR TRACKED VEHICLES AND SKIDDERS. ADD GRAVEL FROM DAM CONSTRUCTION SPOILS AS NEEDED IF SOFT SPOTS DEVELOPE.

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TYPICAL SECTION - PROPOSED TEMPORARY ACCESS ROADS (OFF ROAD)
NOT TO SCALE

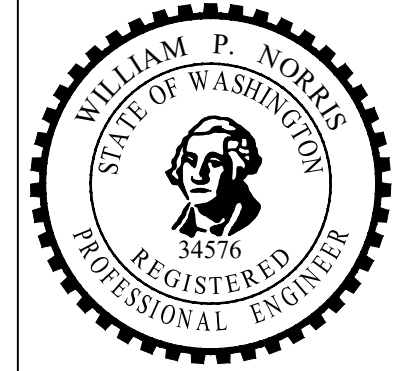


NOTE: ADD GRAVEL FROM DAM CONSTRUCTION SPOILS IF SOFT SPOTS DEVELOPE

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TYPICAL SECTION - PROPOSED TEMPORARY ACCESS ROADS (VEHICLES)
NOT TO SCALE



SHEET LOCATION



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STATUS: PRELIMINARY DESIGN			

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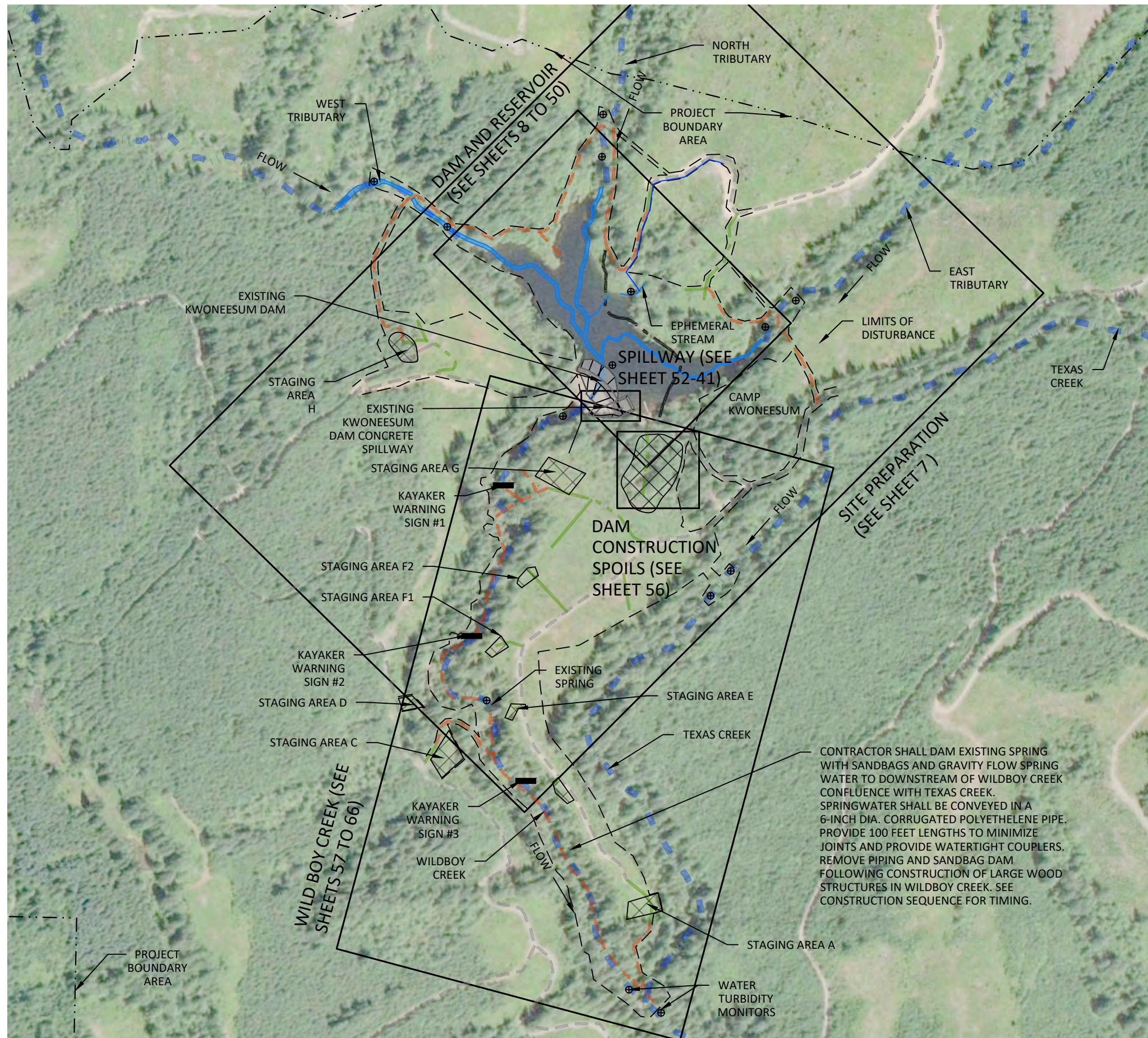
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7700 26TH AVE
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SITE: KWONEESUM DAM REMOVAL DESIGN

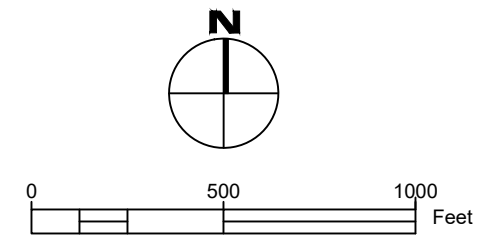
TITLE: PROJECT AREA AND SITE MAP

SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO: -	DRAWING NO: 5	Total Sheets: 80	



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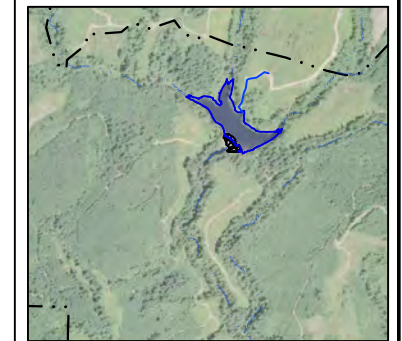
CONTRACTOR SHALL DAM EXISTING SPRING WITH SANDBAGS AND GRAVITY FLOW SPRING WATER TO DOWNSTREAM OF WILDBOY CREEK CONFLUENCE WITH TEXAS CREEK. SPRINGWATER SHALL BE CONVEYED IN A 6-INCH DIA. CORRUGATED POLYETHYLENE PIPE. PROVIDE 100 FEET LENGTHS TO MINIMIZE JOINTS AND PROVIDE WATERTIGHT COUPLERS. REMOVE PIPING AND SANDBAG DAM FOLLOWING CONSTRUCTION OF LARGE WOOD STRUCTURES IN WILDBOY CREEK. SEE CONSTRUCTION SEQUENCE FOR TIMING.



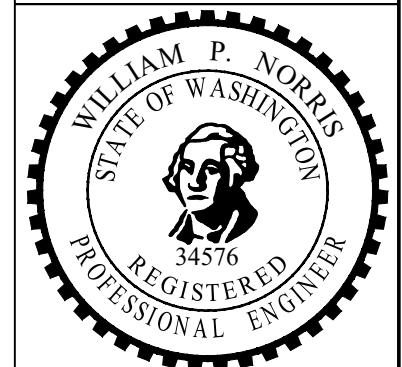
LEGEND

- EXISTING RIVER PATHWAYS
- EXISTING DAM AND SPILLWAY
- EXISTING FOREST ROAD
- PROPOSED TEMPORARY ACCESS ROADS (VEHICLES)
- PROPOSED TEMPORARY ACCESS ROADS (OFF ROAD)
- PROPOSED ACCESS ROADS (TO REMAIN)
- PROJECT BOUNDARY AREA
- PROPOSED TRIBUTARIES
- EPHEMERAL STREAM
- LIMITS OF DISTURBANCE
- STAGING AND STOCKPILE
- WATER TURBIDITY MONITORS
- KAYAKERS WARNING SIGNS

Notes:



SHEET LOCATION



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STATUS: PRELIMINARY DESIGN			

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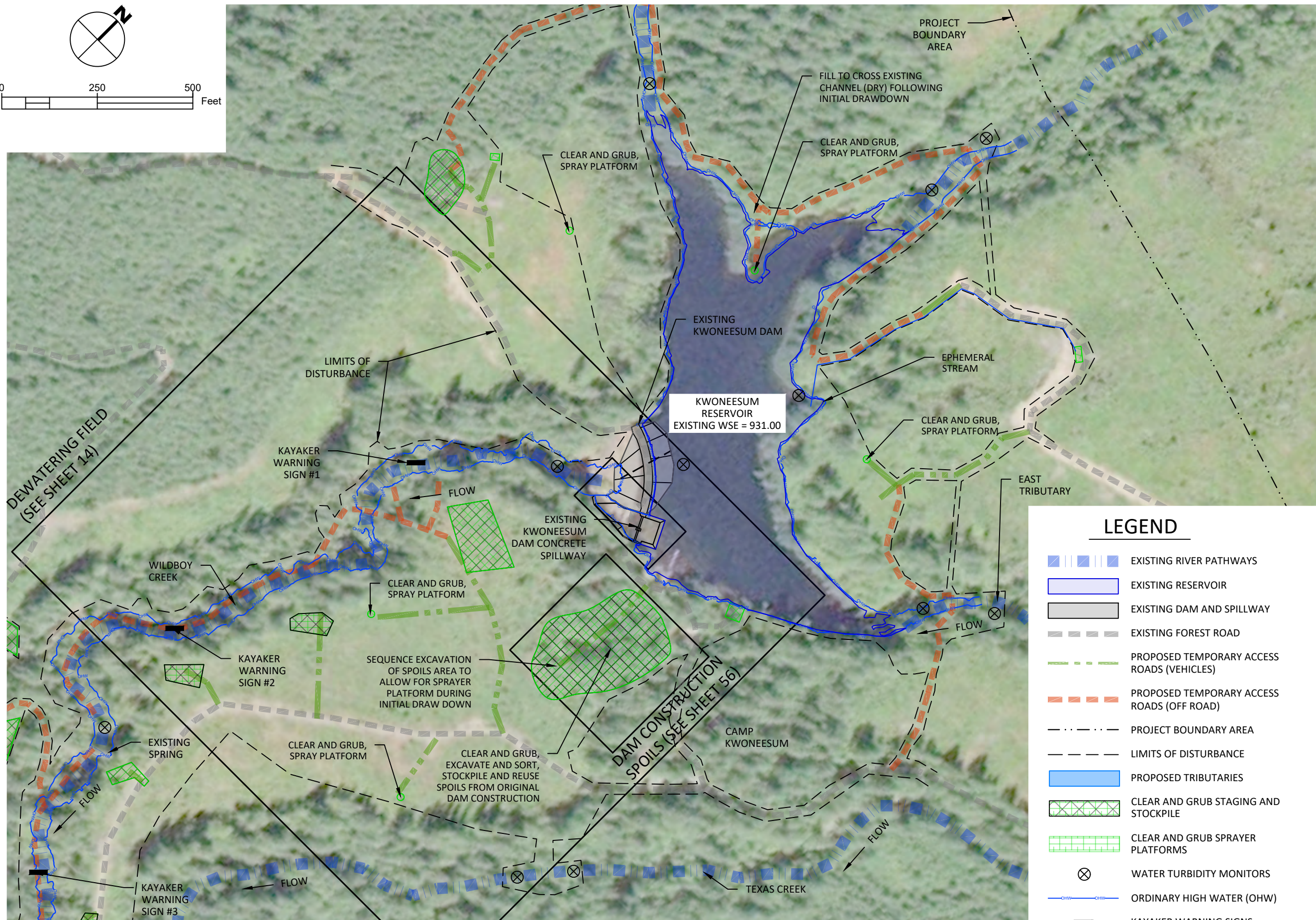
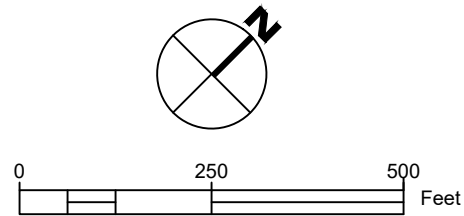
302 W. Steuben St. #6
Bingen, WA 98605 www.ers4life.com

CLIENT: COWLITZ INDIAN TRIBE
7700 26TH AVE
VANCOUVER, WA, 98665

SITE: KWONEESUM DAM
REMOVAL DESIGN

TITLE: PROJECT INDEX MAP

SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
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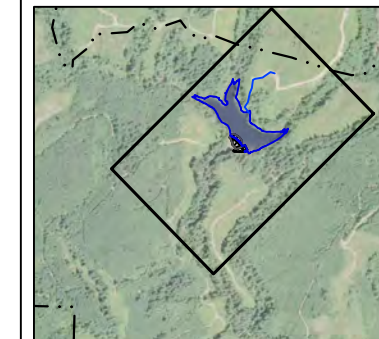


SITEMAP

LEGEND

- EXISTING RIVER PATHWAYS
- EXISTING RESERVOIR
- EXISTING DAM AND SPILLWAY
- EXISTING FOREST ROAD
- PROPOSED TEMPORARY ACCESS ROADS (VEHICLES)
- PROPOSED TEMPORARY ACCESS ROADS (OFF ROAD)
- PROJECT BOUNDARY AREA
- LIMITS OF DISTURBANCE
- PROPOSED TRIBUTARIES
- CLEAR AND GRUB STAGING AND STOCKPILE
- CLEAR AND GRUB SPRAYER PLATFORMS
- WATER TURBIDITY MONITORS
- ORDINARY HIGH WATER (OHW)
- KAYAKER WARNING SIGNS

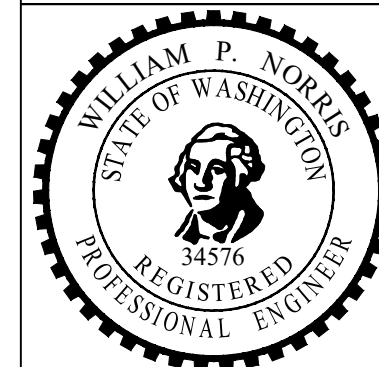
Notes:



SHEET LOCATION

NOTE : ALL STAGING AND STOCKPILE AREAS TO BE CLEARED AND GRUBBED.

RESERVOIR OHW AREA = 10.83 ACRES



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STATUS: PRELIMINARY DESIGN			

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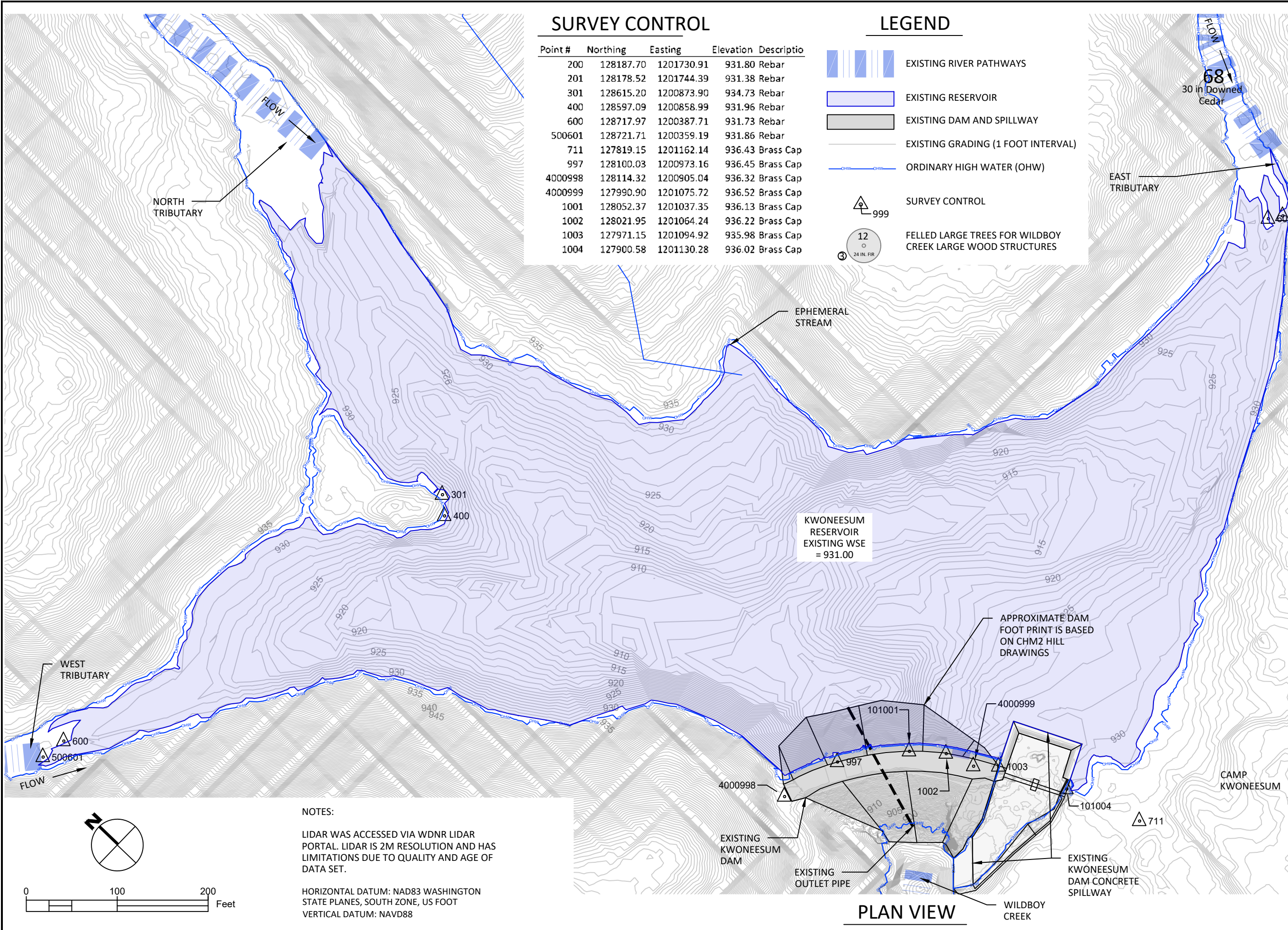
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www.ers4life.com

CLIENT: COWLITZ INDIAN TRIBE
7700 26TH AVE
VANCOUVER, WA, 98665

SITE: KWONEESUM DAM REMOVAL DESIGN

TITLE: SITE PREPARATION, CLEARING AND GRUBBING

SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO: -	DRAWING NO: 7	Total Sheets: 80	



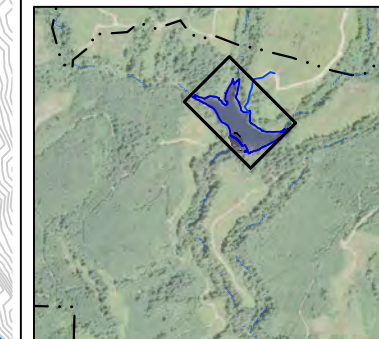
SURVEY CONTROL

Point #	Northing	Easting	Elevation	Description
200	128187.70	1201730.91	931.80	Rebar
201	128178.52	1201744.39	931.38	Rebar
301	128615.20	1200873.90	934.73	Rebar
400	128597.09	1200858.99	931.96	Rebar
600	128717.97	1200387.71	931.73	Rebar
500601	128721.71	1200359.19	931.86	Rebar
711	127819.15	1201162.14	936.43	Brass Cap
997	128100.03	1200973.16	936.45	Brass Cap
4000998	128114.32	1200905.04	936.32	Brass Cap
4000999	127990.90	1201075.72	936.52	Brass Cap
1001	128052.37	1201037.35	936.13	Brass Cap
1002	128021.95	1201064.24	936.22	Brass Cap
1003	127971.15	1201094.92	935.98	Brass Cap
1004	127900.58	1201130.28	936.02	Brass Cap

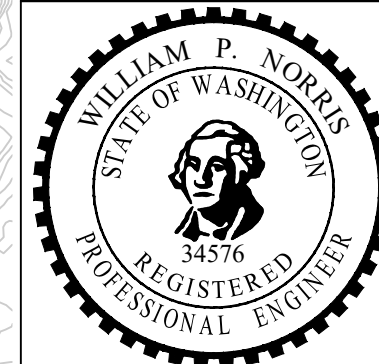
LEGEND

- EXISTING RIVER PATHWAYS
- EXISTING RESERVOIR
- EXISTING DAM AND SPILLWAY
- EXISTING GRADING (1 FOOT INTERVAL)
- ORDINARY HIGH WATER (OHW)
- SURVEY CONTROL
- FELLED LARGE TREES FOR WILDBOY CREEK LARGE WOOD STRUCTURES

Notes:



SHEET LOCATION



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7700 26TH AVE
VANCOUVER, WA, 98665

SITE: KWONEESUM DAM REMOVAL DESIGN

TITLE: KWONEESUM RESERVOIR AND DAM - EXISTING CONDITIONS

SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO: -	DRAWING NO: 8	Total Sheets: 80	

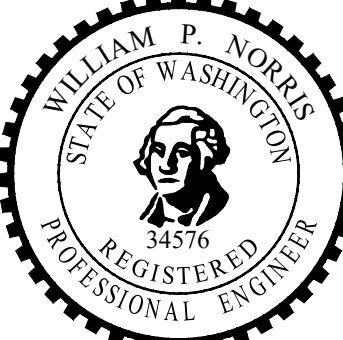
NOTES:

LIDAR WAS ACCESSED VIA WDNR LIDAR PORTAL. LIDAR IS 2M RESOLUTION AND HAS LIMITATIONS DUE TO QUALITY AND AGE OF DATA SET.

HORIZONTAL DATUM: NAD83 WASHINGTON STATE PLANES, SOUTH ZONE, US FOOT
VERTICAL DATUM: NAVD88

CONSTRUCTION SEQUENCE

1. CLEAR AND GRUB DAM CONSTRUCTION SPOILS PILE. EXCAVATE AND SORT DAM CONSTRUCTION SPOILS PILE INTO BOULDERS, COBBLE, GRAVEL, AND SOIL. STEP 1 IN THIS SEQUENCE WILL BE PERFORMED UNDER A SEPARATE CONTRACT PRIOR TO THE DAM REMOVAL CONTRACT. SEPARATE PILES OF BOULDERS, COBBLE, GRAVEL AND SOIL WILL BE LOCATED IN THE STAGING AND STOCKPILE AREA LOCATED SOUTHEAST OF THE RESERVOIR.
2. CLEAR AND GRUB STAGING AREAS, ACCESS ROADS, INCLUDING ACCESS AROUND THE RESERVOIR TO TRIBUTARY DIVERSION LOCATIONS, TEXAS CREEK DISCHARGE LOCATIONS, AND WILDBOY CREEK ACCESS LOCATIONS DOWNSTREAM OF DAM.
3. PLACE BLIND FLANGES AND GASKETS ON ENDS OF WELDED JOINT HDPE PIPE TO FLOAT DIVERSION PIPING CLOSE TO TRIBUTARY DIVERSION DAM LOCATIONS AT FULL RESERVOIR LEVEL. DRAG WELDED JOINT HDPE PIPING OUT OF THE WATER, WITH BLOCK AND TACKLE AND OTHER EQUIPMENT TO UPSTREAM END OF DIVERSION DAM LOCATIONS IN TRIBUTARIES, IDENTIFIED ON THE DRAWINGS. INSTALL TRIBUTARY DIVERSION PIPING FROM TRIBUTARY DIVERSION LOCATIONS TO TEXAS CREEK.
4. INSTALL TRIBUTARY DIVERSION DAMS AND PERFORM FISH EXCLUSION UPSTREAM OF DIVERSION DAMS. PLACE SCREENED PUMP INTAKES, PUMPS, GENERATORS, AND SPILL CONTAINMENT MEASURES. PLACE PUMPED OUTLET EROSION CONTROL MEASURES IN TEXAS CREEK PRIOR TO INITIATING PUMPED TRIBUTARY DIVERSIONS.
5. AN EXPERIENCED BIOLOGIST WILL LEAD A TEAM THAT BEGINS CLEARING FISH 3-5 DAYS PRIOR TO DIVERTING TRIBUTARY FLOWS. THE COWLITZ TRIBE EXPECTS TO HAVE MULTIPLE ELECTRO-FISHING CREWS AND WDFW VOLUNTEERS TO CLEAR THE 0.25 MILE REACH DOWNSTREAM OF THE DAM. ALL COLLECTED FISH AND AMPHIBIANS WILL BE SPECIATED AND ENUMERATED. AN INITIAL FISH RESCUE PASS WILL BE PERFORMED IN THE 0.25 MILE LONG REACH DOWNSTREAM OF THE DAM TO THE EXISTING SPRING LOCATED NEAR THE LEFT BANK OR WILDBOY CREEK. FISH CLEARING WILL OCCUR IN DEFINED SECTIONS/SUB REACHES BY USING SEINES AS BLOCK NETS.
6. DIVERT TRIBUTARY FLOWS EARLY IN THE MORNING TO CONCENTRATE REMAINING FISH IN RESIDUAL POOLS IN THE 0.25 MILE REACH DOWNSTREAM OF THE DAM. SIMULTANEOUSLY, BEGIN THE SECOND ROUND OF FISH CLEARING AS THE 0.25 MILE REACH DOWNSTREAM OF THE DAM BEGINS TO DEWATER. THE CONTRACTOR SHALL ASSIST BY PUMPING DOWN EACH RESIDUAL POOL WITH A NMFS APPROVED SCREENED INTAKE WHILE FISH RESCUE IS PERFORMED IN EACH REMAINING POOL. THE COWLITZ TRIBE EXPECTS TO HAVE MULTIPLE ELECTRO-FISHING CREWS AND WDFW VOLUNTEERS TO CLEAR THE 0.25 MILE REACH DOWNSTREAM OF THE DAM. ALL COLLECTED FISH AND AMPHIBIANS WILL BE SPECIATED AND ENUMERATED. THE SECOND PASS OF FISH CLEARING IS EXPECTED TO TAKE AN ADDITIONAL 2-4 DAYS TO FULLY CLEAR FISH FROM THE 0.25 REACH DOWNSTREAM OF THE DAM.
7. AFTER FISH ARE CLEARED FROM THE 0.25 MILE REACH DOWNSTREAM OF THE DAM, BEGIN CLEARING FISH FROM THE 0.25 MILE REACH FROM THE EXISTING SPRING TO THE CONFLUENCE WITH TEXAS CREEK. THE FIRST PASS OF FISH CLEARING WILL OCCUR IN THIS REACH WHILE THE SPRING IS STILL FLOWING TO THE CONFLUENCE WITH TEXAS CREEK. FISH CLEARING WILL OCCUR IN DEFINED SECTIONS/SUB REACHES BY USING SEINES AS BLOCK NETS. THE COWLITZ TRIBE EXPECTS TO HAVE MULTIPLE ELECTRO-FISHING CREWS AND WDFW VOLUNTEERS TO CLEAR THE 0.25 MILE REACH TO TEXAS CREEK. ALL COLLECTED FISH AND AMPHIBIANS WILL BE SPECIATED AND ENUMERATED. THE FISH CLEARING IS EXPECTED TO TAKE AN ADDITIONAL 3-5 DAYS TO FULLY CLEAR FISH FROM THE 0.25 REACH TO THE CONFLUENCE WITH TEXAS CREEK.
8. INSTALL A SANDBAG DAM TO FORM A SPRING COLLECTION POOL DOWNSTREAM OF THE SPRING AND INSTALL A GRAVITY PIPELINE ALONG THE BANK OF WILDBOY CREEK TO CONVEY WATER TO DOWNSTREAM OF THE CONFLUENCE WITH TEXAS CREEK. DEWATER THE 0.25 MILE REACH FROM THE EXISTING SPRING TO THE CONFLUENCE WITH TEXAS CREEK AND PERFORM A SECOND PASS OF FISH CLEARING CONCURRENTLY. THE CONTRACTOR SHALL ASSIST BY PUMPING DOWN EACH RESIDUAL POOL WITH A NMFS APPROVED SCREENED INTAKE WHILE FISH RESCUE IS PERFORMED IN EACH REMAINING POOL. INSTALL BLOCK NETS JUST UPSTREAM OF TEXAS CREEK IF NEEDED.
9. PLACE SILT CURTAIN IN RESERVOIR. PLACE FLOATING INTAKES, PUMPS AND DEWATERING FIELD SPRAYERS TO PREPARE FOR INITIAL DRAWDOWN. PLACE CLEAR WATER PUMP ON THE DAM FACE TO PREPARE FOR INITIAL DRAWDOWN. THE FLOATING INTAKES ARE INTENDED TO INTERCEPT TURBID WATER GENERATED ALONG SHORELINES DURING INITIAL DRAWDOWN. FLOWS PUMPED FROM THE FLOATING INTAKES WILL BE CONVEYED TO DEWATERING FIELD SPRAYERS FOR LAND APPLICATION AND INFILTRATION.
10. COMMENCE CLEAR WATER DIVERSION PUMPING, AND FLOATING INTAKE PUMPING. THE CONTRACTOR SHALL MONITOR SPRAY LOCATIONS IN THE DEWATERING FIELD AND THROTTLE DOWN PUMPED FLOWS TO AVOID SURFACE RUNOFF. THE CLEAR WATER PUMP WILL PUMP WATER FROM DEEPER PORTIONS OF THE RESERVOIR OVER THE DAM, WHILE ASSURING THE CLEARWATER PUMP'S INTAKE IS SUFFICIENTLY ABOVE FINE SEDIMENTS LOCATED AT THE BOTTOM OF THE RESERVOIR TO AVOID MOBILIZING THOSE SEDIMENTS. FLOATING INTAKE PUMPS WILL OPERATE AT A SLIGHTLY HIGHER CUMULATIVE FLOW RATE THAN THE CLEAR WATER PUMP TO AVOID TURBID WATER FROM PASSING UNDER THE SILT CURTAIN.
11. MONITOR TURBIDITY PLUMES IN THE RESERVOIR AND ADJUST LINES SECURING TURBIDITY CURTAIN AND FLOATING INTAKES AS RESERVOIR LEVELS DESCEND. ADJUST LOCATION OF TURBIDITY CURTAIN AND FLOATING INTAKES, AS NECESSARY TO AVOID DISTURBING RESERVOIR SEDIMENTS. CONTINUE TO MONITOR TURBIDITY PLUMES DURING INITIAL DRAWN DOWN. INITIAL DRAW DOWN OF MORE THAN 10 FEET WILL SIGNIFICANTLY REDUCE EVAPORATIVE DEWATERING DURATION. TEN FEET OF DRAW DOWN CAN BE ACHIEVED IN TEN DAYS (12 HR/DAY) OPERATION DURING DRY WEATHER CONDITIONS IF DIVERSION DAMS AND PIPING ARE PROPERLY SEALED, NO MAJOR SPRINGS ARE LOCATED WITHIN THE RESERVOIR, AND THE CONTRACTOR AVOIDS STIRRING UP BOTTOM SEDIMENTS.
12. PARTIALLY DEMOLISH CONCRETE DAM FACE AND CREATE A LEVEL PLATFORM TO MOVE CLEARWATER PUMP DOWN DAM FACE TO REDUCE SUCTION HEAD AS NECESSARY AS RESERVOIR LEVELS DESCEND. CONTINUE TO MONITOR TURBIDITY PLUMES IN THE RESERVOIR DURING INITIAL DRAWN DOWN. CEASE CLEARWATER PUMPING BEFORE TURBIDITY PLUMES ENTER THE CLEARWATER PUMP INTAKE.
13. AFTER CLEARWATER PUMPING HAS CEASED, REMOVE THE SILT CURTAIN AND PERFORM FISH RESCUE WITHIN THE RESERVOIR. FLOATING INTAKES SHALL REMAIN IN THE RESERVOIR DURING FISH RESCUE. REMOVE CLEARWATER PUMP. CONTRACTOR SHALL CLEAR SOFT SOILS FROM THE DEWATERED SHORELINE FOR BOAT TRAILER ACCESS AND ASSIST WDFW IN DEPLOYING AND RETRIEVING ELECTROFISHING BOAT.
14. THE CONTRACTOR SHALL RELOCATE FLOATING INTAKES TO DEEPER PORTIONS OF THE RESERVOIR AND CONTINUE TO PUMP TO THE DEWATERING FIELD AS LONG AS FLOATING INTAKES ARE 2-FEET, MINIMUM, ABOVE FINE SEDIMENTS LOCATED AT THE BOTTOM OF THE RESERVOIR.
15. LARGE WOOD STRUCTURES IN WILDBOY CREEK (SHEETS 57-71) DOWNSTREAM OF KWONEESUM DAM MAY BE CONSTRUCTED CONCURRENTLY WITH STEPS 15 THROUGH 20 OF THIS SEQUENCE, NOTING THAT ROCK SALVAGED FROM DAM MAY BE INSTALLED AFTER LARGE WOOD AND SLASH HAVE BEEN INSTALLED IN THE LARGE WOOD STRUCTURES.
16. DAM DEMOLITION CAN COMMENCE FROM THE TOP DOWN AS LONG AS 10 FEET OF FREEBOARD IS MAINTAINED. REMOVE REBAR AND STOCKPILE DEMOLISHED CONCRETE. RELOCATE PUMPS AND CONTAINMENT IF ALLOWABLE SUCTION HEAD IS EXCEEDED.
17. PERFORM EVAPORATIVE DEWATERING OF THE RESERVOIR, (SHEETS 20-23).
18. CONTINUE DAM DEMOLITION WHILE MAINTAINING 10 FEET, MINIMUM FREEBOARD UNTIL FINE SEDIMENT HAVE BEEN RELOCATED. ESTABLISH ACCESS ROUTES WITHIN THE RESERVOIR FOOTPRINT USING SPOILS FROM DAM DEMOLITION FOR ACCESS ROAD FILL. REMOVE FINE SEDIMENT AND PLACE IN DISPOSAL AREAS WHICH USE ACCESS ROADS FOR CONTAINMENT.
19. INSTALL DEWATERING COFFERDAM 1 UPSTREAM OF DAM AND PUMP WATER AND PERFORM FISH RESCUE IN THE PLUNGE POOL DOWNSTREAM OF THE DAM PRIOR TO REMOVING BOTTOM 10 FEET OF CONCRETE APRON AT THE UPSTREAM FACE OF DAM, SHEET 28. AFTER FINE SEDIMENT HAS BEEN RELOCATED TO CONFINED AREAS OF THE FORMER RESERVOIR AND ALLOWED TO DRAIN, MIX WITH SOIL SALVAGED FROM ORIGINAL DAM CONSTRUCTION SPOILS AS REFERENCED IN STEP 1 OF THIS SEQUENCE. THE DRAINED AND MIXED SOILS SHALL BE SPREAD IN UNCONFINED AREAS OF THE RESERVOIR, OUTSIDE OF STREAM CHANNEL ALIGNMENTS.
20. SALVAGE AND STOCKPILE DELTAIC SEDIMENTS (SAND AND GRAVEL) FOR CHANNEL CONSTRUCTION. STAGE AND STOCKPILE ROCK SALVAGED FROM DAM AND SPILLWAY DEMOLITION THAT WILL BE USED FOR LARGE WOOD STRUCTURE CONSTRUCTION AND OTHER PURPOSES.
21. USE DEWATERING COFFERDAM 1 TO COMPLETELY REMOVE DAM AND CONSTRUCT WILDBOY CREEK CHANNEL WITHIN FORMER DAM FOOTPRINT. USE THE PLUNGE POOL (DOWNSTREAM OF THE FORMER DAM) AS A SEDIMENT TRAP AFTER CHANNEL IS CONSTRUCTED WITHIN FORMER DAM FOOTPRINT. TURBID WATER COLLECTED IN THE PLUNGE POOL SHALL BE PUMPED TO SPRAYERS LOCATED IN CLEARCUT AREAS FOR INFILTRATION AS DESCRIBED FOR INITIAL DRAWDOWN. ALTERNATE USE OF DEWATERING COFFERDAM 1 AND PLUNGE POOL DEWATERING, AS NECESSARY TO CONSTRUCT TRIBUTARY CHANNELS WITHIN THE RESERVOIR.
22. AFTER CHANNELS HAVE BEEN CONSTRUCTED WITHIN THE RESERVOIR, REINTRODUCE TRIBUTARY FLOWS, ONE AT A TIME TO FLUSH SEDIMENT FROM EACH CONSTRUCTED TRIBUTARY CHANNEL. THE ABILITY TO PUMP FROM EACH TRIBUTARY DIVERSION SHALL REMAIN INTACT UNTIL ALL CHANNELS HAVE BEEN FLUSHED, ONE AT A TIME. INITIAL FLUSHING OF TRIBUTARY CHANNELS SHALL BE COLLECTED IN THE PLUNGE POOL DOWNSTREAM OF THE FORMER DAM LOCATION AND PUMPED TO SPRAYERS IN CLEARCUTS FOR INFILTRATION AS DESCRIBED FOR INITIAL DRAWDOWN. AFTER ALL TRIBUTARIES HAVE BEEN FLUSHED ONE AT A TIME, SUBSEQUENTLY REMOVE TRIBUTARY DIVERSION DAM AND PIPING FOR EACH TRIBUTARY AND ALLOW FLOW THROUGH THE PROJECT.
23. PLACE SEEDING AND MULCH IN DISTURBED AREAS.
24. PERFORM FINAL SITE STABILIZATION.



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REV:	DESCRIPTION:	BY:	DATE:
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STATUS: PRELIMINARY DESIGN



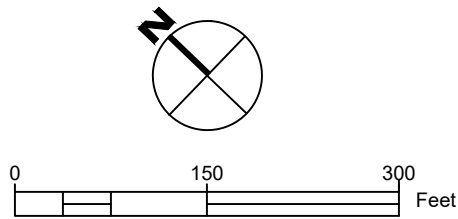
302 W. Steuben St. #6
Bingen, WA 98605 www.ers4life.com

CLIENT: COWLITZ INDIAN TRIBE
7700 26TH AVE
VANCOUVER, WA, 98665

SITE: KWONEESUM DAM
REMOVAL DESIGN

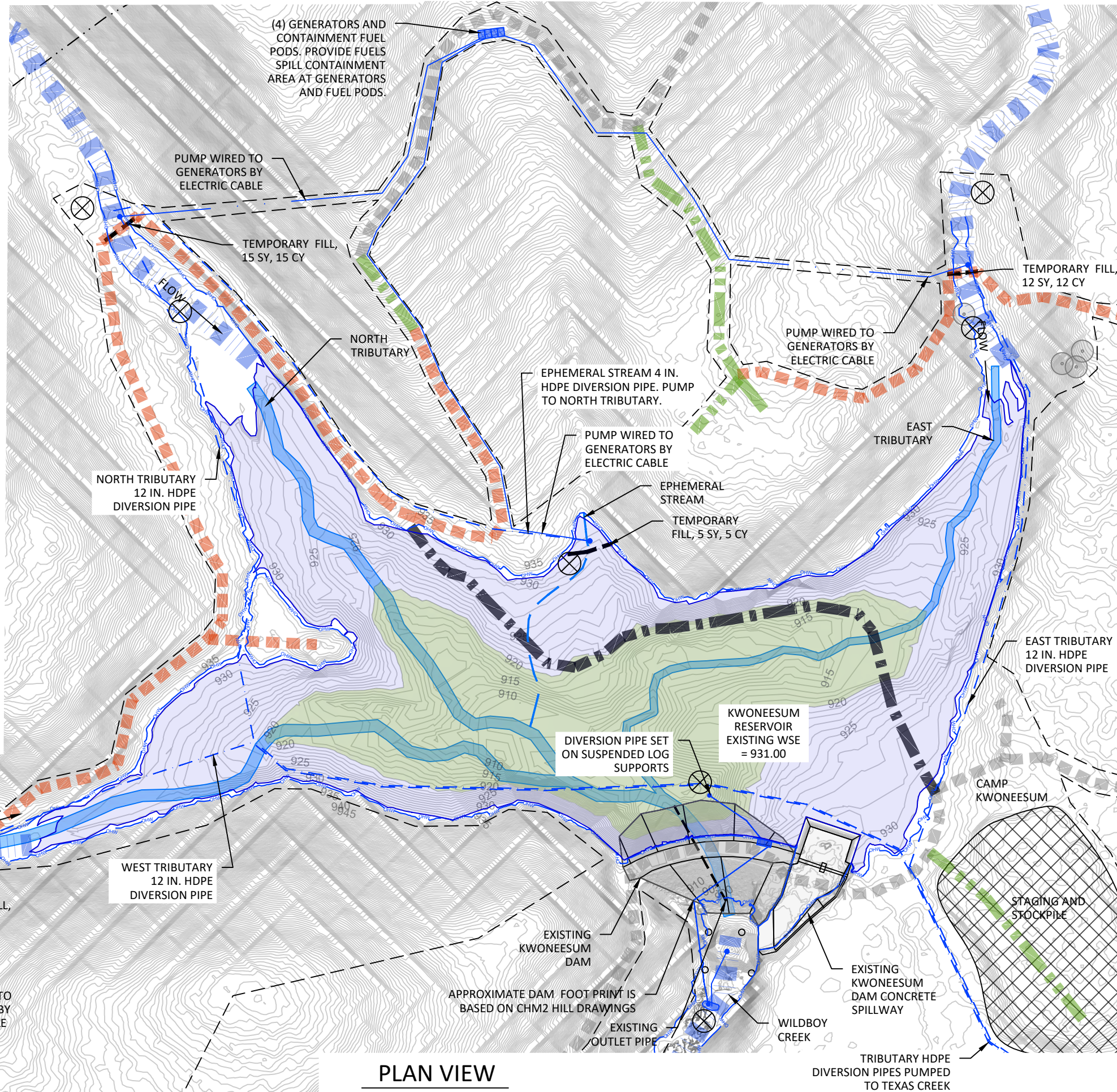
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CONSTRUCTION SEQUENCE
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SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO: -	DRAWING NO: 9	Total Sheets: 80	

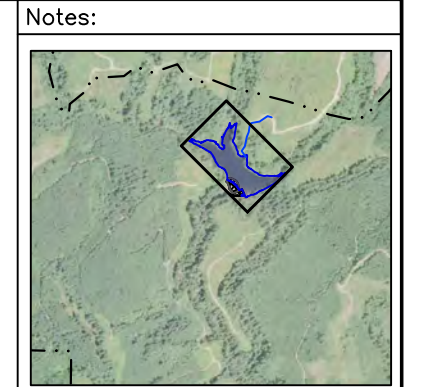


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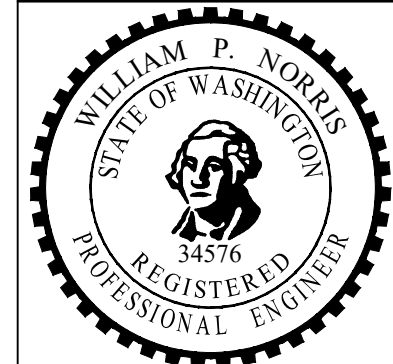
- EXISTING RIVER PATHWAYS
- EXISTING GRADE
- EXISTING RESERVOIR
- EXISTING DAM AND SPILLWAY
- EXISTING FOREST ROADS
- PROPOSED TEMPORARY ACCESS ROADS (VEHICLES)
- PROPOSED TEMPORARY ACCESS ROADS (OFF ROAD)
- PROPOSED ACCESS ROADS (TO REMAIN)
- PROJECT BOUNDARY AREA
- LIMITS OF DISTURBANCE
- PROPOSED TRIBUTARIES
- STAGING AND STOCKPILE
- WATER TURBIDITY MONITORS
- 12 IN. HDPE WELDED JOINT SDR-17 DIVERSION PIPE
- ELECTRIC CABLE
- DIVERSION DAM
- MINIMUM INITIAL DRAWDOWN
- ORDINARY HIGH WATER (OHW)



PLAN VIEW



SHEET LOCATION



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REV:	DESCRIPTION:	BY:	DATE:
STATUS: PRELIMINARY DESIGN			

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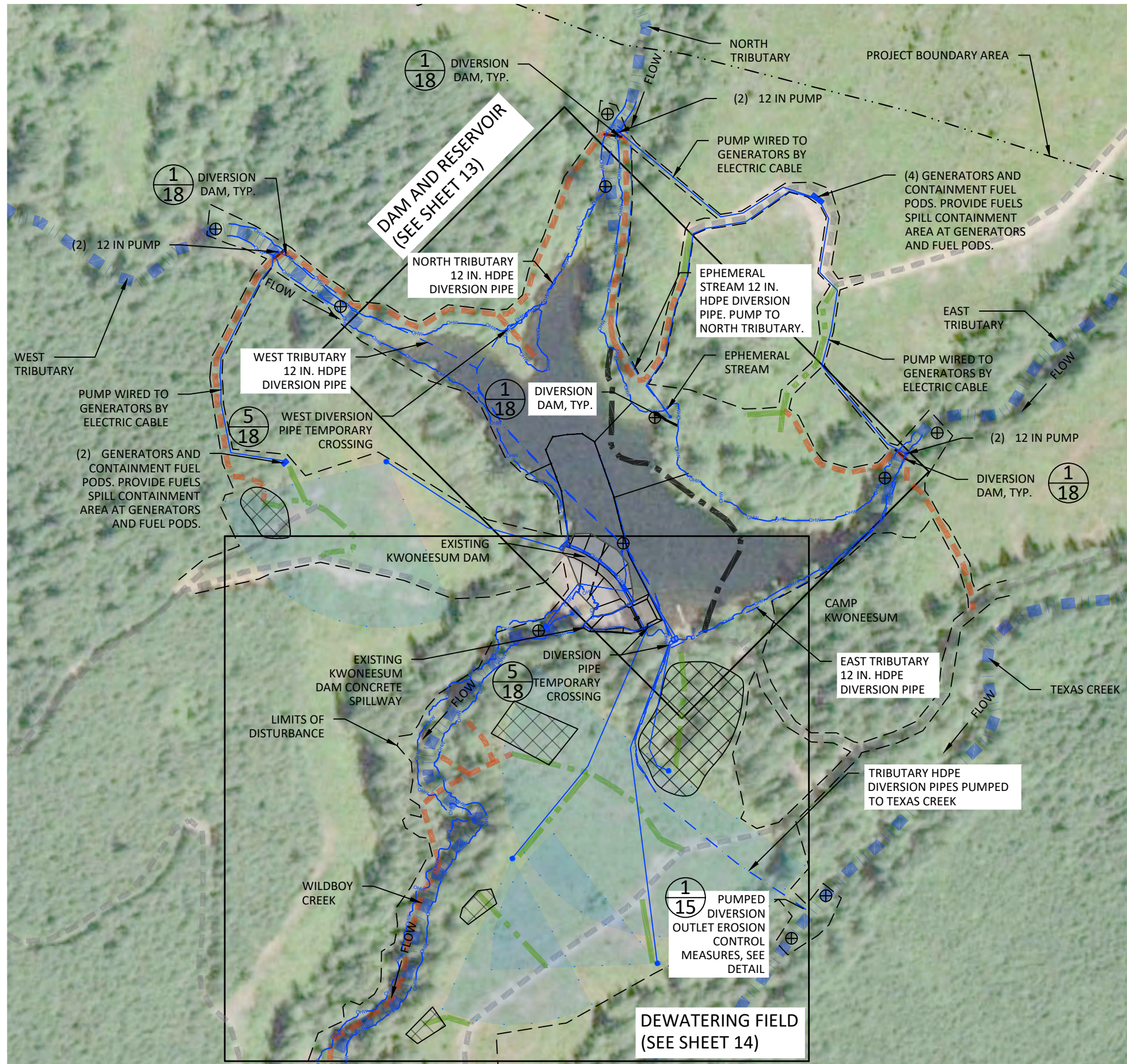
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7700 26TH AVE
VANCOUVER, WA. 98665

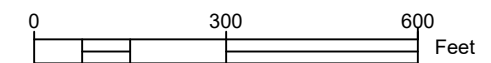
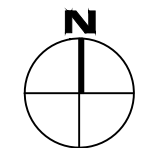
SITE: KWONEESUM DAM REMOVAL DESIGN

TITLE: KWONEESUM RESERVOIR AND DAM - CONSTRUCTION SEQUENCE

SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO: -	DRAWING NO: 10	Total Sheets: 80	



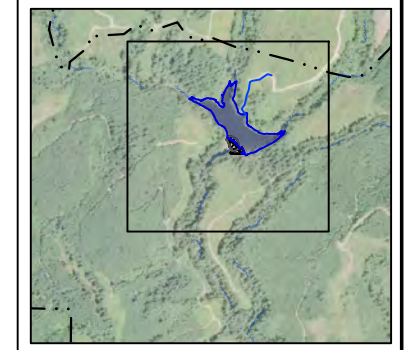
SITEMAP



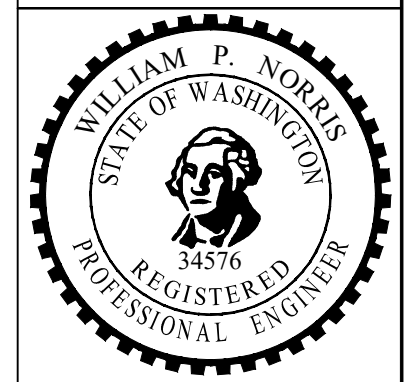
LEGEND

- EXISTING RIVER PATHWAYS
- EXISTING GRADE
- EXISTING RESERVOIR
- EXISTING DAM AND SPILLWAY
- EXISTING FOREST ROADS
- PROPOSED TEMPORARY ACCESS ROADS (VEHICLES)
- PROPOSED TEMPORARY ACCESS ROADS (OFF ROAD)
- PROPOSED ACCESS ROADS (TO REMAIN)
- PROJECT BOUNDARY AREA
- LIMITS OF DISTURBANCE
- ORDINARY HIGH WATER (OHW)
- STAGING AND STOCKPILE
- WATER TURBIDITY MONITORS
- PUMP
- 12 IN. HDPE DEWATERING PIPE
- ELECTRIC CABLE
- 6-INCH CONVEYANCE PIPE
- SPRAY AREA

Notes:



SHEET LOCATION



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REV:	DESCRIPTION:	BY:	DATE:
STATUS: PRELIMINARY DESIGN			

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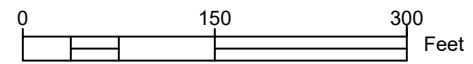
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VANCOUVER, WA. 98665

SITE: KWONEESUM DAM REMOVAL DESIGN

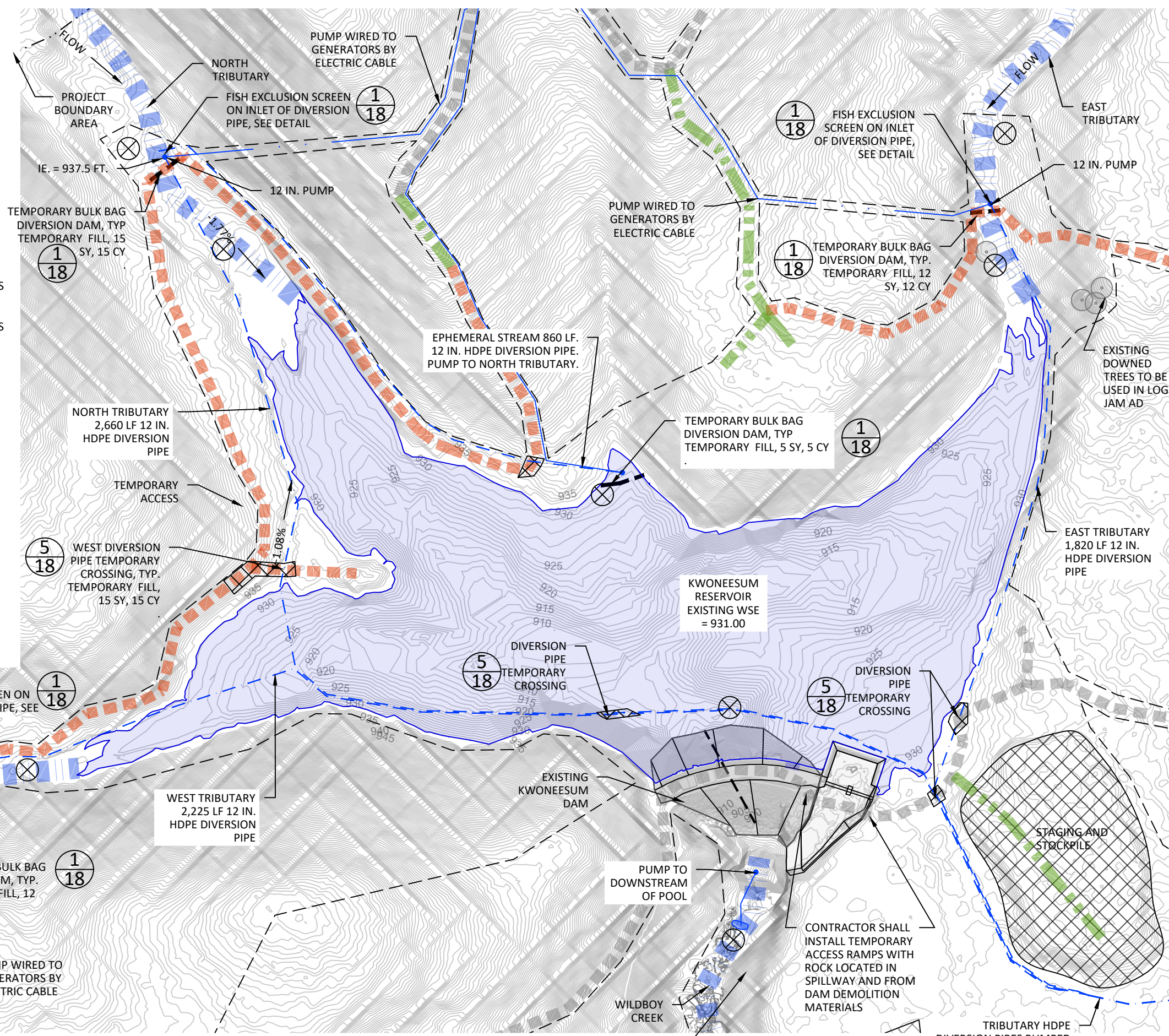
TITLE: KWONEESUM RESERVOIR AND DAM - INITIAL DRAWDOWN SITE PLAN

SCALE:	DATE:	DRAWN:	CHECKED:
	6/4/21	RP	BN
PROJ. NO:	DRAWING NO:	Total Sheets:	
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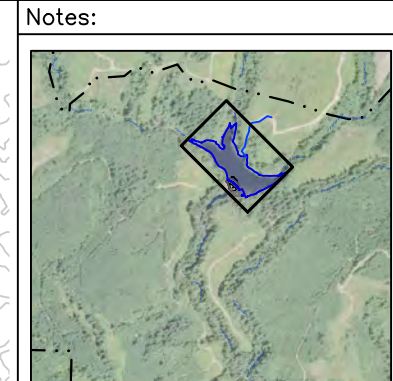


LEGEND

- EXISTING RIVER PATHWAYS
- EXISTING GRADE
- EXISTING RESERVOIR
- EXISTING DAM AND SPILLWAY
- EXISTING FOREST ROADS
- PROPOSED TEMPORARY ACCESS ROADS (VEHICLES)
- PROPOSED TEMPORARY ACCESS ROADS (OFF ROAD)
- PROJECT BOUNDARY AREA
- LIMITS OF DISTURBANCE
- STAGING AND STOCKPILE
- WATER TURBIDITY MONITORS
- 12 IN. HDPE WELDED JOINT SDR-17 DIVERSION PIPE
- ELECTRICAL WIRE
- 6-INCH CONVEYANCE PIPE
- DIVERSION DAM
- ORDINARY HIGH WATER (OHW)



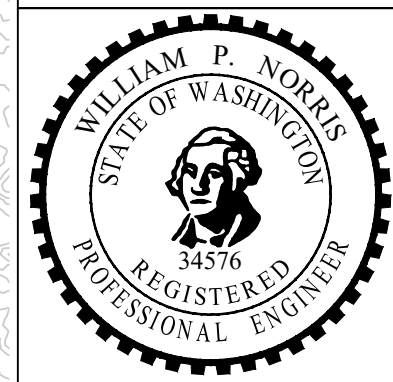
PLAN VIEW



SHEET LOCATION

NOTES:

- RESERVOIR OPERATIONS ESCP PROVIDED BY EXISTING DAM.
- RESERVOIR OHW AREA = 10.83 ACRES



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REV:	DESCRIPTION:	BY:	DATE:
STATUS: PRELIMINARY DESIGN			

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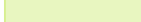

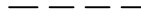

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VANCOUVER, WA, 98665

SITE: KWONEESUM DAM REMOVAL DESIGN

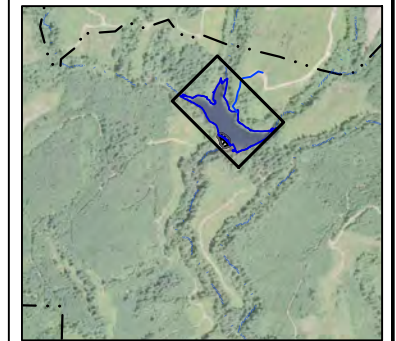
TITLE: KWONEESUM RESERVOIR AND DAM - SURFACE WATER DIVERSION PLAN

SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO:	DRAWING NO: 12	Total Sheets: 80	

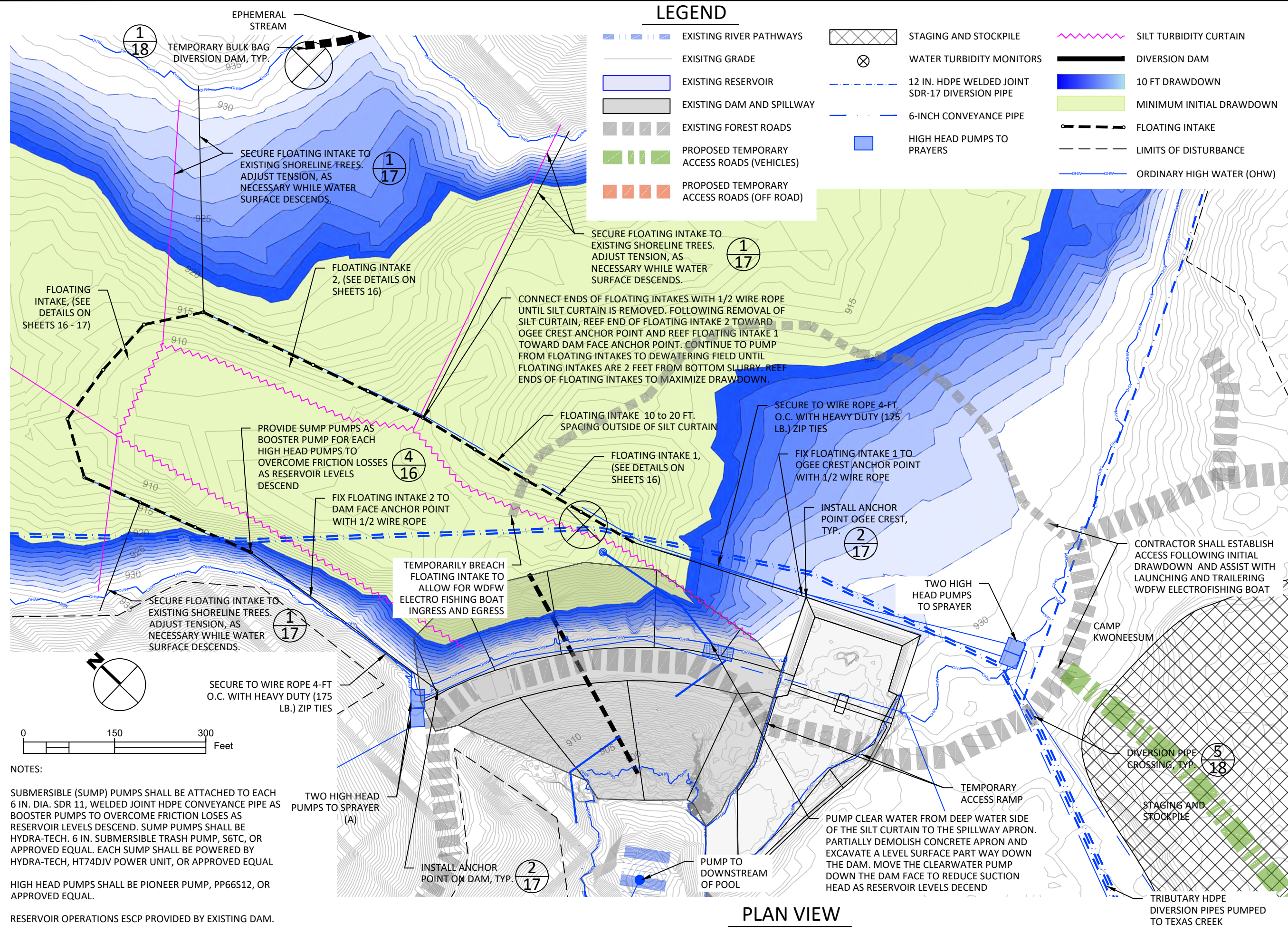
LEGEND

-  EXISTING RIVER PATHWAYS
-  EXISTING GRADE
-  EXISTING RESERVOIR
-  EXISTING DAM AND SPILLWAY
-  EXISTING FOREST ROADS
-  PROPOSED TEMPORARY ACCESS ROADS (VEHICLES)
-  PROPOSED TEMPORARY ACCESS ROADS (OFF ROAD)
-  STAGING AND STOCKPILE
-  WATER TURBIDITY MONITORS
-  12 IN. HDPE WELDED JOINT SDR-17 DIVERSION PIPE
-  6-INCH CONVEYANCE PIPE
-  HIGH HEAD PUMPS TO PRAYERS
-  SILT TURBIDITY CURTAIN
-  DIVERSION DAM
-  10 FT DRAWDOWN
-  MINIMUM INITIAL DRAWDOWN
-  FLOATING INTAKE
-  LIMITS OF DISTURBANCE
-  ORDINARY HIGH WATER (OHW)

Notes:



SHEET LOCATION



PLAN VIEW

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REV:	DESCRIPTION:	BY:	DATE:
STATUS: PRELIMINARY DESIGN			

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SITE: KWONEESUM DAM
REMOVAL DESIGN

TITLE: KWONEESUM RESERVOIR
AND DAM - INITIAL
DRAWDOWN PUMP PLAN

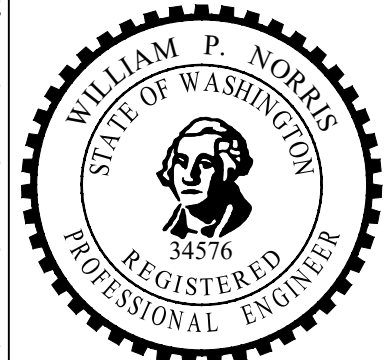
SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO: -	DRAWING NO: 13	Total Sheets: 80	

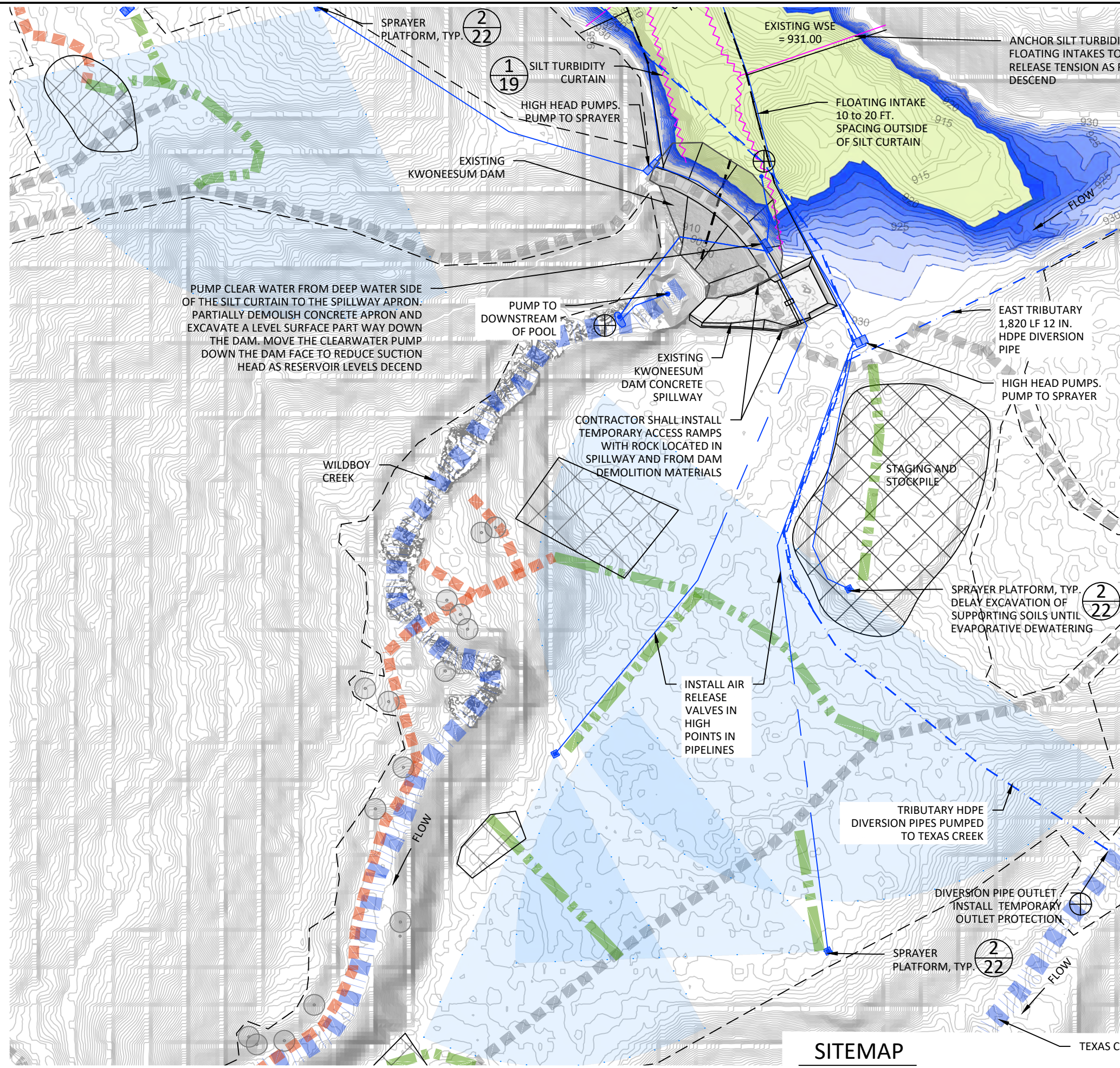
NOTES:

SUBMERSIBLE (SUMP) PUMPS SHALL BE ATTACHED TO EACH 6 IN. DIA. SDR 11, WELDED JOINT HDPE CONVEYANCE PIPE AS BOOSTER PUMPS TO OVERCOME FRICTION LOSSES AS RESERVOIR LEVELS DESCEND. SUMP PUMPS SHALL BE HYDRA-TECH. 6 IN. SUBMERSIBLE TRASH PUMP, S6TC, OR APPROVED EQUAL. EACH SUMP SHALL BE POWERED BY HYDRA-TECH, HT74DJV POWER UNIT, OR APPROVED EQUAL

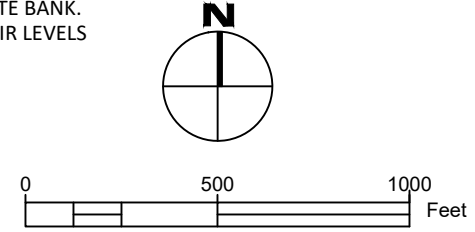
HIGH HEAD PUMPS SHALL BE PIONEER PUMP, PP66S12, OR APPROVED EQUAL.

RESERVOIR OPERATIONS ESCP PROVIDED BY EXISTING DAM.





SITMAP

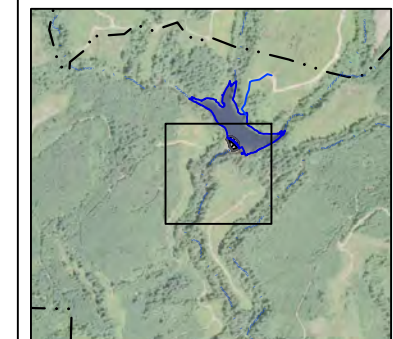


LEGEND

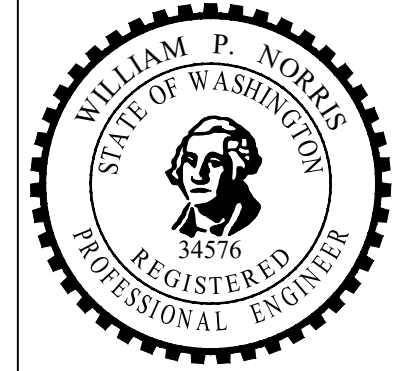
- EXISTING RIVER PATHWAYS
- EXISTING GRADE
- EXISTING RESERVOIR
- EXISTING DAM AND SPILLWAY
- EXISTING FOREST ROADS
- PROPOSED TEMPORARY ACCESS ROADS (VEHICLES)
- PROPOSED TEMPORARY ACCESS ROADS (OFF ROAD)
- PROJECT BOUNDARY AREA
- LIMITS OF DISTURBANCE
- STAGING AND STOCKPILE
- WATER TURBIDITY MONITORS
- 12 IN. HDPE WELDED JOINT SDR-17 DIVERSION PIPE
- 6-INCH CONVEYANCE PIPE
- SILT TURBIDITY CURTAIN
- DIVERSION DAM
- 10 FT DRAW DOWN
- FINE SEDIMENT AREA AFTER INITIAL DRAW DOWN
- SPRAY INFILTRATION AREA

NOTE:
"DEWATERING FIELD" INCLUDES THE AREAS WHERE WATER FROM FLOATING INTAKES WILL BE SPRAYED FOR LAND APPLICATION.

Notes:



SHEET LOCATION



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REV:	DESCRIPTION:	BY:	DATE:
STATUS: PRELIMINARY DESIGN			

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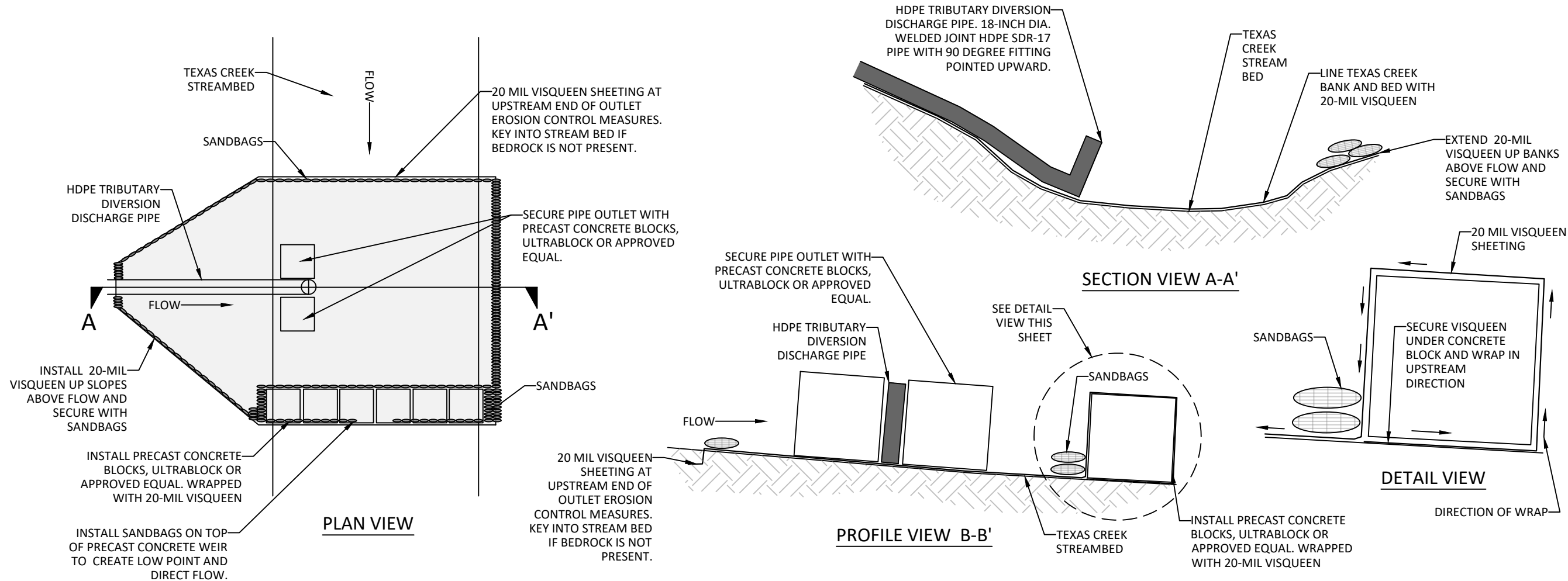
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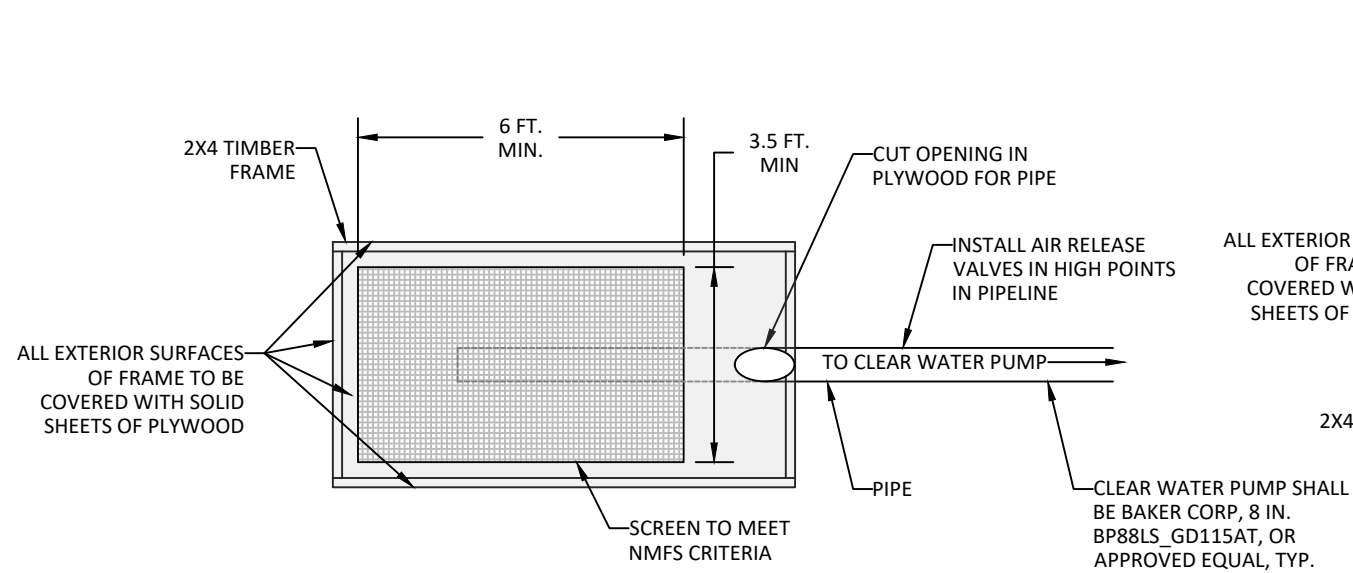
SITE: KWONEESUM DAM
REMOVAL DESIGN

TITLE: KWONEESUM RESERVOIR
AND DAM - INITIAL
DRAWDOWN PLAN

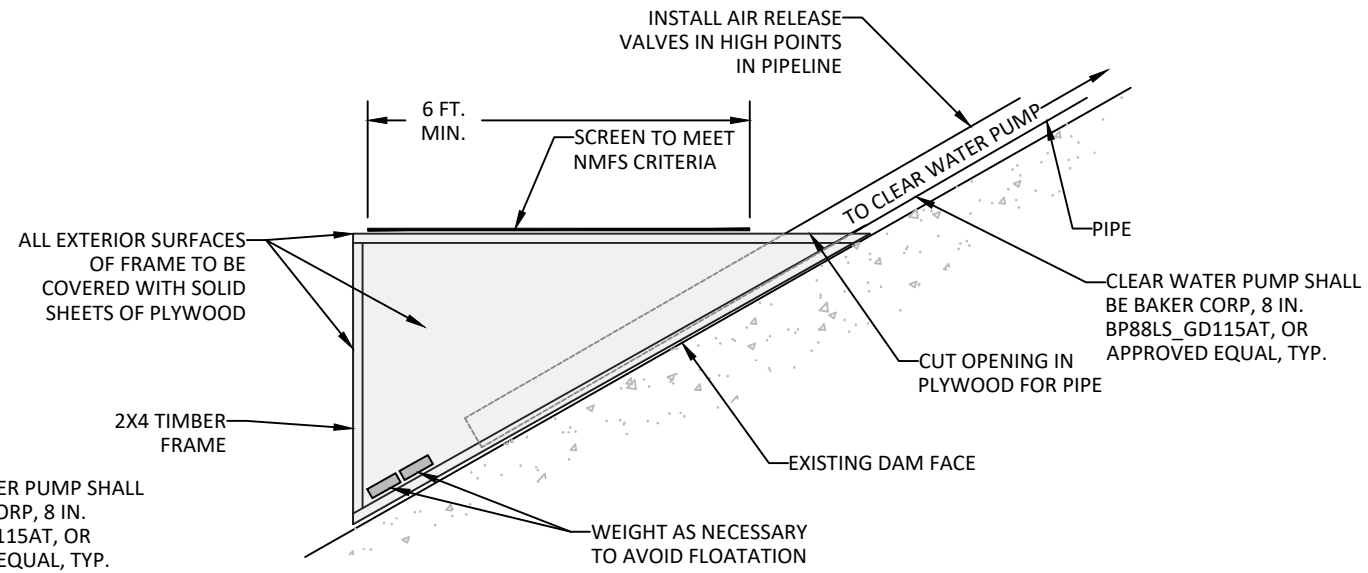
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	6/4/21	RP	BN
PROJ. NO:	DRAWING NO:	Total Sheets:	
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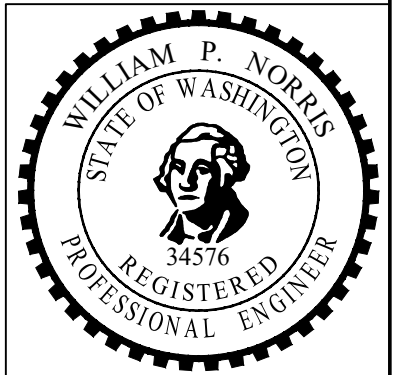
1
14 TYPICAL DETAILS: PUMPED DIVERSION OUTLET EROSION CONTROL MEASURES
NOT TO SCALE



3
15 TYPICAL PLAN - CLEAR WATER PUMP INTAKE SCREEN
NOT TO SCALE



4
15 TYPICAL SECTION - CLEAR WATER PUMP INTAKE SCREEN
NOT TO SCALE



3			
2			
1			
REV:	DESCRIPTION:	BY:	DATE:
STATUS: PRELIMINARY DESIGN			

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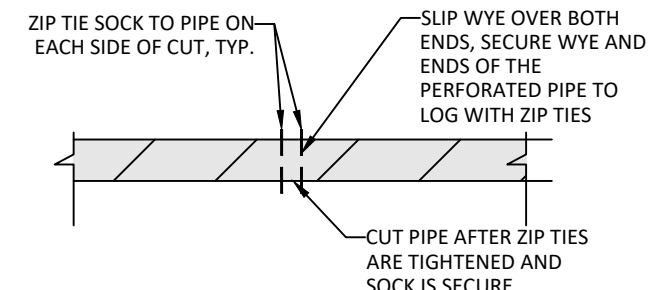
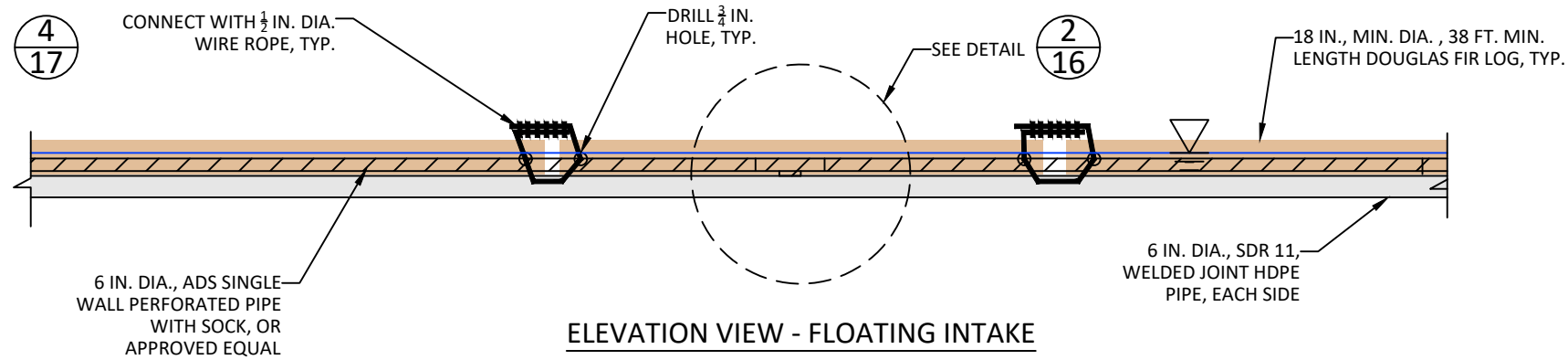
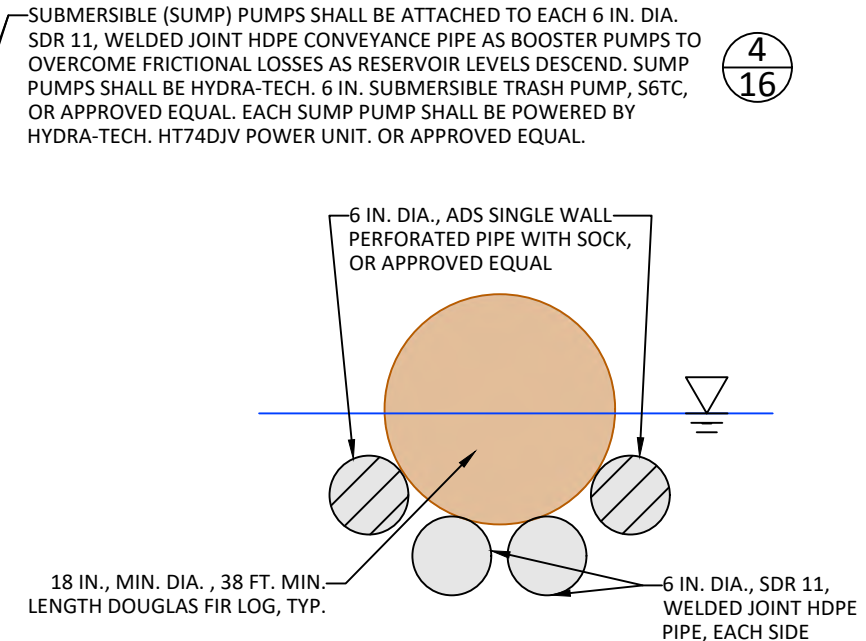
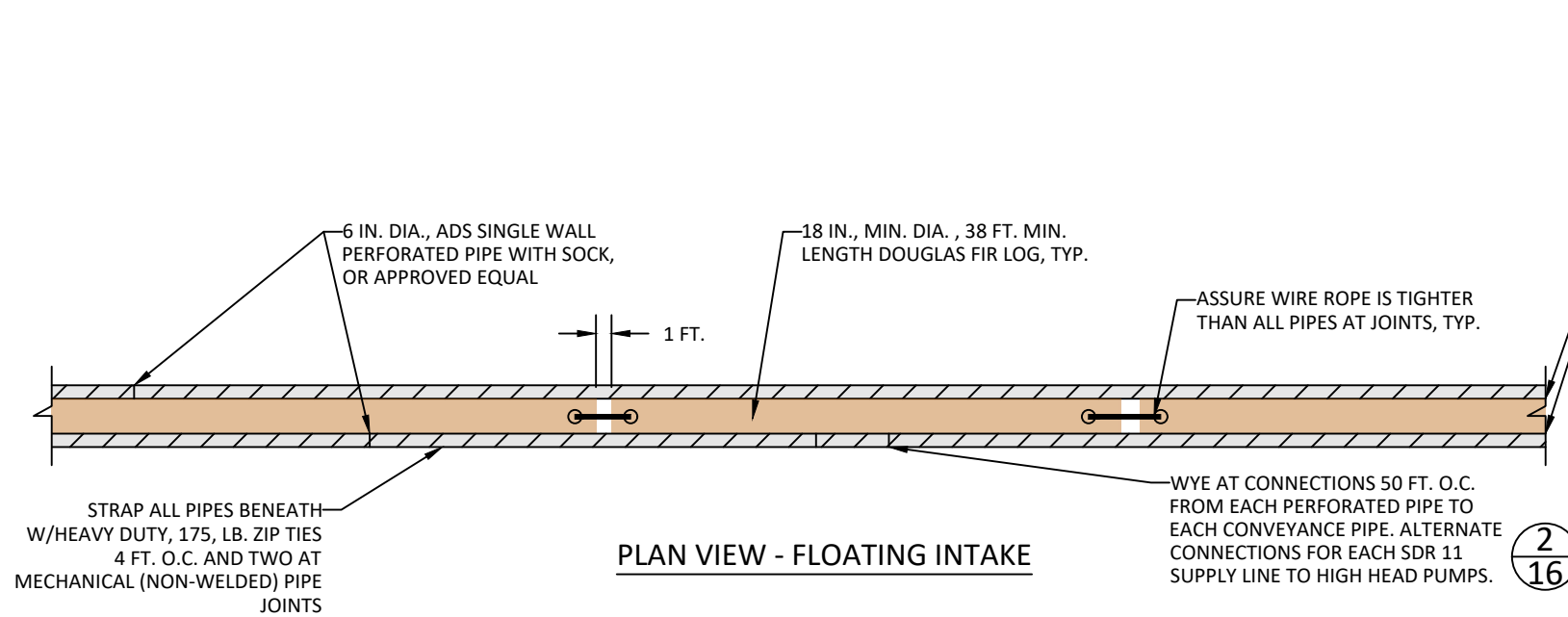
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SITE: KWONEESUM DAM REMOVAL DESIGN

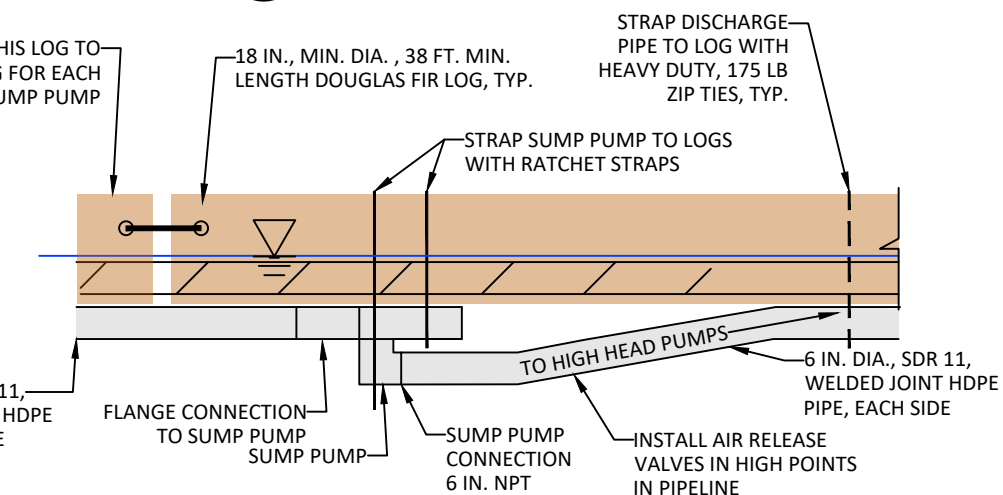
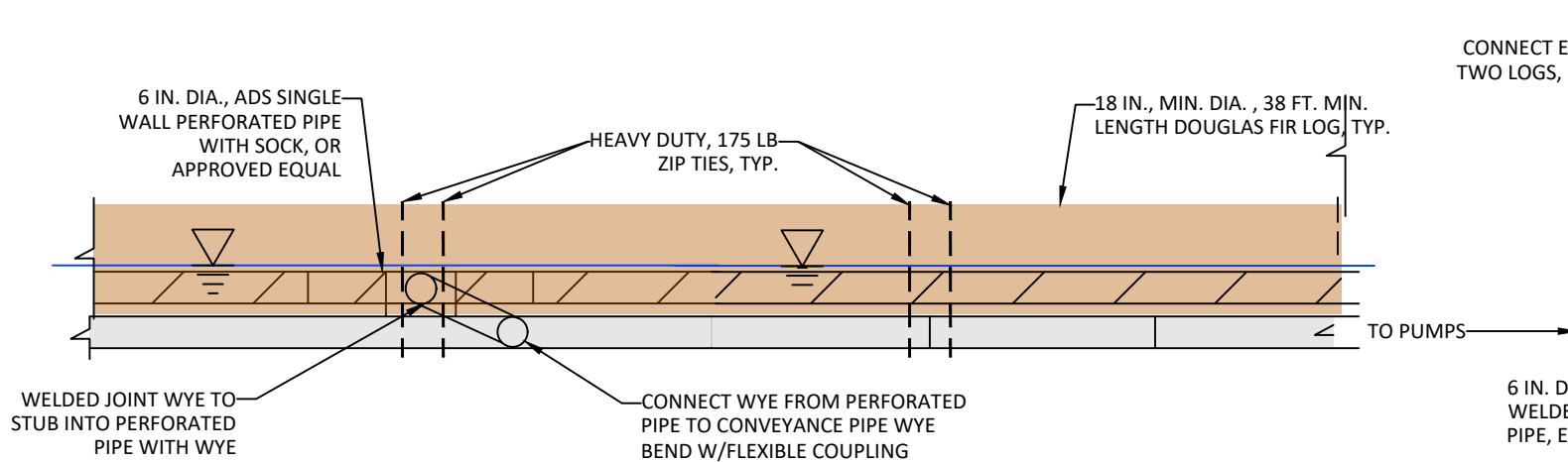
TITLE: KWONEESUM RESERVOIR AND DAM - DEWATERING TYPICAL DETAILS

SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO: -	DRAWING NO: 15	Total Sheets: 80	

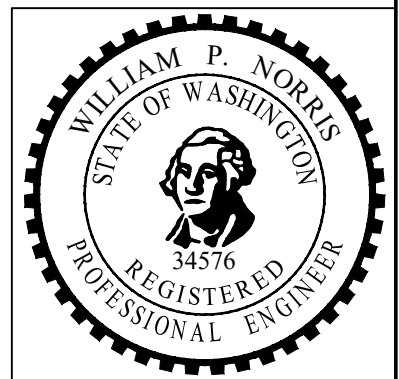


1
16 NOT TO SCALE
TYPICAL DETAIL - FLOATING INTAKE

3
16 NOT TO SCALE
TYPICAL DETAIL - PERFORATED PIPE



4
16 NOT TO SCALE
TYPICAL DETAIL - SUMP PUMP FLOAT CONNECTION



3			
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REV:	DESCRIPTION:	BY:	DATE:
STATUS: PRELIMINARY DESIGN			

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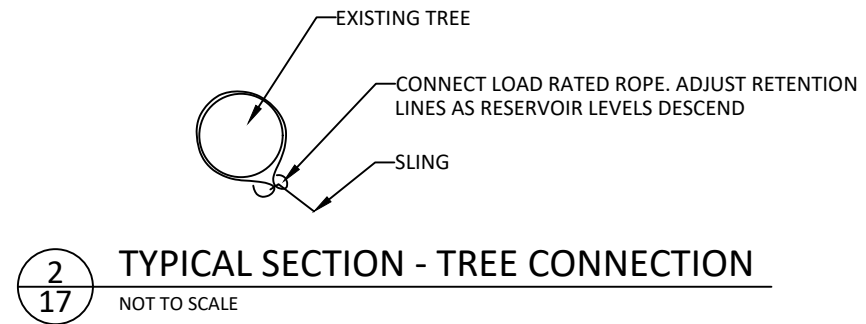
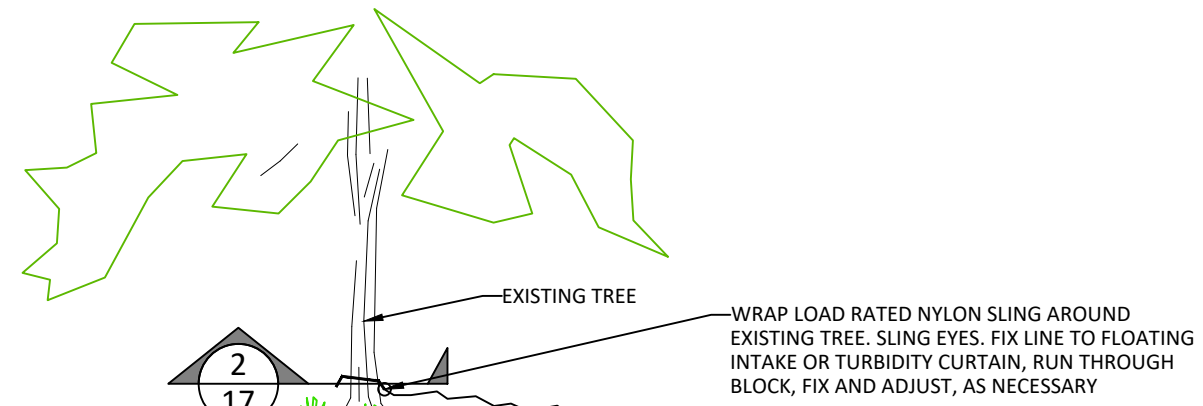
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SITE: KWONEESUM DAM REMOVAL DESIGN

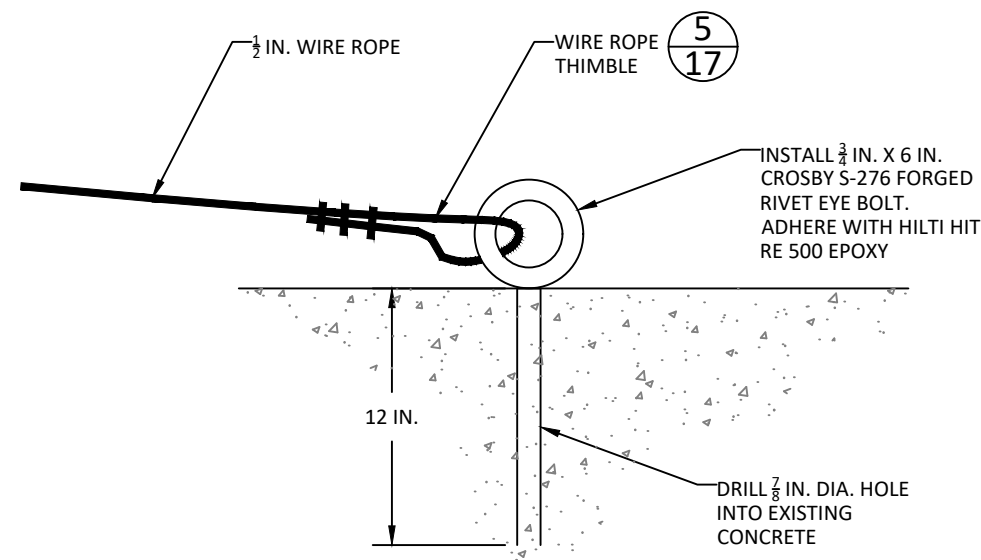
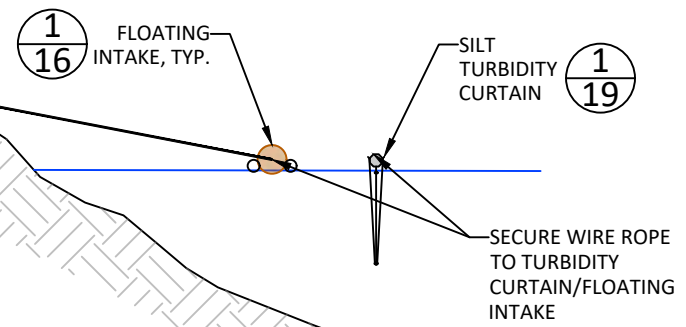
TITLE: KWONEESUM RESERVOIR AND DAM - DEWATERING TYPICAL DETAILS

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PROJ. NO:	DRAWING NO: 16	Total Sheets: 80	

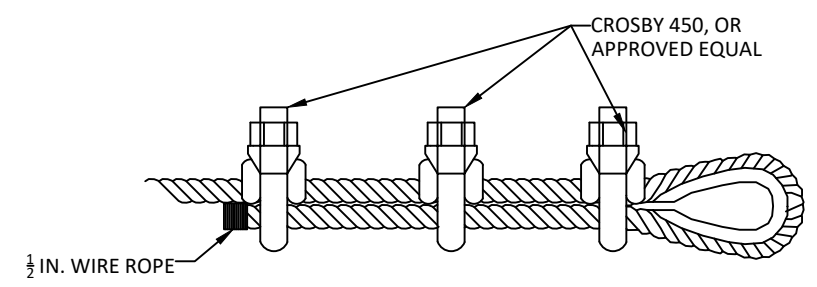


CONNECT SLING TO WIRE ROPE THIMBLE 4/14 WITH A LOAD APPROPRIATE ROPE WITH TRUCKER HITCH OR BLOCK AND TACKLE THAT ALLOWS FOR CONTROLLED LENGTHENING OF LINE AS RESERVOIR LEVELS DESCEND.

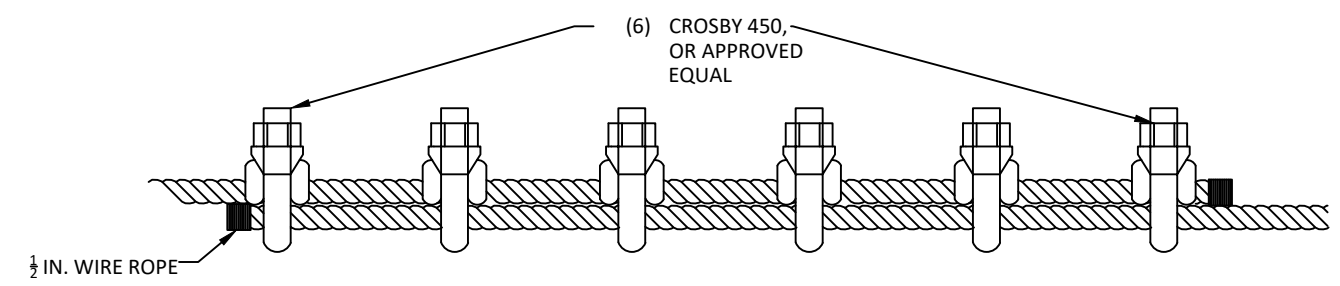
1/17 TYPICAL DETAIL - FLOATING INTAKE RETENTION LINE NOT TO SCALE



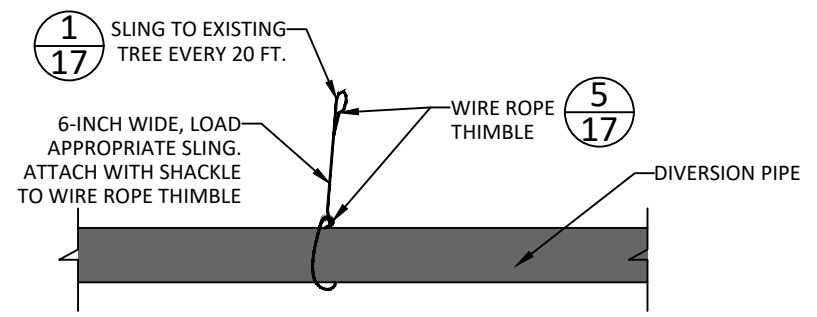
3/17 TYPICAL DETAIL - ANCHOR POINT NOT TO SCALE



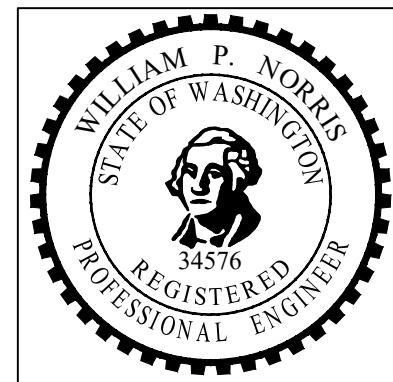
5/17 TYPICAL DETAIL - WIRE ROPE THIMBLE NOT TO SCALE



4/17 TYPICAL DETAIL - 1/2 IN. DIA. WIRE ROPE END OVERLAP CONNECTION NOT TO SCALE



6/17 TYPICAL DETAIL - PIPE RESTRAINING SLING TO EXISTING TREE NOT TO SCALE



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REV:	DESCRIPTION:	BY:	DATE:
STATUS: PRELIMINARY DESIGN			

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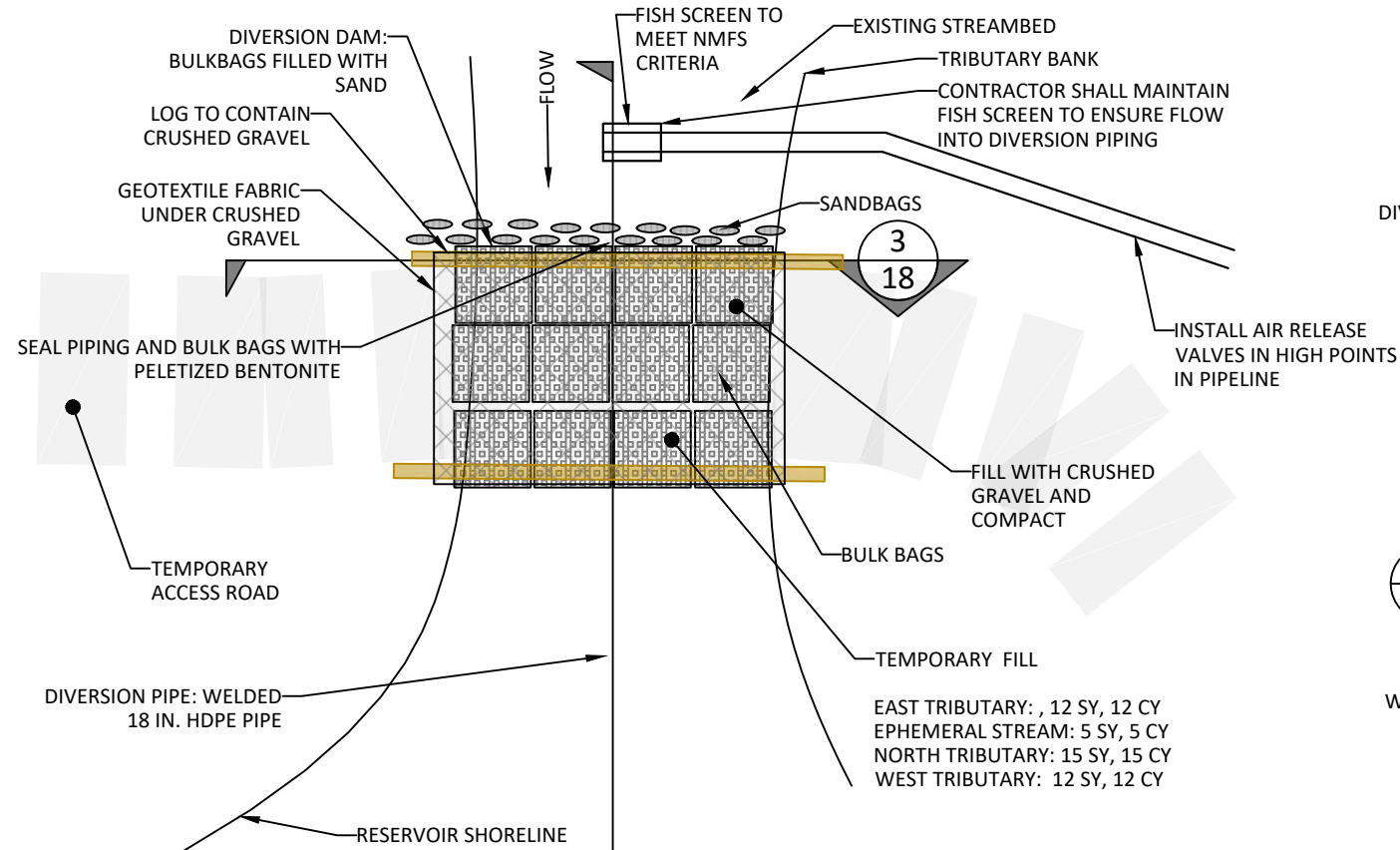
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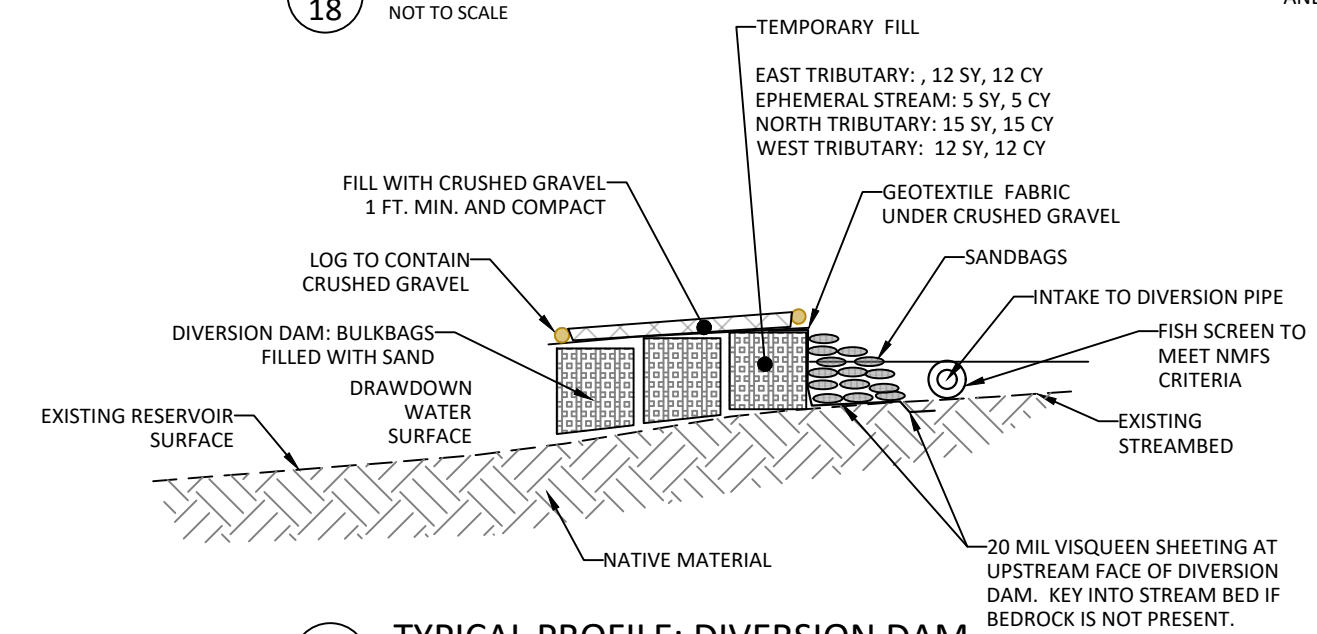
SITE: KWONEESUM DAM
REMOVAL DESIGN

TITLE: KWONEESUM RESERVOIR
AND DAM - DEWATERING
TYPICAL DETAILS

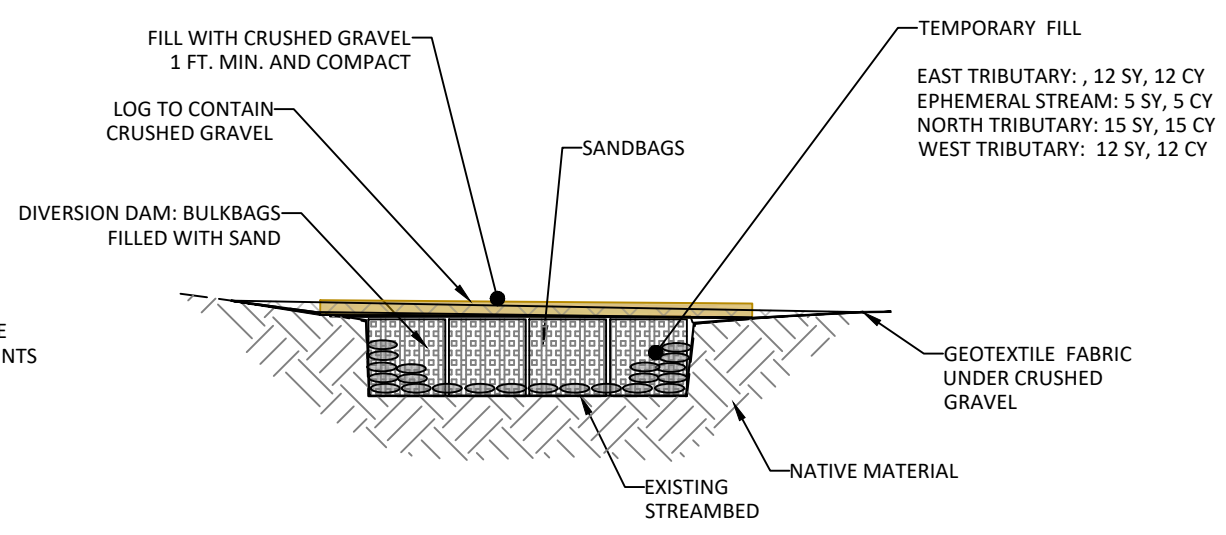
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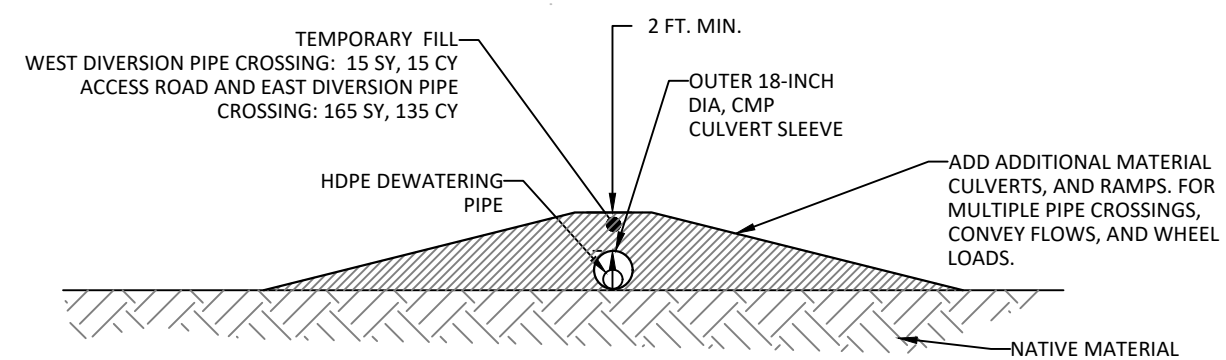
1
18
TYPICAL PLAN VIEW: DIVERSION DAM
NOT TO SCALE



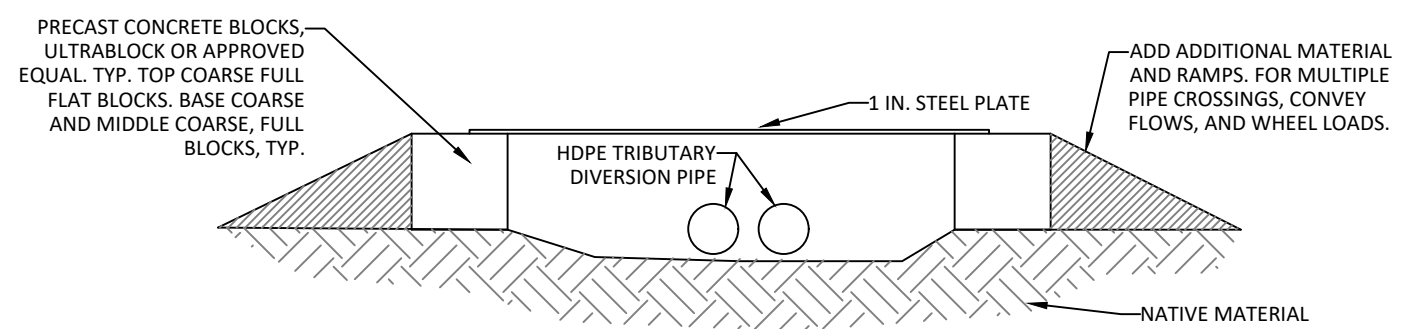
2
18
TYPICAL PROFILE: DIVERSION DAM
NOT TO SCALE



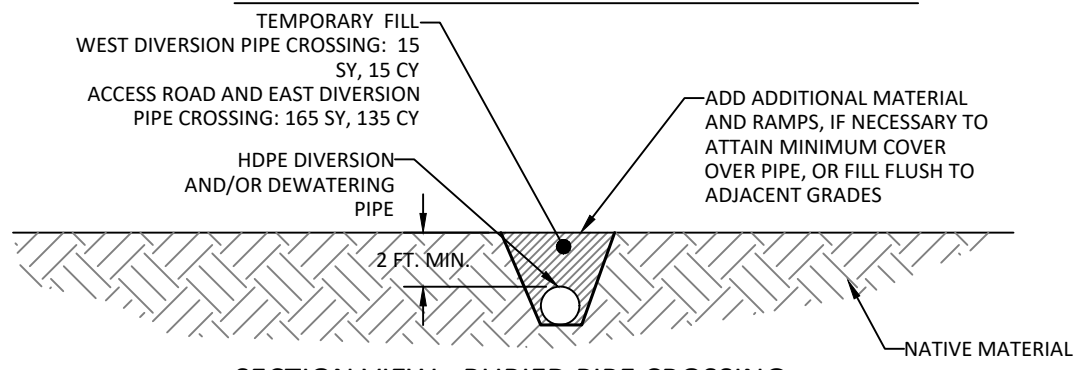
3
18
TYPICAL CROSS-SECTION: DIVERSION DAM WITH PIPE
NOT TO SCALE



SECTION VIEW - PIPE CROSSING WITH CULVERT

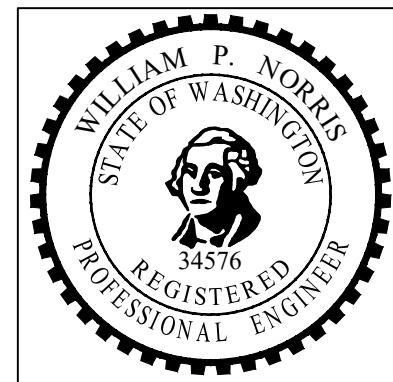


SECTION VIEW - PIPE CROSSING PRECAST BLOCKS



SECTION VIEW - BURIED PIPE CROSSING

5
18
TYPICAL SECTION VIEW: TEMPORARY CROSSING
NOT TO SCALE



3			
2			
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REV:	DESCRIPTION:	BY:	DATE:
STATUS: PRELIMINARY DESIGN			

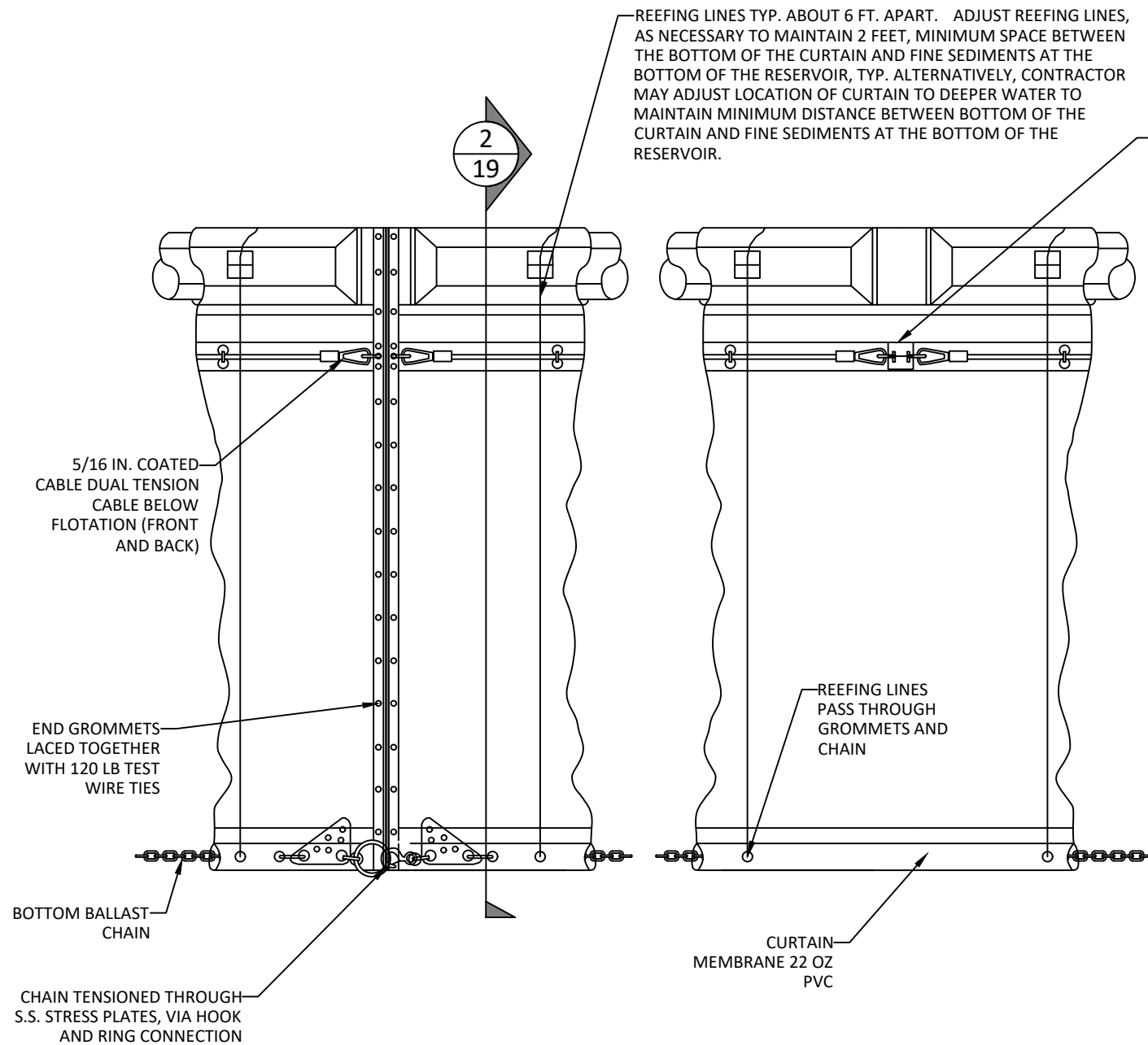
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SITE: KWONEESUM DAM
REMOVAL DESIGN

TITLE: KWONEESUM RESERVOIR
AND DAM - DEWATERING
TYPICAL DETAILS

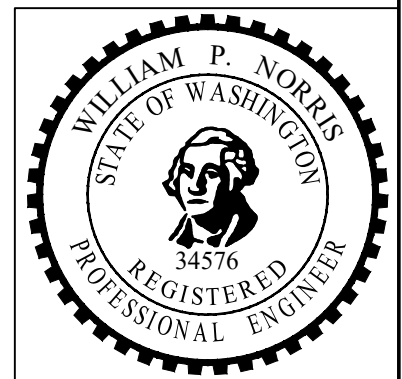
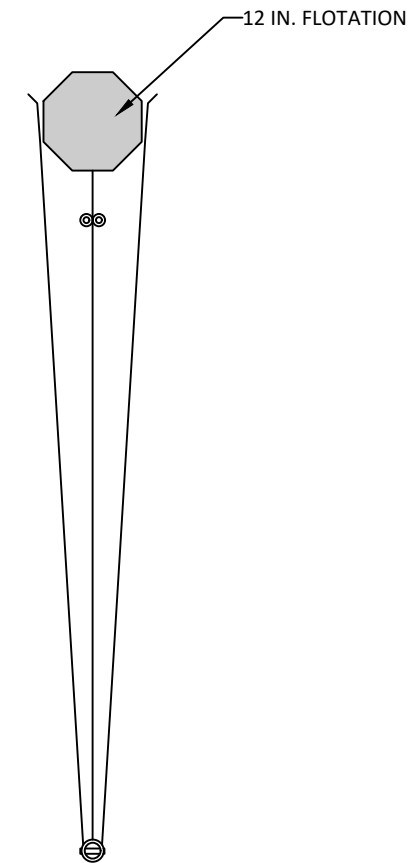
SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO: -	DRAWING NO: 18	Total Sheets: 80	



1
19
TYPICAL DETAIL - TYPE 2 TURBIDITY CURTAIN ELEVATION VIEW
NOT TO SCALE

NOTE:
INSTALL PER
MANUFACTURERS
RECOMMENDATIONS

2
19
TYPICAL SECTION - TYPE 2 TURBIDITY CURTAIN
NOT TO SCALE



3	-	-	-
2	-	-	-
1	-	-	-
REV:	DESCRIPTION:	BY:	DATE:
STATUS: PRELIMINARY DESIGN			

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SITE: KWONEESUM DAM
REMOVAL DESIGN

TITLE: KWONEESUM RESERVOIR
AND DAM - DEWATERING
TYPICAL DETAILS

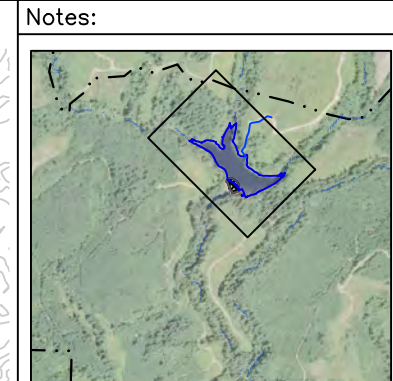
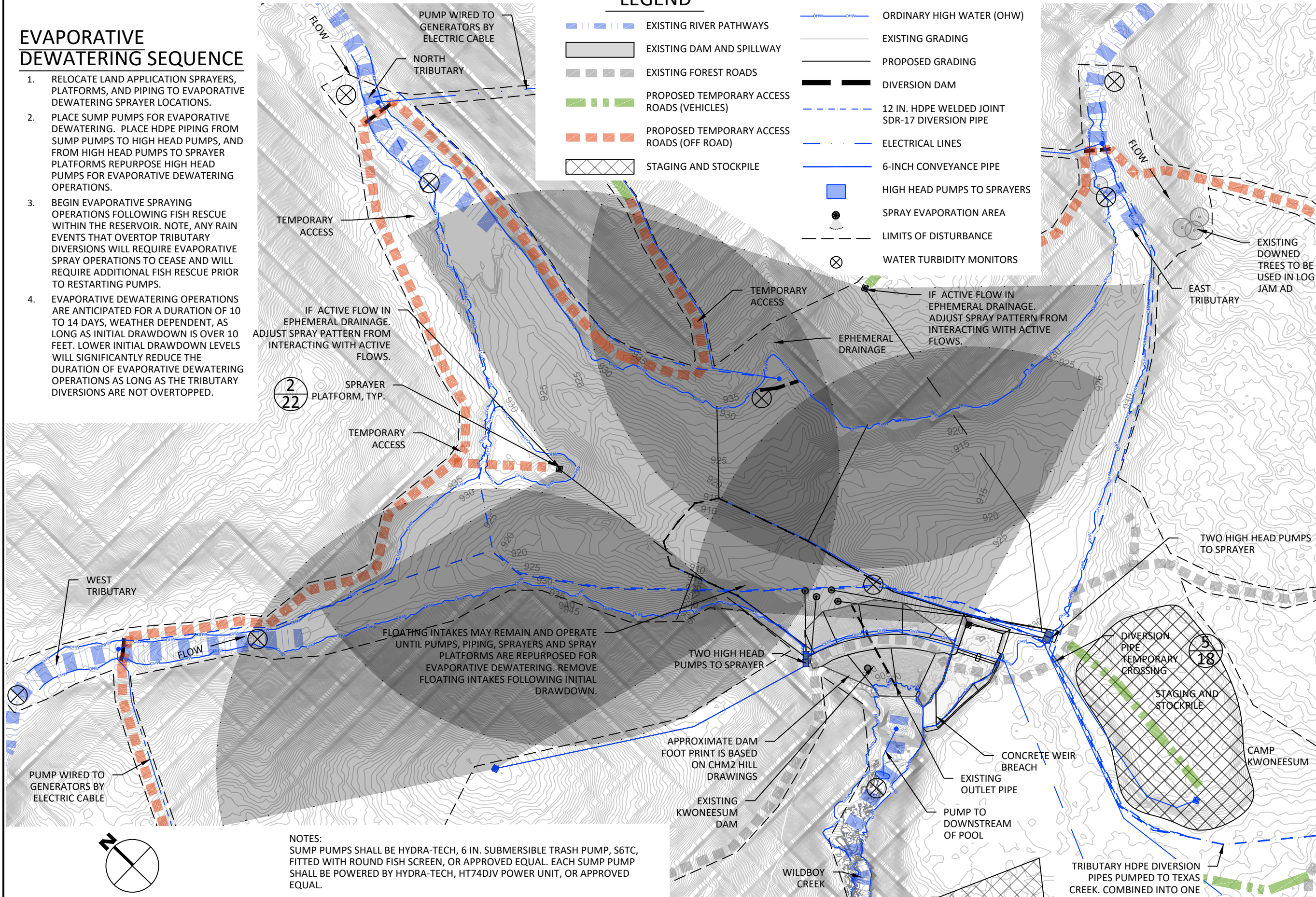
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PROJ. NO: -	DRAWING NO: 19	Total Sheets: 80	

EVAPORATIVE DEWATERING SEQUENCE

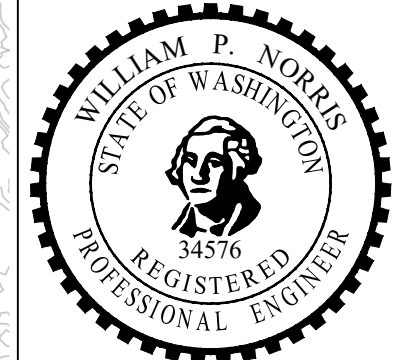
1. RELOCATE LAND APPLICATION SPRAYERS, PLATFORMS, AND PIPING TO EVAPORATIVE DEWATERING SPRAYER LOCATIONS.
2. PLACE SUMP PUMPS FOR EVAPORATIVE DEWATERING. PLACE HDPE PIPING FROM SUMP PUMPS TO HIGH HEAD PUMPS, AND FROM HIGH HEAD PUMPS TO SPRAYER PLATFORMS REPURPOSE HIGH HEAD PUMPS FOR EVAPORATIVE DEWATERING OPERATIONS.
3. BEGIN EVAPORATIVE SPRAYING OPERATIONS FOLLOWING FISH RESCUE WITHIN THE RESERVOIR. NOTE, ANY RAIN EVENTS THAT OVERTOP TRIBUTARY DIVERSIONS WILL REQUIRE EVAPORATIVE SPRAY OPERATIONS TO CEASE AND WILL REQUIRE ADDITIONAL FISH RESCUE PRIOR TO RESTARTING PUMPS.
4. EVAPORATIVE DEWATERING OPERATIONS ARE ANTICIPATED FOR A DURATION OF 10 TO 14 DAYS, WEATHER DEPENDENT, AS LONG AS INITIAL DRAWDOWN IS OVER 10 FEET. LOWER INITIAL DRAWDOWN LEVELS WILL SIGNIFICANTLY REDUCE THE DURATION OF EVAPORATIVE DEWATERING OPERATIONS AS LONG AS THE TRIBUTARY DIVERSIONS ARE NOT OVERTOPPED.

LEGEND

- EXISTING RIVER PATHWAYS
- EXISTING DAM AND SPILLWAY
- EXISTING FOREST ROADS
- PROPOSED TEMPORARY ACCESS ROADS (VEHICLES)
- PROPOSED TEMPORARY ACCESS ROADS (OFF ROAD)
- STAGING AND STOCKPILE
- ORDINARY HIGH WATER (OHW)
- EXISTING GRADING
- PROPOSED GRADING
- DIVERSION DAM
- 12 IN. HDPE WELDED JOINT SDR-17 DIVERSION PIPE
- ELECTRICAL LINES
- 6-INCH CONVEYANCE PIPE
- HIGH HEAD PUMPS TO SPRAYERS
- SPRAY EVAPORATION AREA
- LIMITS OF DISTURBANCE
- WATER TURBIDITY MONITORS



SHEET LOCATION



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REV:	DESCRIPTION:	BY:	DATE:
STATUS: PRELIMINARY DESIGN			

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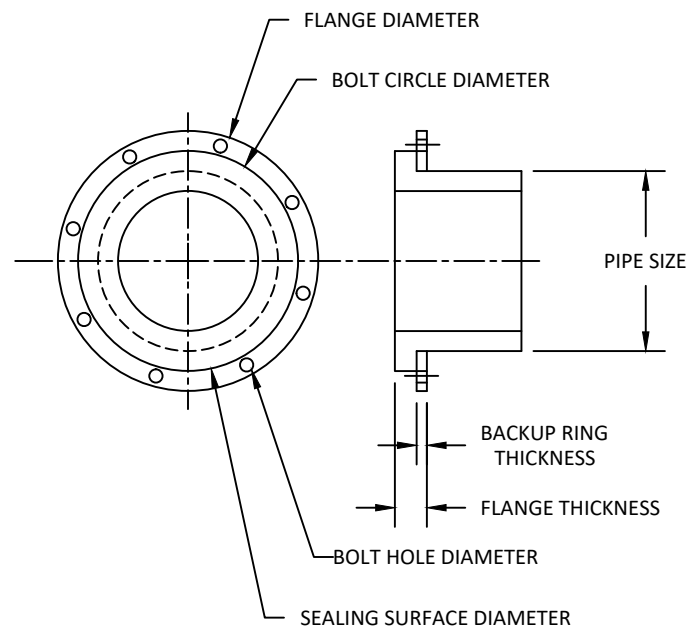
SITE: KWONEESUM DAM REMOVAL DESIGN

TITLE: KWONEESUM RESERVOIR AND DAM - RESERVOIR EVAPORATIVE DEWATERING

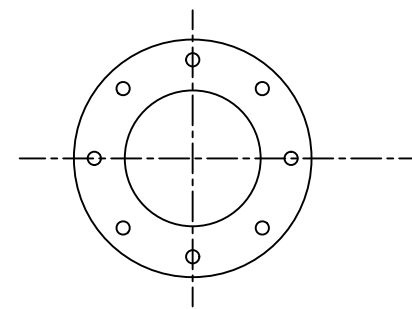
SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO:	DRAWING NO: 20	Total Sheets: 80	

NOTES:
SUMP PUMPS SHALL BE HYDRA-TECH, 6 IN. SUBMERSIBLE TRASH PUMP, S6TC, FITTED WITH ROUND FISH SCREEN, OR APPROVED EQUAL. EACH SUMP PUMP SHALL BE POWERED BY HYDRA-TECH, HT74DJV POWER UNIT, OR APPROVED EQUAL.
HIGH END PUMPS SHALL BE PIONEER PUMP, PP667S12, OR APPROVED EQUAL.

PLAN VIEW

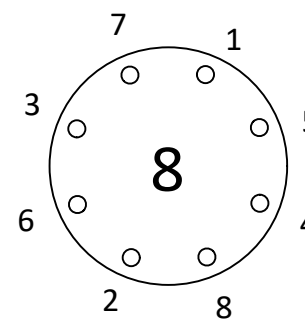


DETAIL - FLANGE ADAPTER AND BACK-UP RING

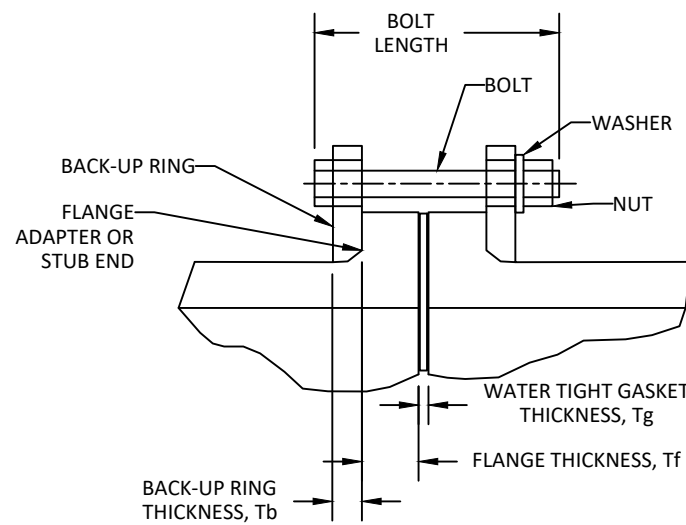


FULL FACE STYLE

DETAIL - FLANGE GASKET STYLES



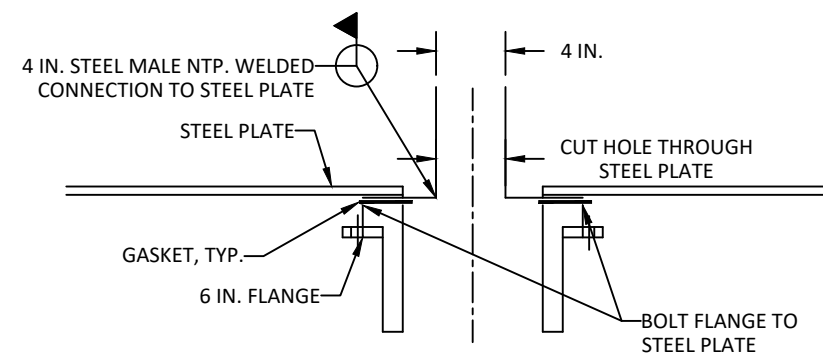
DETAIL - FLANGE BOLT TIGHTENING PATTERNS



DETAIL - BOLT LENGTH PARAMETERS

IPS PIPE SIZE	FLANGE OD	BOLT PIPE DIAMETER	BOLT HOLE DIAMETER	NO. OF BOLTS
6	11.00	9.50	0.88	8
8	13.50	11.75	0.88	8
18	25.00	22.75	1.25	16
24	32.00	29.50	1.38	20

TABLE - FLANGE DIMENSIONS (INCH SIZED) ANSI B16.5 CLASS 150

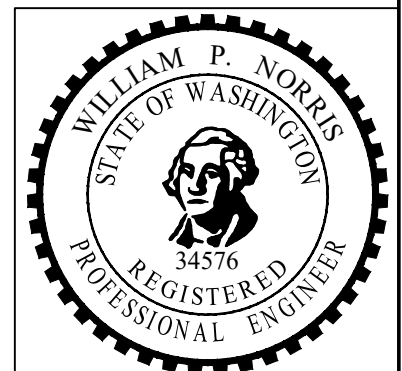


DETAIL - FLANGE CONNECTION TO SPRAYER PLATFORM

1
21

TYPICAL DETAIL - FLANGE ADAPTER AND BACKUP RING

NOT TO SCALE



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STATUS: PRELIMINARY DESIGN			

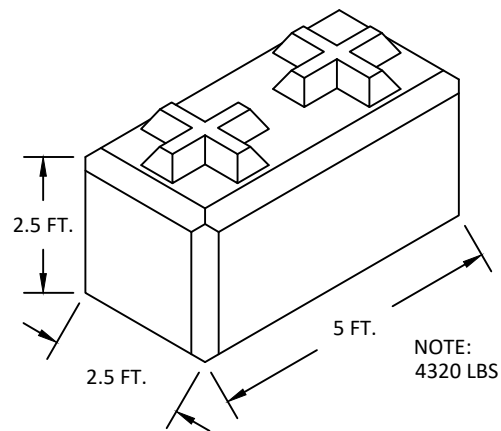
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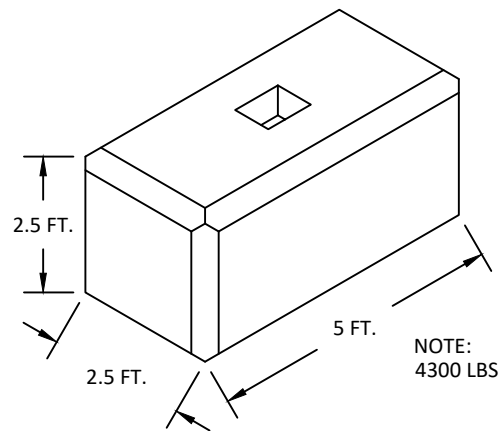
SITE: KWONEESUM DAM REMOVAL DESIGN

TITLE: KWONEESUM RESERVOIR AND DAM - SEDIMENT MANAGEMENT TYPICAL DETAIL

SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO: -	DRAWING NO: 21	Total Sheets: 80	

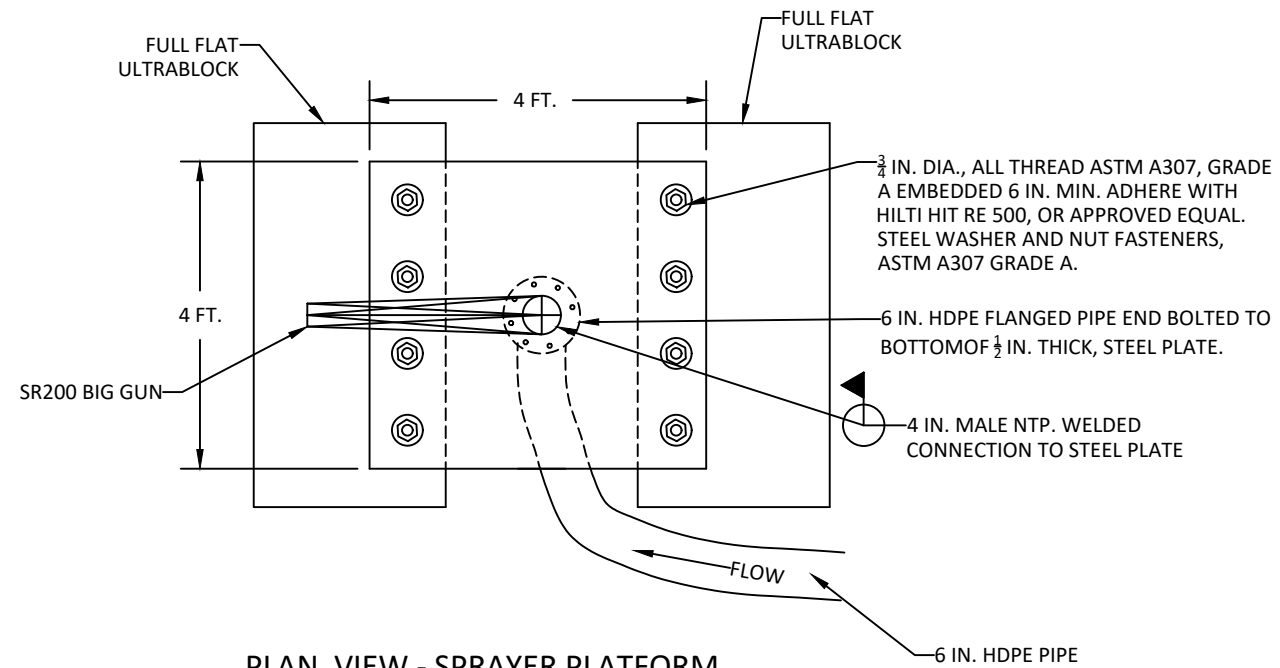


FULL

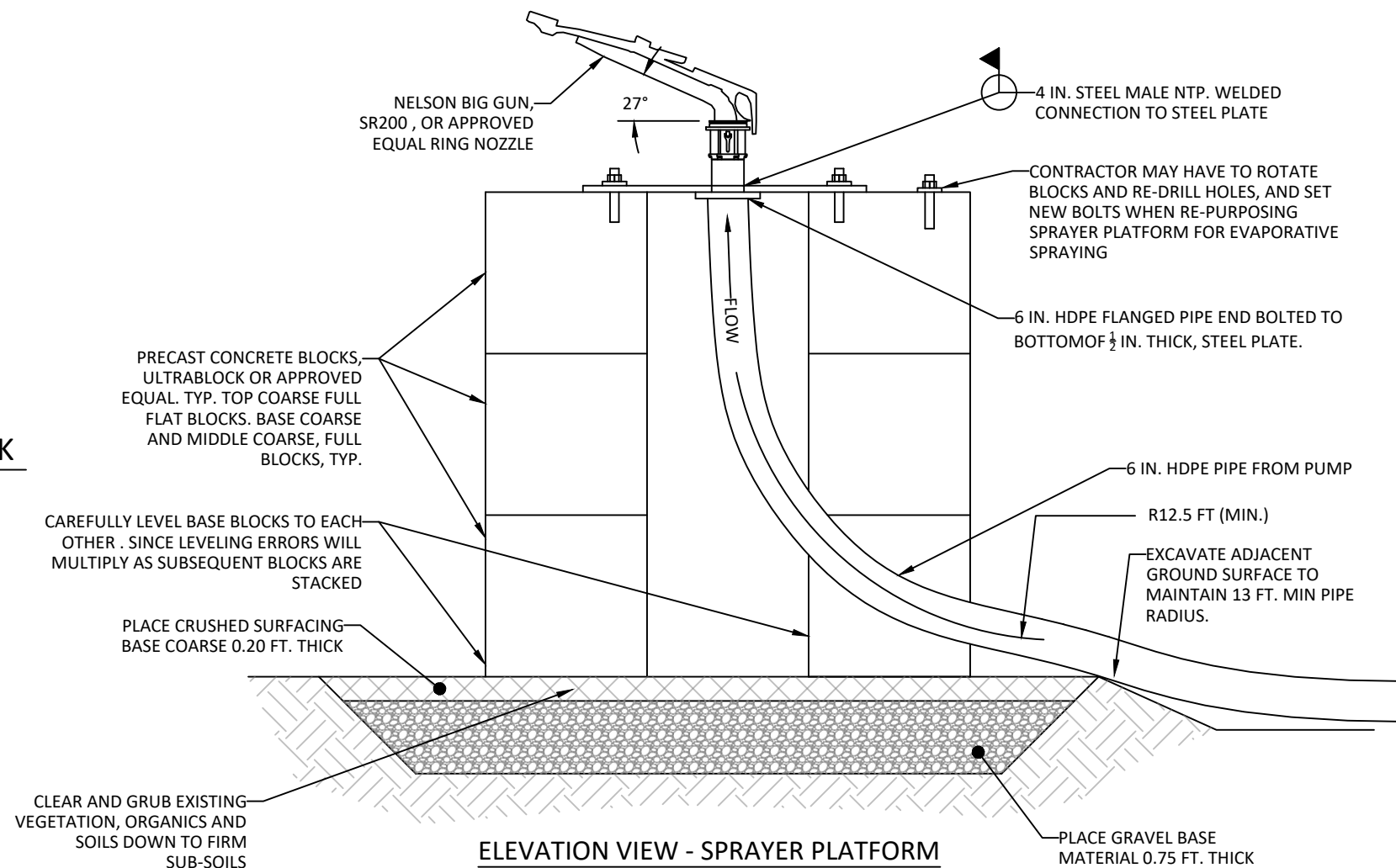


FULL FLAT

1
22 TYPICAL DETAIL - PRECAST CONCRETE BLOCK
NOT TO SCALE

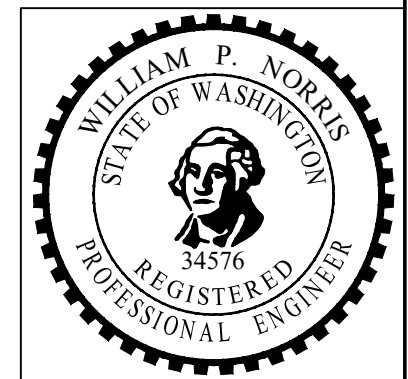


PLAN VIEW - SPRAYER PLATFORM
NOT TO SCALE



ELEVATION VIEW - SPRAYER PLATFORM

2
22 TYPICAL DETAIL - SPRAYER PLATFORM DETAILS
NOT TO SCALE



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STATUS: PRELIMINARY DESIGN			

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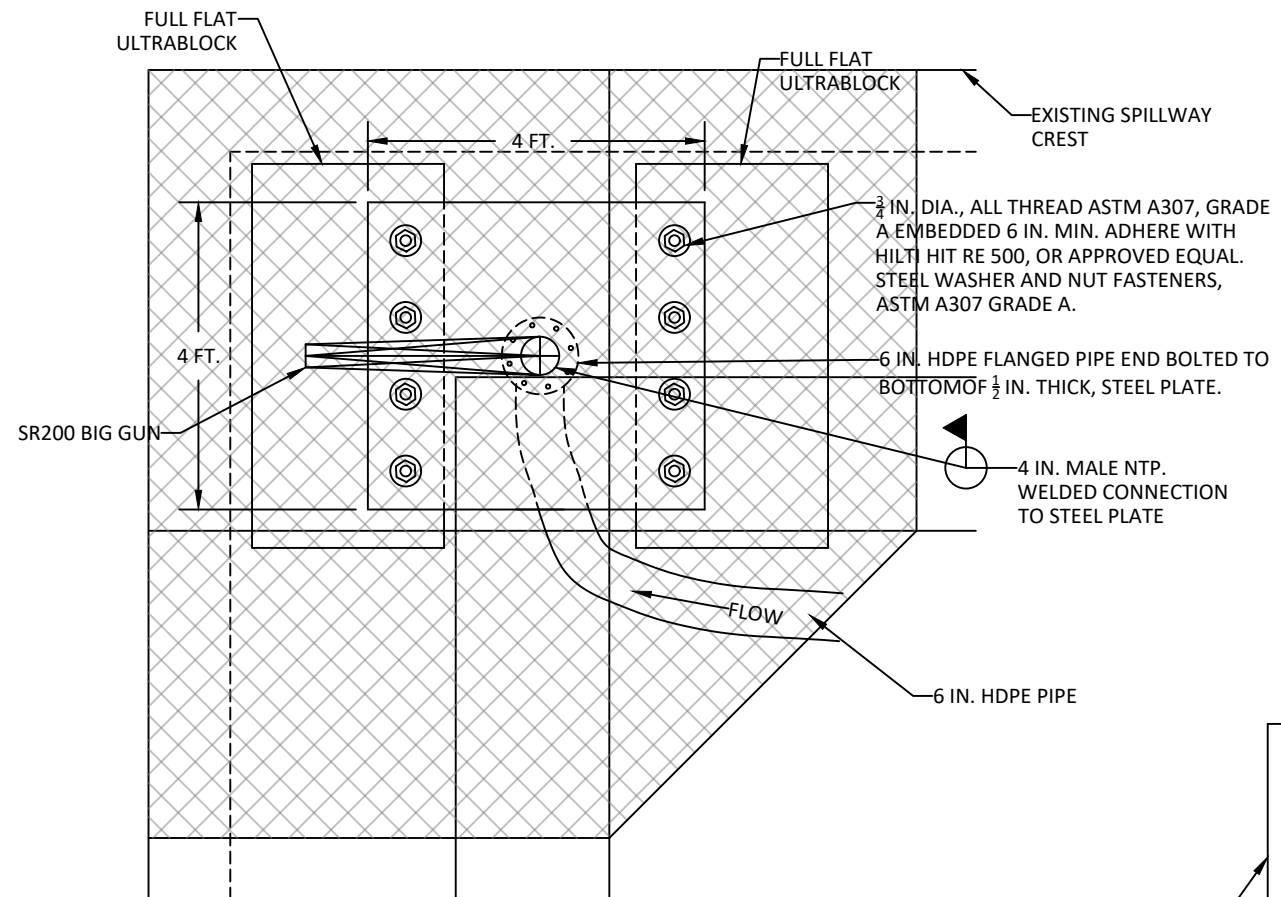
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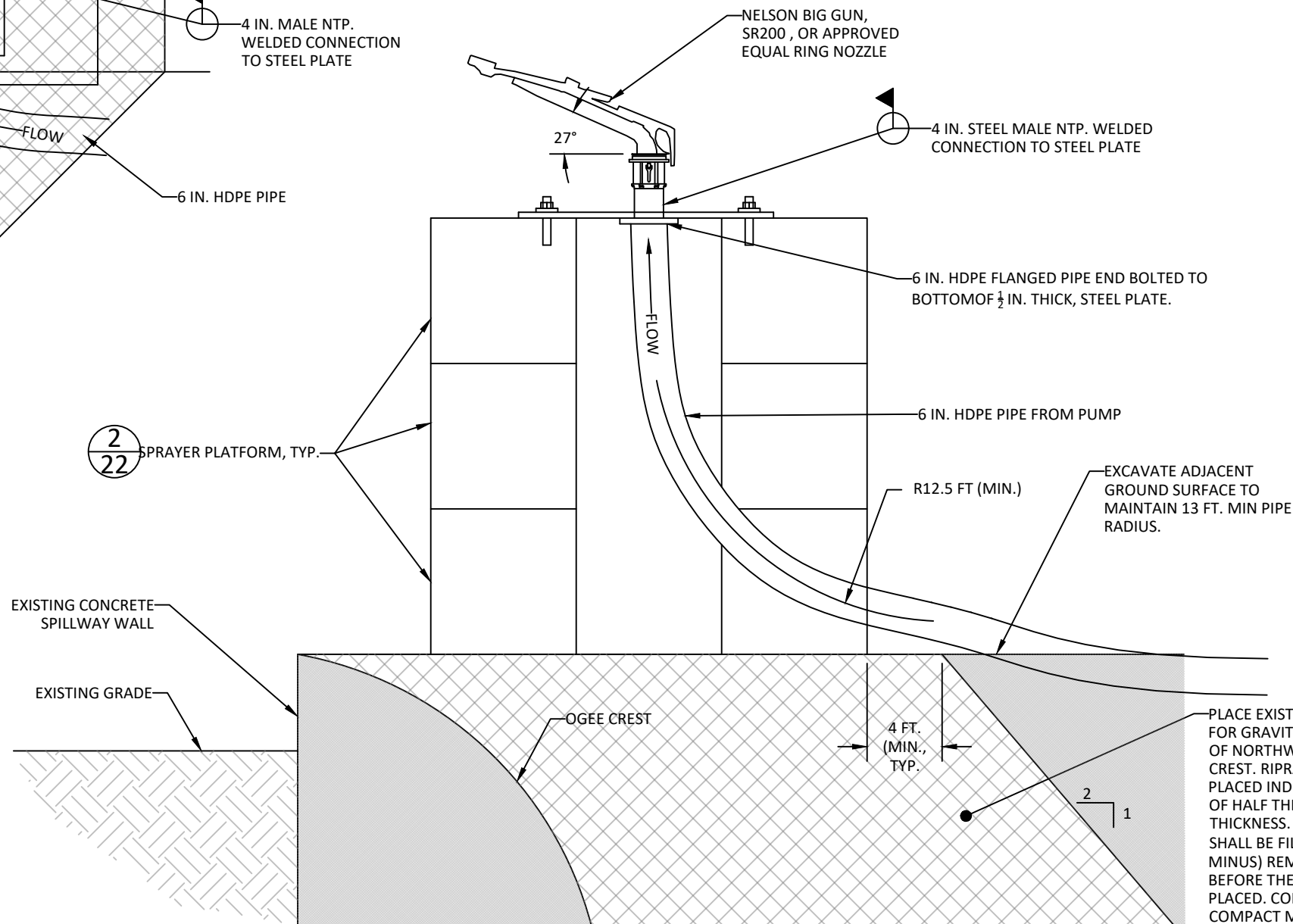
SITE: KWONEESUM DAM
REMOVAL DESIGN

TITLE: KWONEESUM RESERVOIR
AND DAM - SEDIMENT
MANAGEMENT TYPICAL
DETAIL

SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO: -	DRAWING NO: 22	Total Sheets: 80	



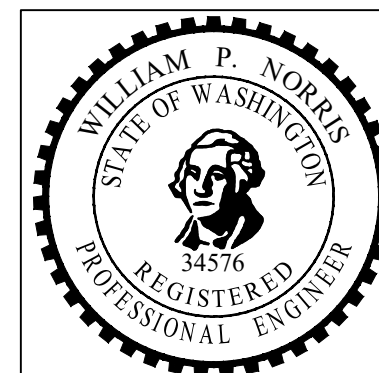
PLAN VIEW - SPRAYER PLATFORM



SECTION VIEW - SPRAYER PLATFORM

1
23 TYPICAL DETAIL - SPRAYER PLATFORM IN SPILLWAY DETAILS
NOT TO SCALE

PLACE EXISTING RIPRAP EXCAVATED FOR GRAVITY DIVERSION PIPE INSIDE OF NORTHWEST CORNER OF OGEE CREST. RIPRAP MATERIAL SHALL BE PLACED INDIVIDUALLY AND IN LIFTS OF HALF THE RIPRAP HEIGHT THICKNESS. EACH LIFT OF RIPRAP SHALL BE FILLED WITH SMALL (3-INCH, MINUS) REMOVED FROM THE DAM BEFORE THE NEXT LIFT OF RIPRAP IS PLACED. CONTRACTOR SHALL COMPACT MATERIALS WITH EXCAVATOR BUCKET AND TRACKS FOR EACH SUCCESSIVE LIFT. SUBSEQUENT LIFTS OF RIPRAP SHALL BE PLACED IN SUCH A WAY THAT POCKETS BETWEEN OR UNDER THEM CAN BE FILLED WITH CRUSHED ROCK FROM THE DAM EITHER BEFORE OR AFTER RIPRAP PLACEMENT. ADD GRAVEL BASE AND CRUSHED SURFACING BASE PER DETAIL 1 OF SHEET 16 OVER RIPRAP LIFTS.



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SITE: KWONEESUM DAM
REMOVAL DESIGN

TITLE: KWONEESUM RESERVOIR
AND DAM - SEDIMENT
MANAGEMENT TYPICAL
DETAIL

SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO: -	DRAWING NO: 23	Total Sheets: 80	

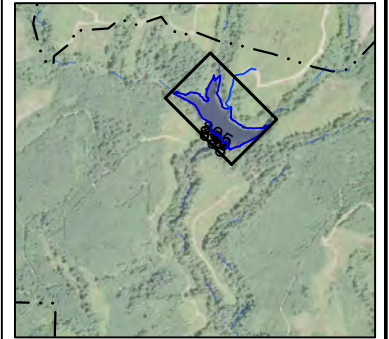
EXCAVATION AND FILL QUANTITIES WITHIN OHW UPSTREAM OF DAM

Bid Item	Area (SY)	Temporary Cut in OHW (CY)	Temporary Fill in OHW (CY)	Permanent Cut in OHW (CY)	Permanent Fill in OHW (CY)
Access Road	4499				10530
Diversion Pipe Access Road Crossing	165		135		
Access Road East Tributary Removal	638		2080		
East Tributary Cofferdam	12		12		
Ephemeral Stream Cofferdam	5		5		
North Tributary Cofferdam	15		15		
West Tributary Cofferdam	12		12		
Reservoir Tributary Regrades	12090	24631		13903	
Containment Berms	1667				1862
Reservoir Fill and Regrade	29291				44339
Diversion Pipe Ditch	726	972			
Diversion Pipe West Crossing	11		8		

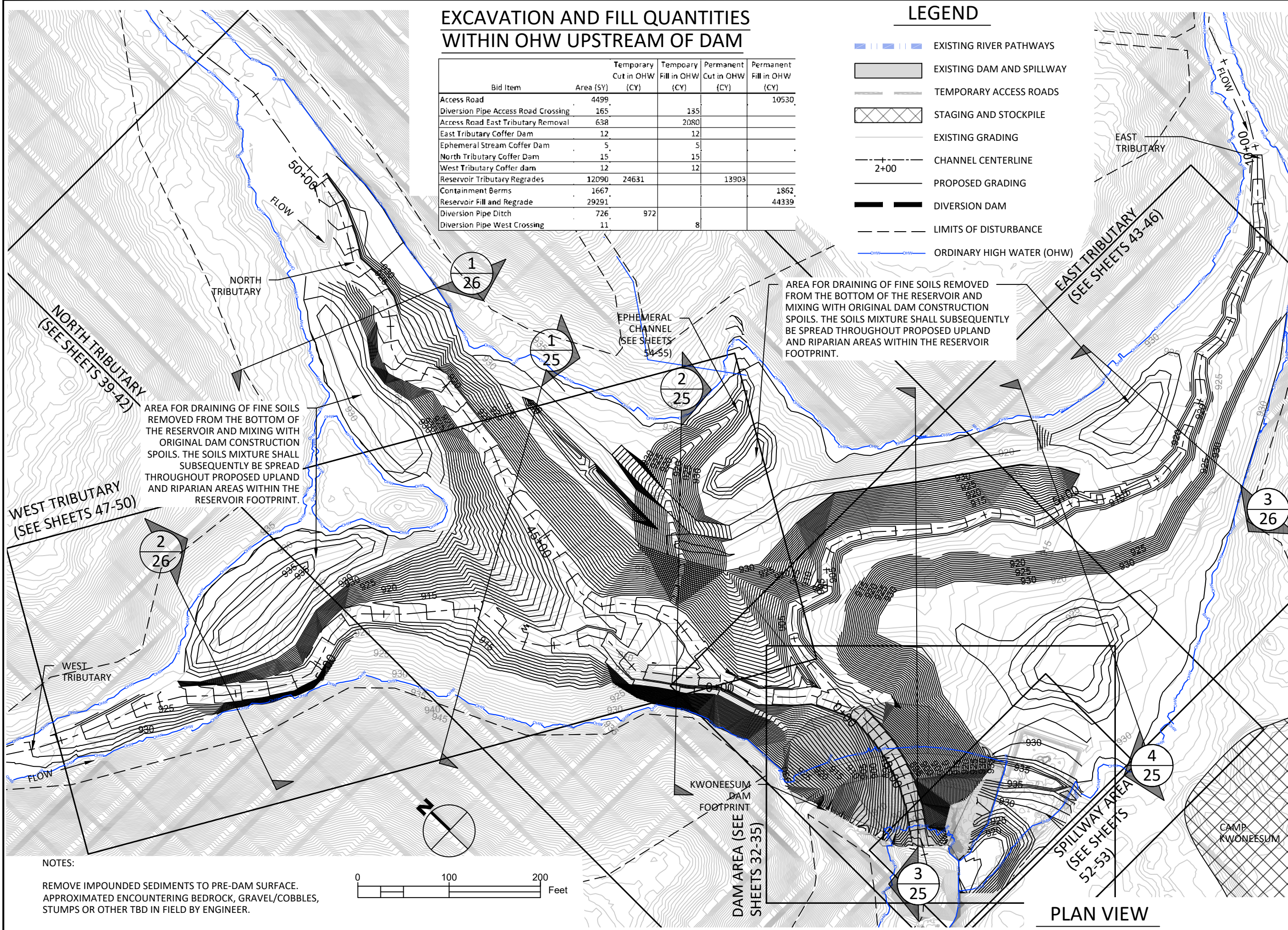
LEGEND

- EXISTING RIVER PATHWAYS
- EXISTING DAM AND SPILLWAY
- TEMPORARY ACCESS ROADS
- STAGING AND STOCKPILE
- EXISTING GRADING
- CHANNEL CENTERLINE
- PROPOSED GRADING
- DIVERSION DAM
- LIMITS OF DISTURBANCE
- ORDINARY HIGH WATER (OHW)

Notes:



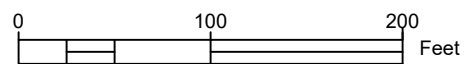
SHEET LOCATION



AREA FOR DRAINING OF FINE SOILS REMOVED FROM THE BOTTOM OF THE RESERVOIR AND MIXING WITH ORIGINAL DAM CONSTRUCTION SPOILS. THE SOILS MIXTURE SHALL SUBSEQUENTLY BE SPREAD THROUGHOUT PROPOSED UPLAND AND RIPARIAN AREAS WITHIN THE RESERVOIR FOOTPRINT.

AREA FOR DRAINING OF FINE SOILS REMOVED FROM THE BOTTOM OF THE RESERVOIR AND MIXING WITH ORIGINAL DAM CONSTRUCTION SPOILS. THE SOILS MIXTURE SHALL SUBSEQUENTLY BE SPREAD THROUGHOUT PROPOSED UPLAND AND RIPARIAN AREAS WITHIN THE RESERVOIR FOOTPRINT.

NOTES:
REMOVE IMPOUNDED SEDIMENTS TO PRE-DAM SURFACE.
APPROXIMATED ENCOUNTERING BEDROCK, GRAVEL/COBBLES,
STUMPS OR OTHER TBD IN FIELD BY ENGINEER.



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STATUS: PRELIMINARY DESIGN			

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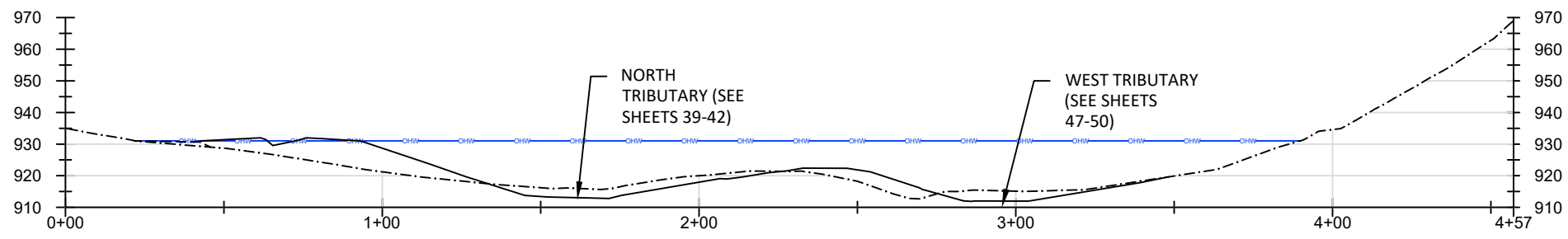
CLIENT: COWLITZ INDIAN TRIBE
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SITE: KWONEESUM DAM
REMOVAL DESIGN

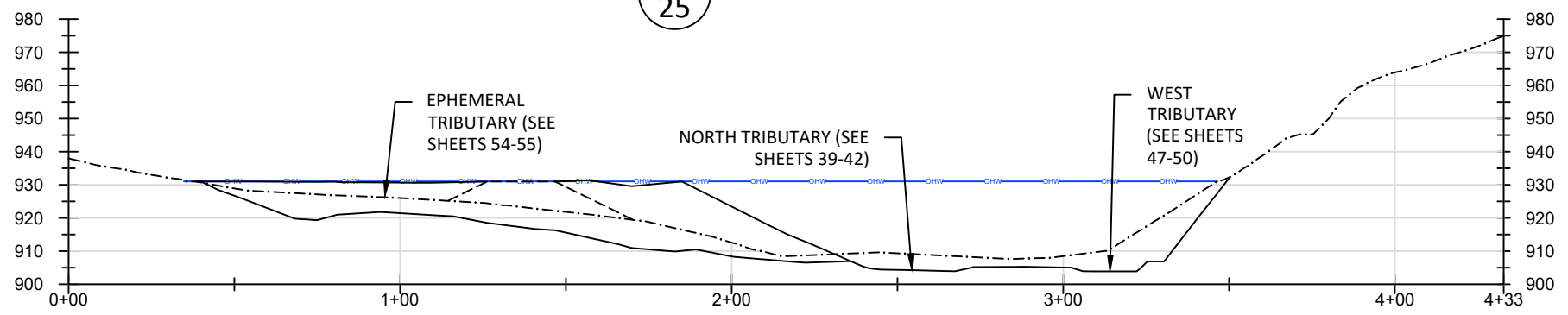
TITLE: KWONEESUM RESERVOIR
AND DAM - ANTICIPATED
RESERVOIR MASS GRADING

SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
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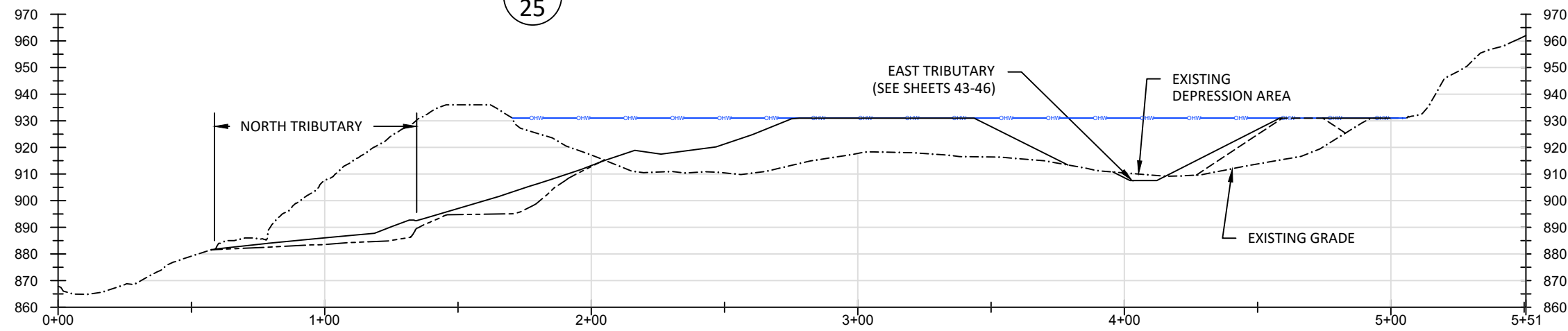
PLAN VIEW



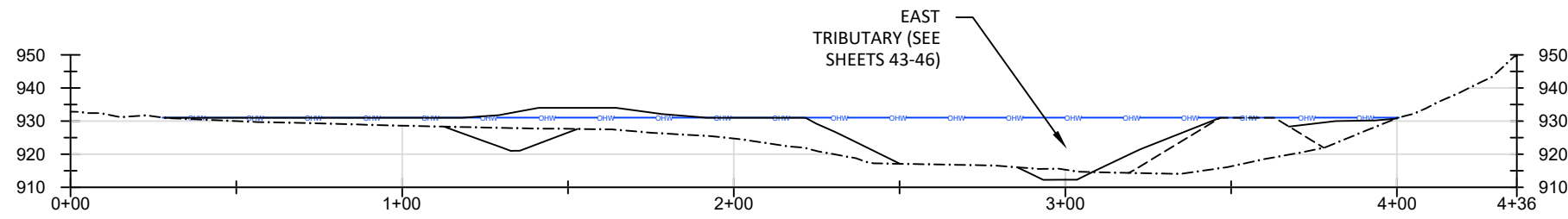
1
25
CROSS-SECTION



2
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CROSS-SECTION



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25
CROSS-SECTION

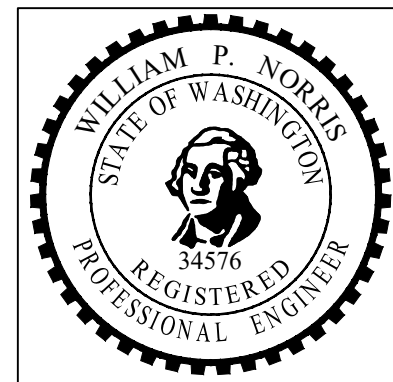


4
25
CROSS-SECTION

- LEGEND**
- - - - - EXISTING GRADE
 - OHW — OHW — ORDINARY HIGH WATER (OHW)50
 - ANTICIPATED GRADE
 - - - - - ANTICIPATED DAM SUBGRADE
 - - - - - ACCESS ROAD SALVAGED ROCK

NOTES:
ALL EXCAVATION
CUT AND FILLS ARE
PERMANENT

ALL
CROSS-SECTIONS
ARE ORIENTED LEFT
TO RIGHT LOOKING
DOWNSTREAM.



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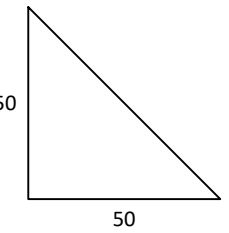
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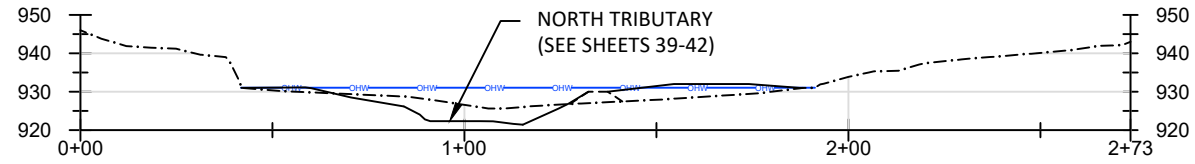
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SITE: KWONEESUM DAM
REMOVAL DESIGN

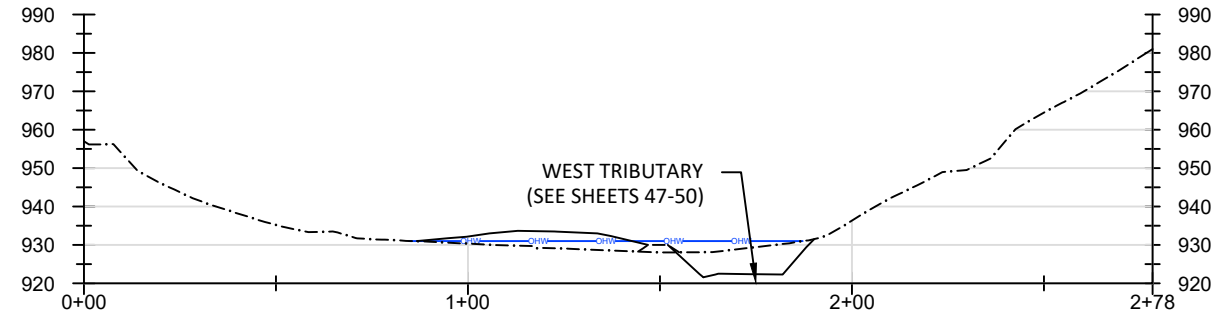
TITLE: KWONEESUM RESERVOIR
AND DAM – MASS
GRADING CROSS-SECTIONS

SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO: -	DRAWING NO: 25	Total Sheets: 80	

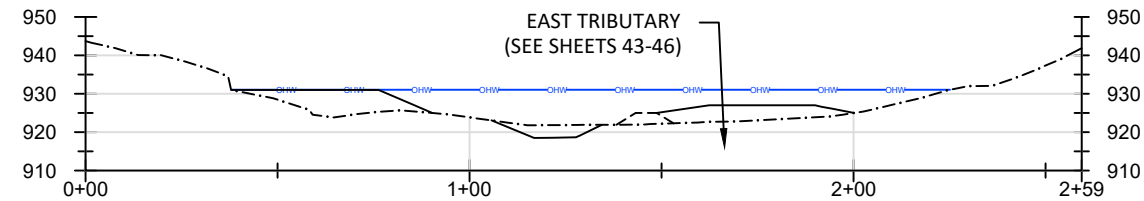




1
26 CROSS-SECTION - NORTH TRIBUTARY



2
26 CROSS-SECTION - WEST TRIBUTARY



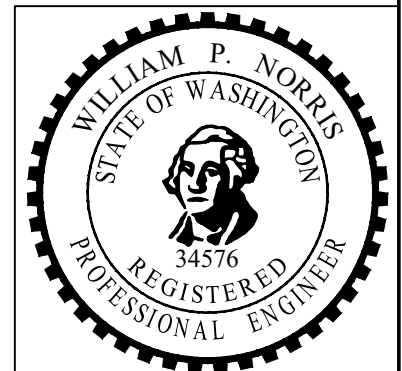
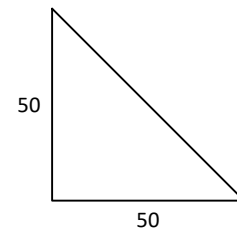
3
26 CROSS-SECTION - EAST TRIBUTARY

LEGEND

- - - - - EXISTING GRADE
- OHW — OHW — ORDINARY HIGH WATER (OHW)
- ANTICIPATED GRADE
- - - - - ACCESS ROAD SALVAGED ROCK

NOTES:
ALL EXCAVATION CUT AND FILLS ARE PERMANENT

ALL CROSS-SECTIONS ARE ORIENTED LEFT TO RIGHT LOOKING DOWNSTREAM.



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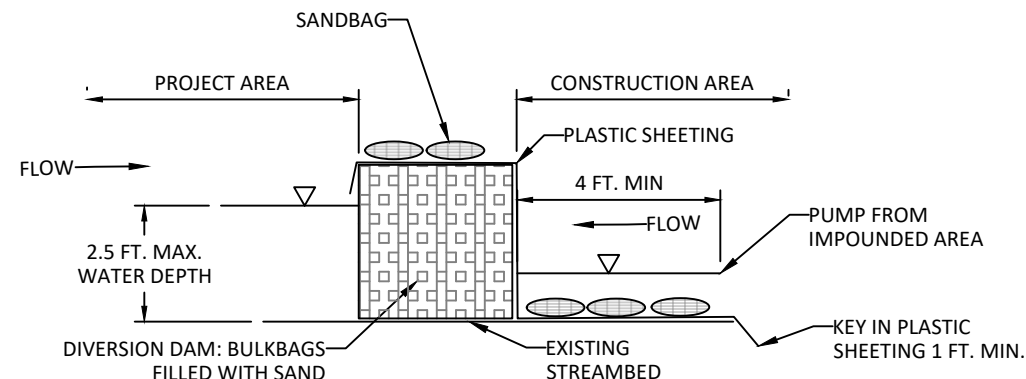
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SITE: KWONEESUM DAM
REMOVAL DESIGN

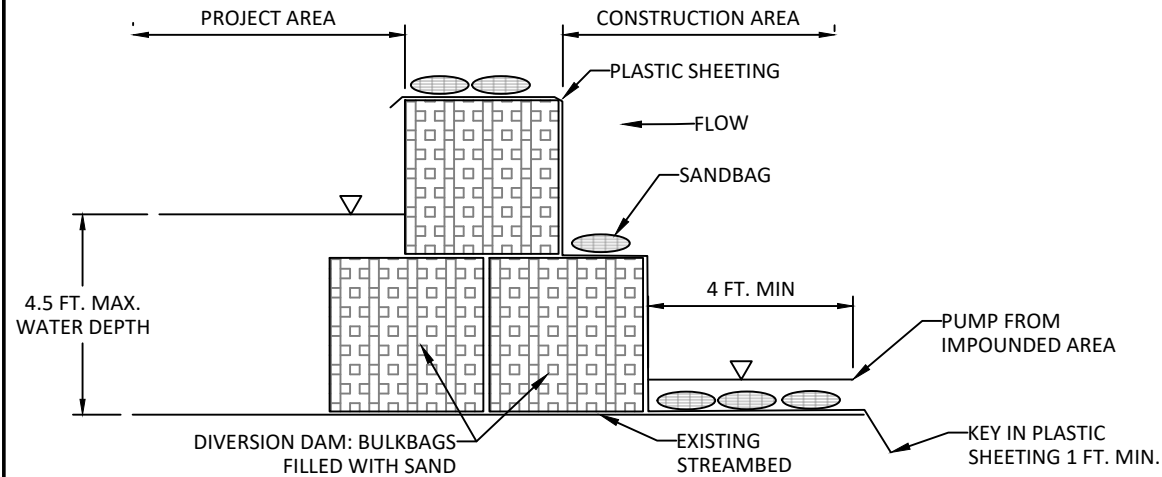
TITLE: KWONEESUM RESERVOIR
AND DAM – MASS
GRADING CROSS-SECTIONS

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PROJ. NO: -	DRAWING NO: 26	Total Sheets: 80	



TYPICAL SECTION VIEW: SINGLE LAYER

NOT TO SCALE



TYPICAL SECTION VIEW: STACKED LAYERS

NOT TO SCALE

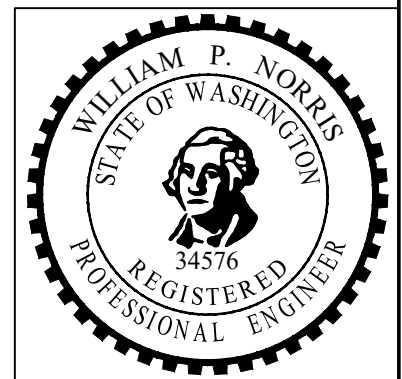
COFFERDAM NOTES:

1. BULKBAG COFFERDAM IS A PRE-APPROVED METHOD FOR ISOLATING THE WORK AREA FROM SURFACE FLOWS. CONTRACTOR MAY SUBMIT ALTERNATE COFFERDAM DESIGN TO THE ENGINEER FOR REVIEW AND APPROVAL. ALTERNATE DESIGN SUBMITTAL SHALL INCLUDE SHOP DRAWINGS AND/OR MATERIALS DATA AND MANUFACTURER'S RECOMMENDATIONS.
2. BULKBAGS SHALL BE FILLED WITH SAND. PLACE FILLED BULKBAGS ADJACENT TO ONE ANOTHER TO CREATE A CONTINUOUS ROW THAT ISOLATES THE WORK AREA FROM SURFACE FLOWS.
3. IF WATER DEPTH EXCEEDS 85% OF THE BULKBAG HEIGHT, AN ADDITIONAL TOP ROW OF BULKBAGS SHALL BE INSTALLED, SUPPORTED BY TWO BOTTOM ROWS OF BULKBAGS.
4. BULKBAG COFFERDAM SHALL BE SEALED BY COVERING THE COFFERDAM WITH PLASTIC SHEETING HELD IN PLACE BY STANDARD SANDBAGS PLACED IN ROWS ON TOP OF COFFERDAM, AND AT TOE OF COFFERDAM. THE PLASTIC SHEETING SHALL BE DRAPED ALONG THE CHANNEL BOTTOM ON THE WORK AREA SIDE OF THE COFFERDAM WITH OUTWARD EDGE OF SHEETING MINIMUM 4- FEET FROM TOE OF COFFERDAM. THE DRAPED PORTION OF PLASTIC SHEETING SHALL BE PINNED TO THE CHANNEL BED BY MINIMUM TWO ROWS OF STANDARD SANDBAGS.
5. THE OUTWARD EDGE OF PLASTIC SHEETING ON WORK AREA SIDE SHALL BE TOED INTO THE CHANNEL BED MINIMUM 1-FT. TOEING IN THE OUTWARD EDGE OF PLASTIC SHEETING SHALL OCCUR AFTER THE COFFERDAM IS CLOSED TO PREVENT TURBIDITY RELEASE TO THE WATERWAY.
6. THE COFFERDAM SHALL BE TIGHTLY SEALED TO THE GROUND BY PLASTIC SHEETING AND STANDARD SANDBAGS. MULTIPLE LAYERS OF SHEETING AND SANDBAGS MAY BE REQUIRED TO FORM A WATERTIGHT SEAL.
7. BULKBAGS SHALL BE WATERPROOF CUBE-SHAPED POLYPROPYLENE WOVEN FABRIC BAGS WITH FULLY OPEN TOP, FLAT BOTTOM, FOUR LOOPS, MINIMUM 2-TON WEIGHT CAPACITY, MINIMUM 5:1 SAFETY FACTOR.
8. PLASTIC SHEETING SHALL BE MINIMUM 6-MIL THICKNESS. ROLL LENGTH SHALL BE LONG ENOUGH TO ENSURE THAT ENTIRE LENGTH OF COFFERDAM WILL BE COVERED WITHOUT A SEAM. MINIMUM 12-FT WIDE ROLL SHALL BE USED FOR SINGLE LAYER BULK BAG COFFERDAM. MINIMUM 16-FT WIDE ROLL SHALL BE USED FOR 2-LAYER STACKED BULKBAG COFFERDAM.
9. CONTRACTOR SHALL PROVIDE PUMPING SUFFICIENT FOR A NET INFLOW TO THE WORK AREA, AND DISCHARGE TURBID WATER TO UPLAND FLOODPLAIN.
10. BULKBAG COFFERDAM SHALL BE COMPLETELY REMOVED AFTER CONSTRUCTION IS COMPLETED AND TURBIDITY HAS BEEN REMOVED.
11. IF NECESSARY, GAPS BETWEEN BULKBAGS MAY BE FILLED WITH BENTONITE TO SEAL AND IMPROVE COFFERDAM SEAL.

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27

TYPICAL DETAIL: DAM REMOVAL COFFER DAM 1

NOT TO SCALE



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STATUS: PRELIMINARY DESIGN			

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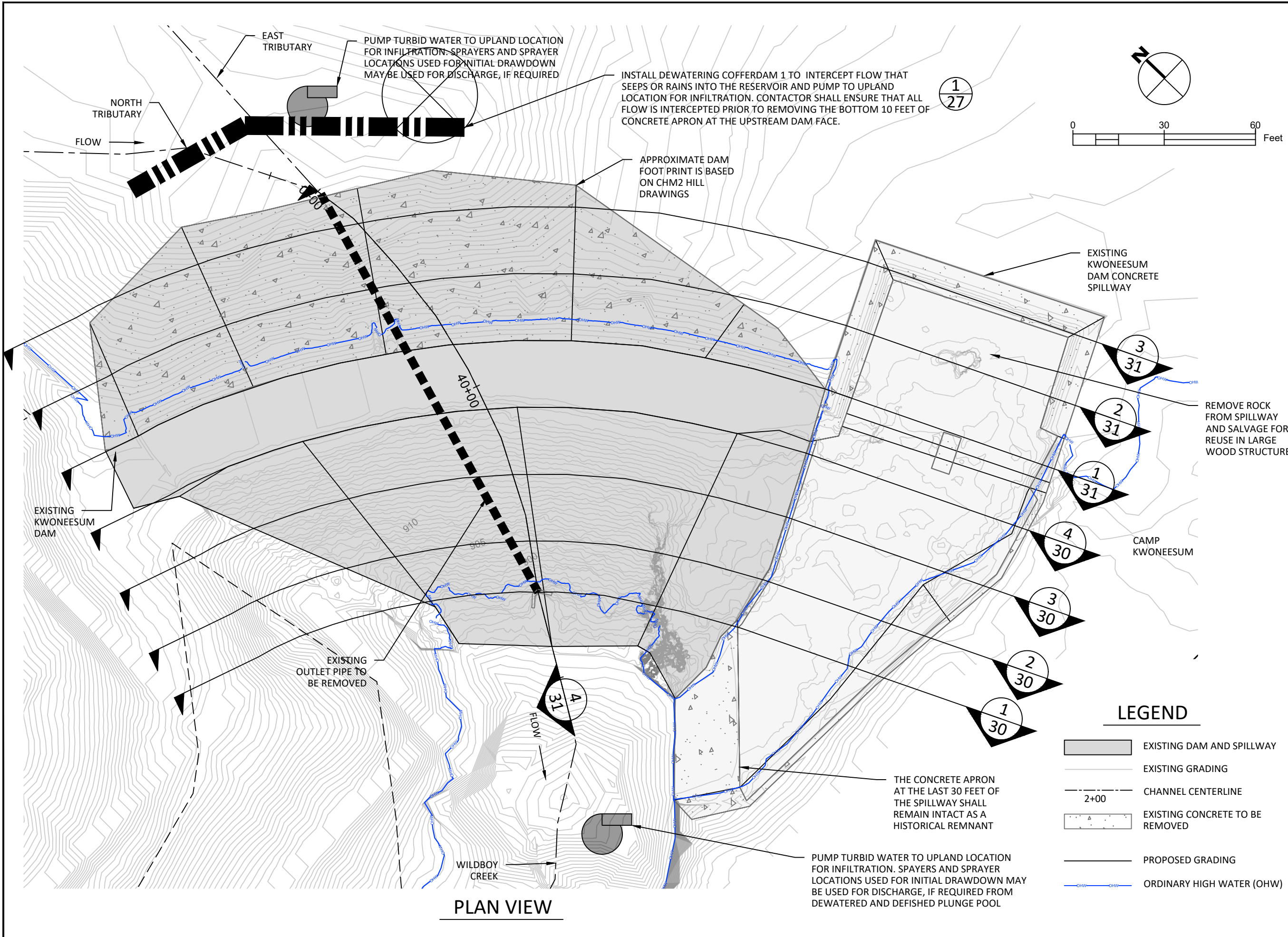
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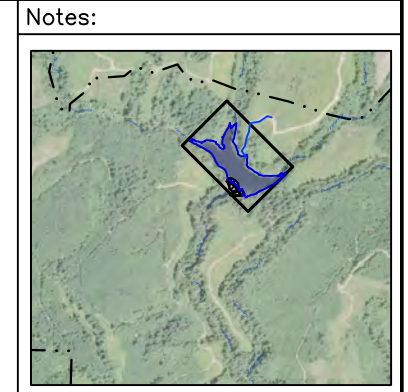
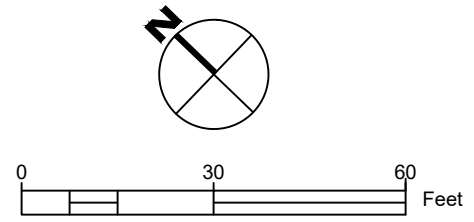
SITE: **KWONEESUM DAM
REMOVAL DESIGN**

TITLE: **KWONEESUM RESERVOIR
AND DAM – TYPICAL
DETAILS DAM REMOVAL**

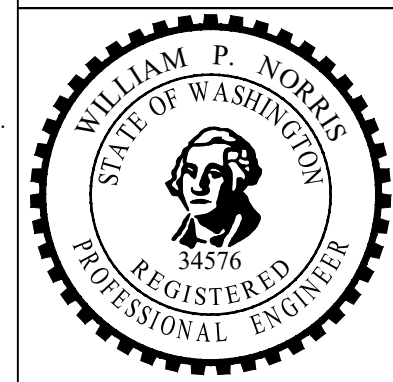
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PROJ. NO: -	DRAWING NO: 27	Total Sheets: 80	



PLAN VIEW



SHEET LOCATION



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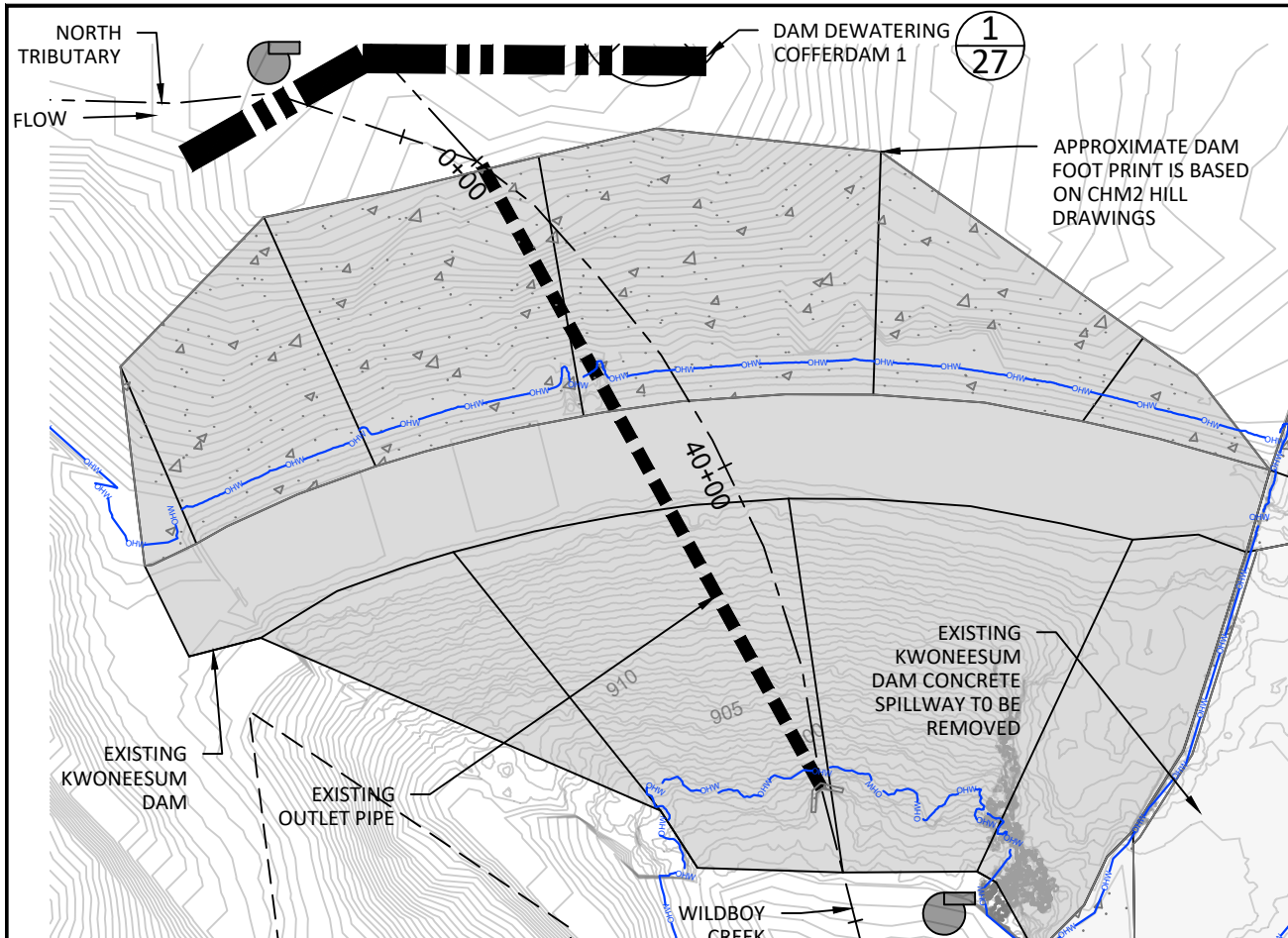
SITE: KWONEESUM DAM
REMOVAL DESIGN

TITLE: KWONEESUM RESERVOIR
AND DAM – DAM
REMOVAL

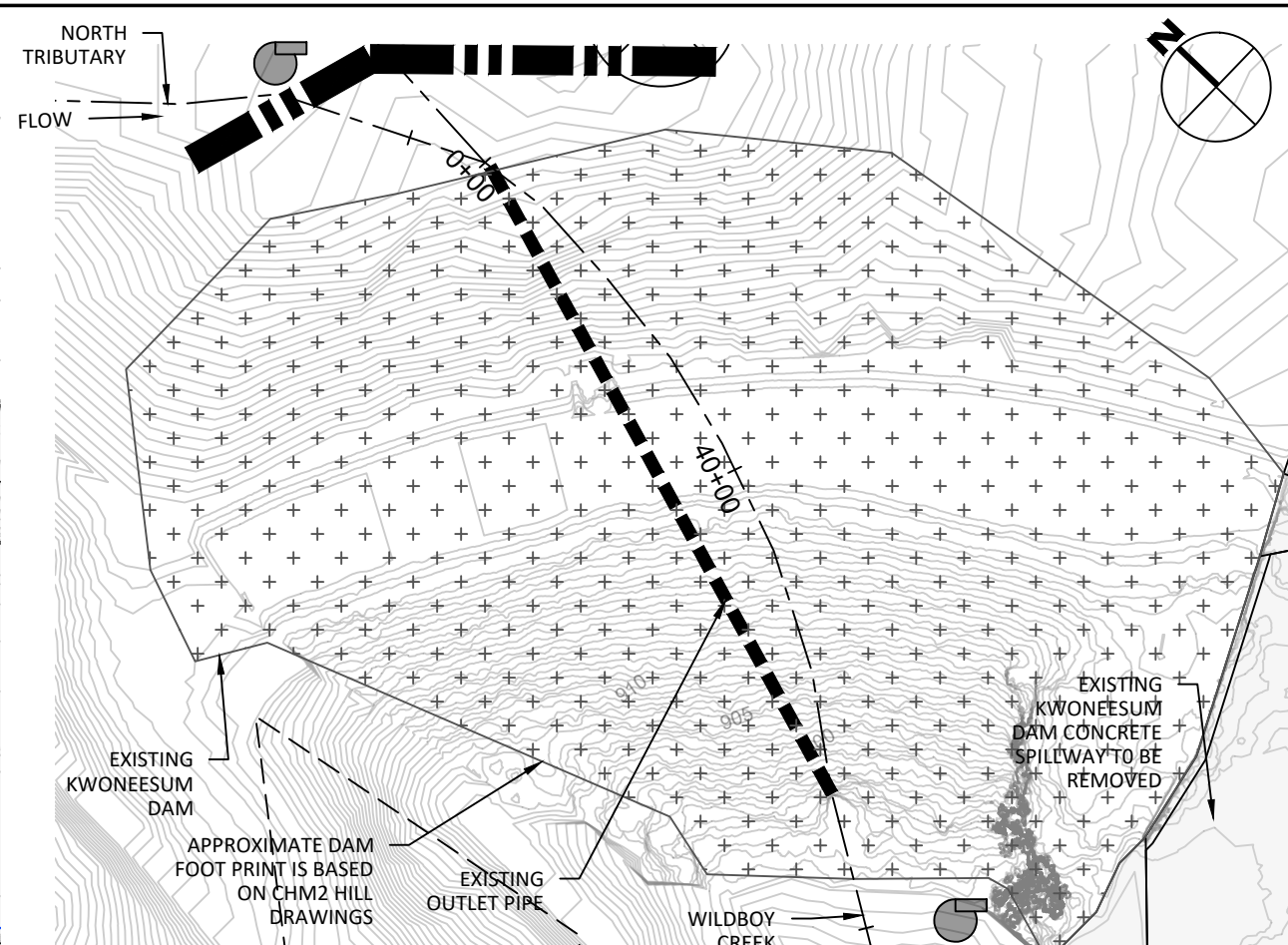
SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO: -	DRAWING NO: 28	Total Sheets: 80	

LEGEND

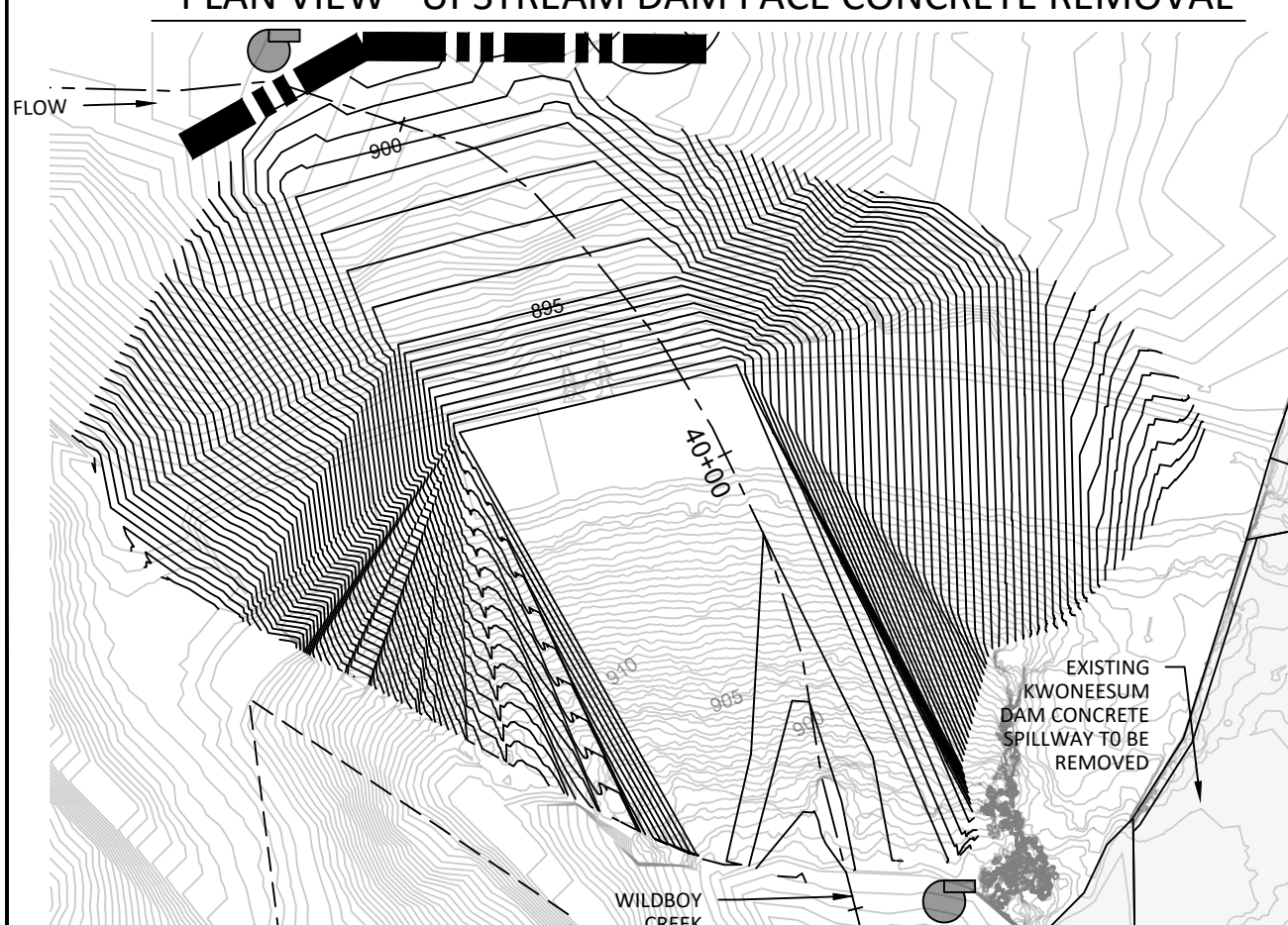
- EXISTING DAM AND SPILLWAY
- EXISTING GRADING
- CHANNEL CENTERLINE
- EXISTING CONCRETE TO BE REMOVED
- PROPOSED GRADING
- ORDINARY HIGH WATER (OHW)



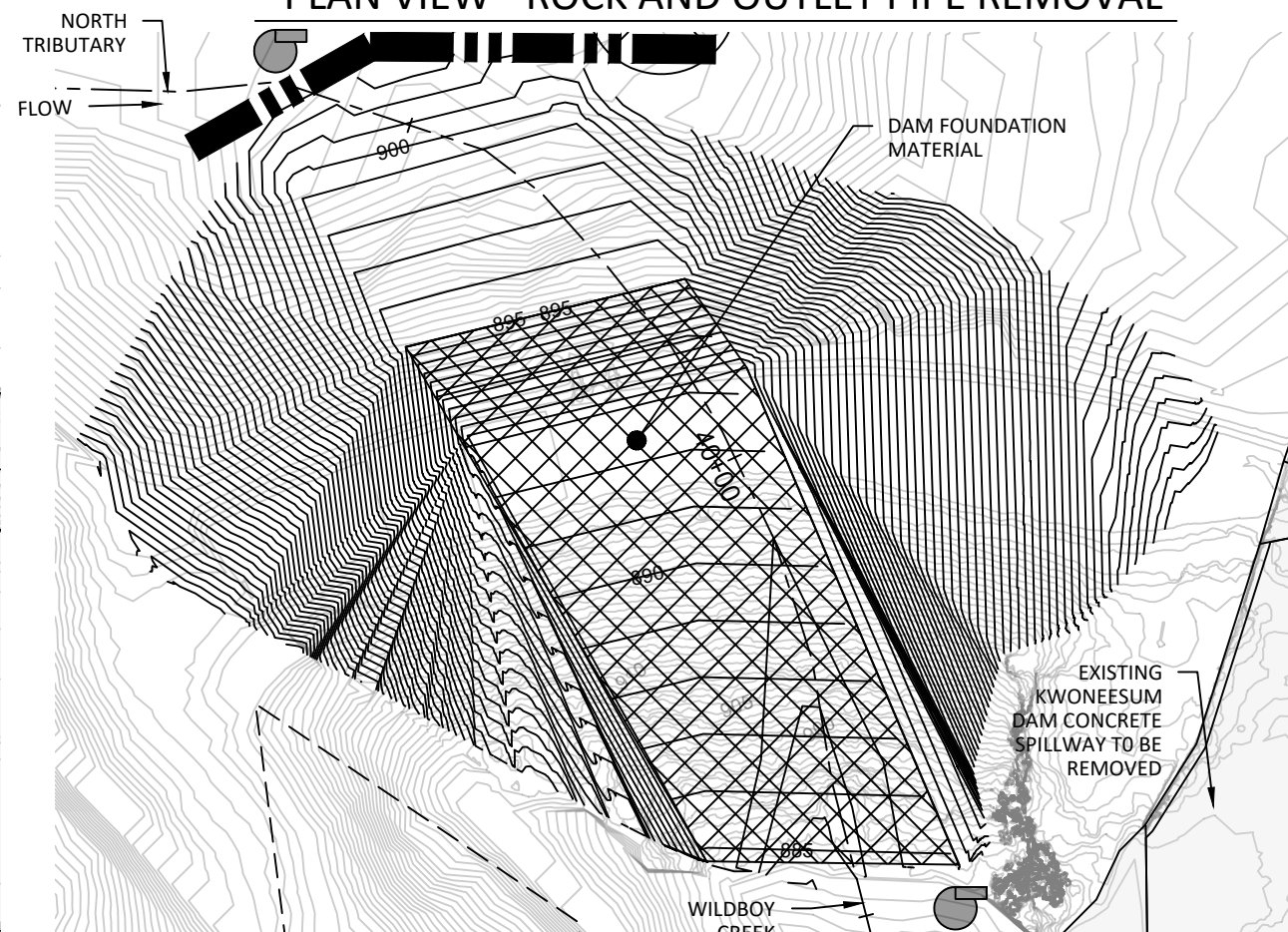
PLAN VIEW - UPSTREAM DAM FACE CONCRETE REMOVAL



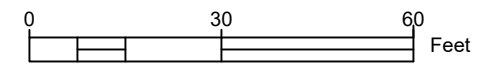
PLAN VIEW - ROCK AND OUTLET PIPE REMOVAL



PLAN VIEW - DAM SUBGRADE SURFACE

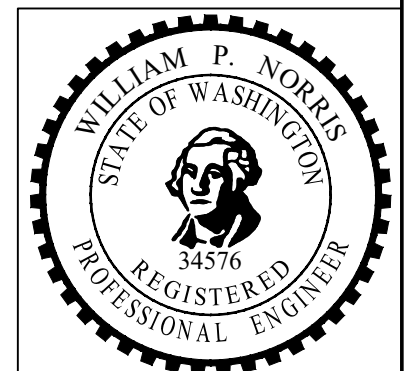


PLAN VIEW - BURIED LARGE WOOD GRADE CONTROL



LEGEND

- EXISTING DAM AND SPILLWAY
- EXISTING GRADING
- EXISTING CONCRETE TO BE REMOVED
- EXISTING DAM MATERIAL TO BE REMOVED
- EXISTING OUTLET PIPE TO BE REMOVED
- DAM FOUNDATION MATERIAL
- CHANNEL CENTERLINE
- PROPOSED GRADING
- ORDINARY HIGH WATER (OHW)
- EXISTING OUTLET PIPE
- DEWATERING COFFER DAM 1
- DEWATERING COFFER DAM 2



3			
2			
1			
REV:	DESCRIPTION:	BY:	DATE:
STATUS: PRELIMINARY DESIGN			

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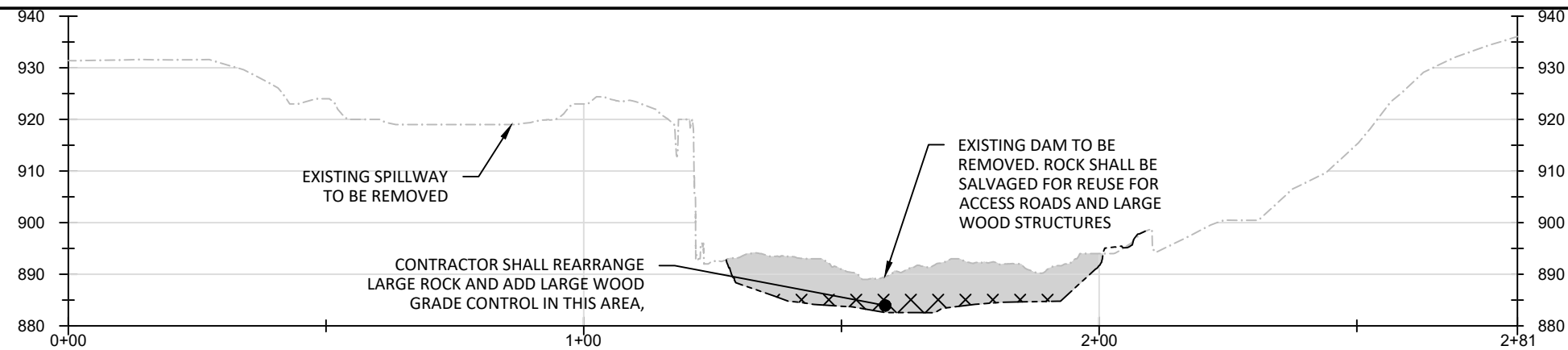
302 W. Steuben St. #6
Bingen, WA 98605
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CLIENT: COWLITZ INDIAN TRIBE
7700 26TH AVE
VANCOUVER, WA, 98665

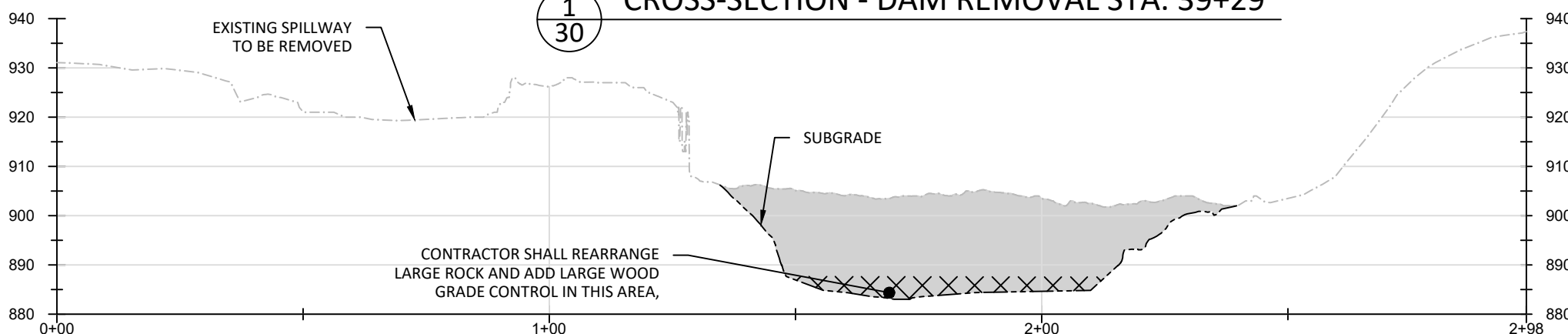
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REMOVAL DESIGN

TITLE: KWONEESUM RESERVOIR
AND DAM - DAM
REMOVAL SEQUENCE

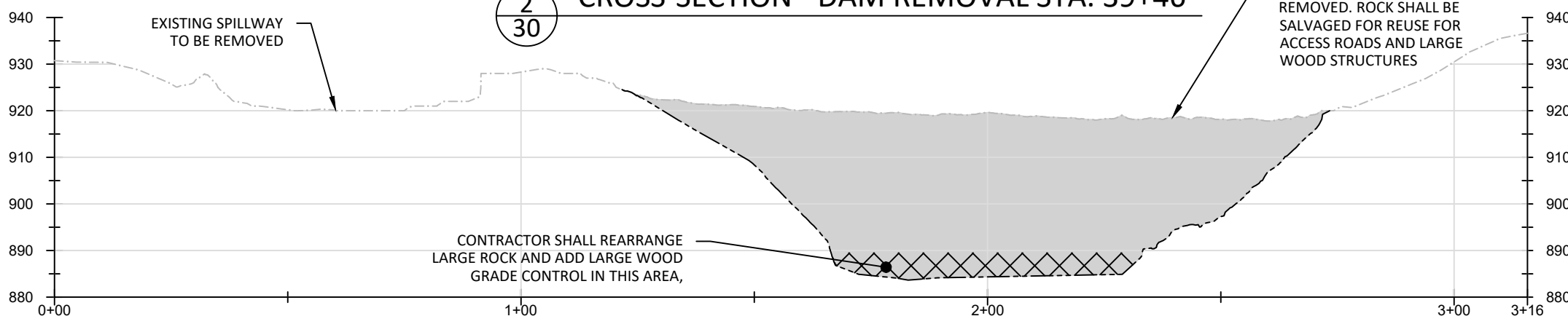
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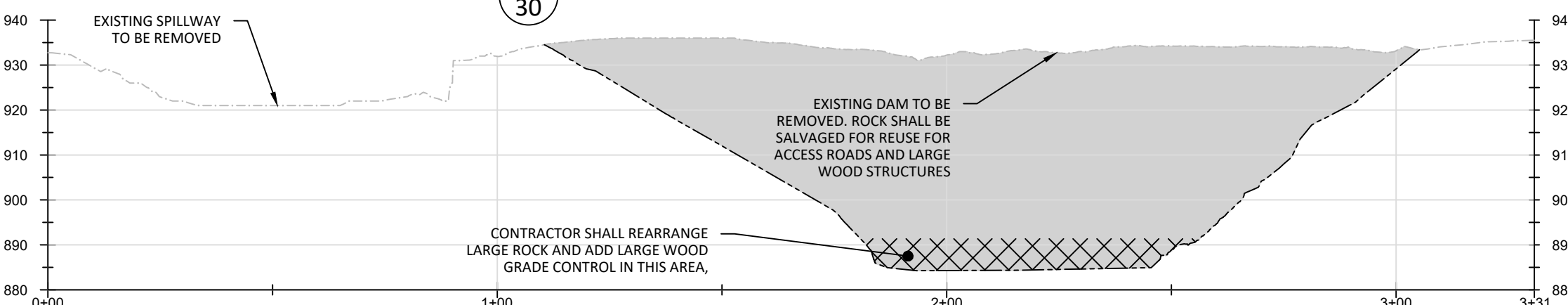
1
30
CROSS-SECTION - DAM REMOVAL STA. 39+29



2
30
CROSS-SECTION - DAM REMOVAL STA. 39+46



3
30
CROSS-SECTION - DAM REMOVAL STA. 39+69



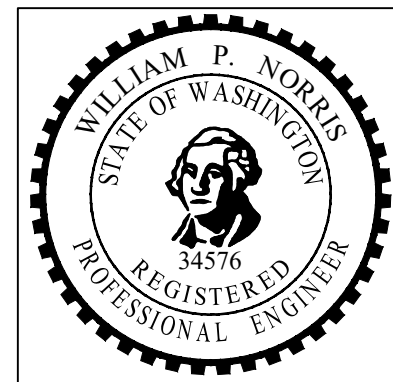
4
30
CROSS-SECTION - DAM REMOVAL STA. 39+92

NOTES:
ALL EXCAVATION CUT AND FILLS ARE PERMANENT

ALL CROSS-SECTIONS ARE ORIENTED LEFT TO RIGHT LOOKING DOWNSTREAM.

LEGEND

- EXISTING GRADE
- ANTICIPATED DAM SUBGRADE
- EXISTING DAM TO BE REMOVED
- DAM FOUNDATION MATERIAL



3			
2			
1			
REV:	DESCRIPTION:	BY:	DATE:
STATUS: PRELIMINARY DESIGN			

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VANCOUVER, WA, 98665

SITE: KWONEESUM DAM REMOVAL DESIGN
TITLE: KWONEESUM RESERVOIR AND DAM - DAM SUBGRADE CROSS-SECTIONS

SCALE:	DATE: 6/4/21	DRAWN: RP	CHECKED: BN
PROJ. NO: -	DRAWING NO: 30	Total Sheets: 80	

