US Army Corps of Engineers
Seattle District

Joint Public Notice

Application for a Department of the Army Permit and a Washington Department of Ecology Water Quality Certification and/or Coastal Zone Management Consistency Concurrence

US Army Corps of Engineers
Regulatory Branch
Post Office Box 3755
Seattle, WA 98124-3755
Telephone: (206) 764-6960
ATTN: Ms. Olivia Romano,
Project Manager

WA Department of Ecology
SEA Program
Post Office Box 47600
Olympia, WA 98504-7600
Telephone: (360) 407-6068
ATTN: SEA Program,
Federal Permit Coordinator

Public Notice Date: June 24, 2016
Expiration Date: July 24, 2016

Reference No.: NWS-2016-0016
Name: Seattle City Light

Interested parties are hereby notified that the U.S. Army Corps of Engineers (Corps) and the Washington Department of Ecology (Ecology) have received an application to perform work in waters of the U.S. as described below and shown on the enclosed drawings dated April 24, 2015.

The Corps will review the work in accordance with Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Ecology will review the work pursuant to Section 401 of the CWA, with applicable provisions of State water pollution control laws and the Coastal Zone Management Act.

APPLICANT: Seattle City Light
Attention: Mr. Scott Luchessa
P.O. Box 34023
Seattle, Washington 98124-4023
Telephone: (206) 733-9655

LOCATION: In Skagit River (Gorge Lake) at the confluence of Stetattle Creek, near Diablo, Whatcom County, Washington.

WORK: Excavate and remove up to 18,000 cubic yards of material from an existing cobble bar below the ordinary high water mark of Gorge Lake at the confluence of Stetattle Creek. The cobble bar consist mostly of small boulders, cobble, and gravel covering an area of 2.2 acres. Excavation depth ranges would be from five feet at the upstream end of the bar to nine feet at the downstream end. The material removed from the existing cobble bar would be hauled about 16 miles southwest to an upland area adjacent to the Skagit River. Bank and riparian habitat restoration would occur at the access ramp adjacent to the Gorge Campground. Restoration would include installation of native riparian plants, compost, and topsoil amendments.

The work would be conducted in four phases.

Phase 1 - Installation of the cofferdam and an access ramp: The cofferdam work would be done mostly in dry by lowering Gorge Lake, reducing flows through Diablo Powerhouse, installing a cofferdam around the perimeter of the work area, and managing the water that infiltrates the site. Cofferdam construction would consist of

super-sacks using up to 6,000 cubic yards of on-site gravel excavated from the cobble bar down to the waterline. The super-sacks would be placed at the upstream end of the cobble bar to divert Stetattle Creek flow from the work area. Depending on the flow in Stetattle Creek, an excavator would be operate in the shallow water at the west edge of the wetted perimeter of Stetattle Creek when building the cofferdam diversion. A plastic lining would then be laid over the Stetattle Creek bed. This would reduce the hyproheic flow from Stetattle Creek into the work area. The lining would likely be held in place with sand bags and placed by divers. Dewatering methods would be implemented to collect water that infiltrates (hyproheic flow) within the perimeter of the cofferdam. Dewatering methods would include digging a sump or installing subsurface wells to collect the hyproheic flow and pumping it to a treatment site located either in the excavated footprint or an adjacent upland location. Construction of access ramp would allow haul trucks, dozers, excavators, and loaders access to the work site. Access ramp construction would involve pulling back up to 780 cubic yards of material from the top of the bank at Gorge Campground to achieve the appropriate grade and remove up to 11 trees along the bank line.

Phase 2 – Install Skagit River cofferdam and excavation: Diablo Powerhouse flows would be reduced to lower the water surface adjacent to the cobble bar level to Phase 2 excavation. Excavation would proceed by cutting a bench into the south side of the cobble bar and removing about 5,000 cubic yards of material, would either be loaded for off-site disposal or temporary stockpile in uplands. Once the Phase 2 excavation is completed, the Skagit River cofferdam would be installed along the bench wall. The Super-sacks for this cofferdam would be filled with material from the cobble bar. After this cofferdam has been completed, overlapping steel plates would be hung with chains over the super-sacks to prevent river flows from potentially scouring and undermining the super-sacks.

Phase 3 – Complete excavation, install habitat structures, remove access ramp, and terminate dewatering: Once the Skagit River cofferdam is in place, the remaining 6,500 cubic yards of cobble would be removed. Four instream structures would be constructed, these structures would be comprised of logs, root wads, stone ballast, and live willow stacks and installed on the right bank of the Skagit River downstream of the confluence of Stetattle Creek to mitigate impacts to fish habitat. Each structure would include four root wads and require the excavation of up to seven cubic yards to install each root wad. The logs would be held in place by rock ballast or rock anchors and backfilled with native material and planted with native plants using brush layering or similar bioengineering techniques. During installation of the habitat structures, Gorge Lake would be held at a constant elevation.

Phase 4 – Remove cofferdams and reestablish flows: The Skagit River cofferdam would be removed first. The super-sacks would be removed using a barge-mounted excavator or small crane using flexi-floats with spuds. Removal of Stetattle Creek cofferdam would create a transient condition where the streambed of the Creek would be perched on a bench about five feet higher than the new excavated bed of the adjacent lake. To minimize the duration of this transient condition and facility formation of a channel that enables fish passage upstream into the Creek the following would occur: 1) a few of the super-sacks from the Stetattle Creek cofferdam would be removed to form a small opening in the diversion dam, 2) other super-sacks in the diversion dam would be repositioned so they are perpendicular to the flow, forcing the entire creek to flow into the excavated area through the initial opening of the cofferdam that will help for a low-gradient pilot channel through the bench facilitating fish passage from the river into the creek, and 3) to ensure the channel has the velocity needed for fish to move upstream into Stetattle Creek, large boulders would be placed with a crane at the mouth of Stetattle Creek to force water to turn right as it exits the creek. Boulders would form a pocket of water with low velocities where fish can rest as they move up into Stetattle Creek. The boulder structures would nudge the creek towards the four new instream habitat structures on the right bank of the river, increasing their effectiveness.

PURPOSE: To restore power generating capacity of the Diablo Powerhouse. The existing cobble and gravel bar has caused a backwater effect at the tailrace, reducing the peak flows, and reducing the river's ability to mobilize aggraded material. An increase in surface water elevation at the tailrace has resulted in the loss of head and thereby resulted in loss of power generation capacity, estimated to be about 8,700 megawatts per year.

ENDANGERED SPECIES: The Endangered Species Act (ESA) requires federal agencies to consult with the National Marine Fisheries Service (NMFS) and/or U.S. Fish and Wildlife Service (USFWS) pursuant to Section 7 of the ESA on all actions that may affect a species listed (or proposed for listing) under the ESA as threatened or endangered or any designated critical habitat. The Federal Energy Regulatory Commission (FERC), as the lead agency or Seattle City Light as designed non-federal lead for ESA consultation, will consult with the NMFS and/or the USFWS as required under Section 7 of the ESA.

ESSENTIAL FISH HABITAT: The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996, requires all Federal agencies to consult with the NMFS on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH). The proposed action would impact EFH in the project area. The FERC, as the lead agency for a determination regarding EFH, or the Seattle City Light as designed non-federal lead will consult with the NMFS, if necessary.

CULTURAL RESOURCES: The National Park Service (NPS), as the lead agency for determining compliance with Section 106 of the National Historic Preservation Act, will consult with the State Historic Preservation Officer and Native American Tribes as appropriate.

PUBLIC HEARING: Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing.

EVALUATION – CORPS: The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people.

The Corps is soliciting comments from the public; Native American Nations or tribal governments; Federal, State, and local agencies and officials; and other interested parties in order to consider and evaluate the impacts of this activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition or deny a permit for the work. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the activity.

The described discharge will be evaluated for compliance with guidelines promulgated by the Environmental Protection Agency under authority of Section 404(b)(1) of the CWA. These guidelines require an alternatives analysis for any proposed discharge of dredged or fill material into waters of the U.S.

SOURCE OF FILL MATERIAL: The source of the fill material will be from the existing cobble and gravel bar and shoreline.

EVALUATION – ECOLOGY: Ecology is soliciting comments from the public; Federal, Native American Nations or tribal governments, State, and local agencies and officials; and other interested parties in order to consider and

evaluate the impacts of this activity. Ecology will be considering all comments to determine whether to certify or deny certification for the proposed project.

As a Federal agency, the FERC or Seattle City Light as designed non-federal lead will contact the Washington Department of Ecology directly to ensure the work is consistent with the Coastal Zone Management Program.

COMMENT AND REVIEW PERIOD: Conventional mail or e-mail comments on this public notice will be accepted and made part of the record and will be considered in determining whether authorizing the work would not be contrary to the public interest. In order to be accepted, e-mail comments must originate from the author's e-mail account and must include on the subject line of the e-mail message the permit applicant's name and reference number as shown below. Either conventional mail or e-mail comments must include the permit applicant's name and reference number, as shown below, and the commenter's name, address, and phone number. All comments whether conventional mail or e-mail must reach this office, no later than the expiration date of this public notice to ensure consideration.

CORPS COMMENTS: All e-mail comments should be sent to olivia.h.romano@usace.army.mil. Conventional mail comments should be sent to: U.S. Army Corps of Engineers, Regulatory Branch, Attention: Olivia Romano, P.O. Box 3755, Seattle, Washington 98124-3755. All comments received will become part of the administrative record and are subject to public release under the Freedom of Information Act including any personally identifiable information such as names, phone numbers, and addresses.

ECOLOGY COMMENTS: Any person desiring to present views on the project pertaining to a request for water quality certification under Section 401 of the CWA and/or Coastal Zone Management consistency concurrence, may do so by submitting written comments to the following address: Washington State Department of Ecology, Attention: Federal Permit Coordinator, P.O. Box 47600, Olympia, Washington 98504-7600, or e-mail to ecyrefedpermits@ecy.wa.gov.

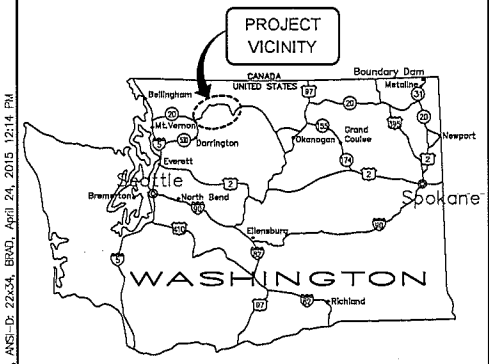
To ensure proper consideration of all comments, responders must include the following name and reference number in the text of their comments: Seattle City Light; NWS-2016-0016

Encl: Figures (17)

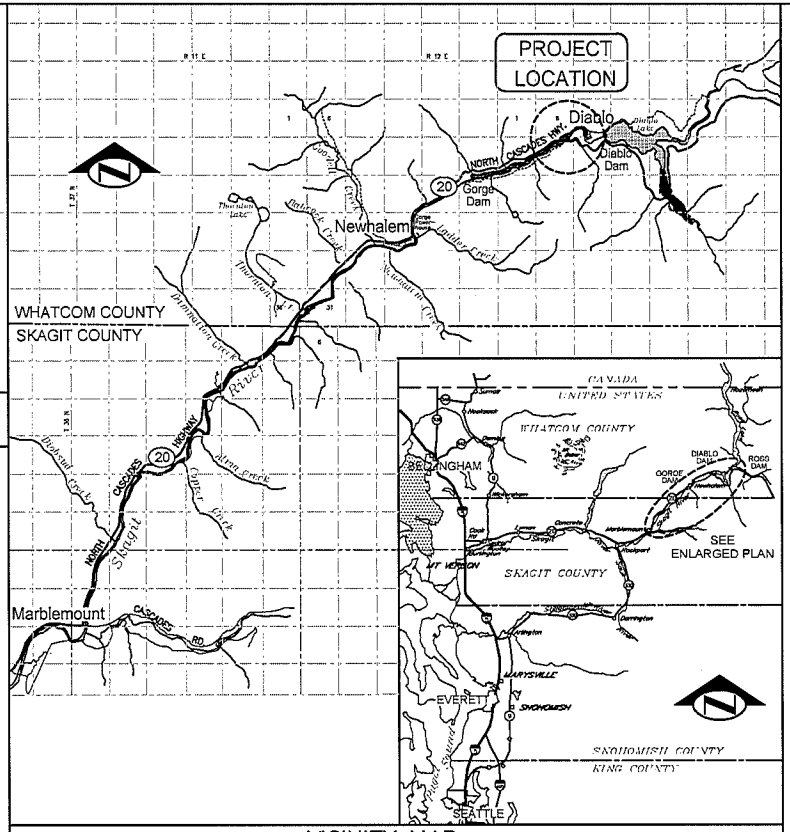
THE CITY OF SEATTLE
DEPARTMENT OF EXECUTIVE ADMINISTRATION

CITY LIGHT DEPARTMENT

STETATTLE CREEK BAR EXCAVATION



STATE MAP
SCALE: N.T.S.



VICINITY MAP
SCALE: N.T.S.

SHEET INDEX

SHEET #	SHEET TITLE	DRAWING #
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C–3	EXISTING SITE PLAN	D–49603
C–4	PROPOSED SITE PLAN	D–49604
C–5	SITE ACCESS AND CONSTRUCTION STAGING/STOCKPILE PLAN	D–49605
C–6	PHASE 1 WATER HANDLING PLAN	D–49606
C–7	PHASES 2 & 3 WATER HANDLING PLAN	D–49607
C–8	PHASE 1 TESC PLAN	D–49608
C–9	PHASES 2 & 3 TESC PLAN	D–49609
C–10	TESC NOTES AND DETAILS	D–49610
C–11	CROSS SECTIONS	D–49611
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C–16	STETATTLE CREEK MITIGATION PLAN, PROFILE AND SECTION	D–49616
C–17	HEADCUT CONTINGENCY PLAN	D–49617

OWNER
SEATTLE CITY LIGHT
P.O. BOX 34023
SEATTLE, WA 98124

CONSULTANT
R2 RESOURCES CONSULTANTS
REDMOND, WA

PROJECT ENGINEERS
GLEN ANDERSON, P.E., R2
STUART BECK, P.E., R2
PAUL LARSON, P.E., SEATTLE CITY LIGHT
PETER BARTON, P.E., SEATTLE CITY LIGHT

PROJECT MANAGER
LISA WILLIAMS, SEATTLE CITY LIGHT

\\Vas\shared projects\1920_Stetattle_Bar_SCL\Drawings\2015-04-07_D49601 COVER SHEET Updated 70%.dwg, ANSI-D: 22x34, BRAD, April 24, 2015 12:14 PM

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REVISIONS					
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WORK ORDER #: 1307373-01					
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WORK ORDER #:					

NWS-2016-0016

70% DRAWINGS
04/24/2015

ENDORSEMENTS	
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DRAWN: R2 BCG	04/24/2015
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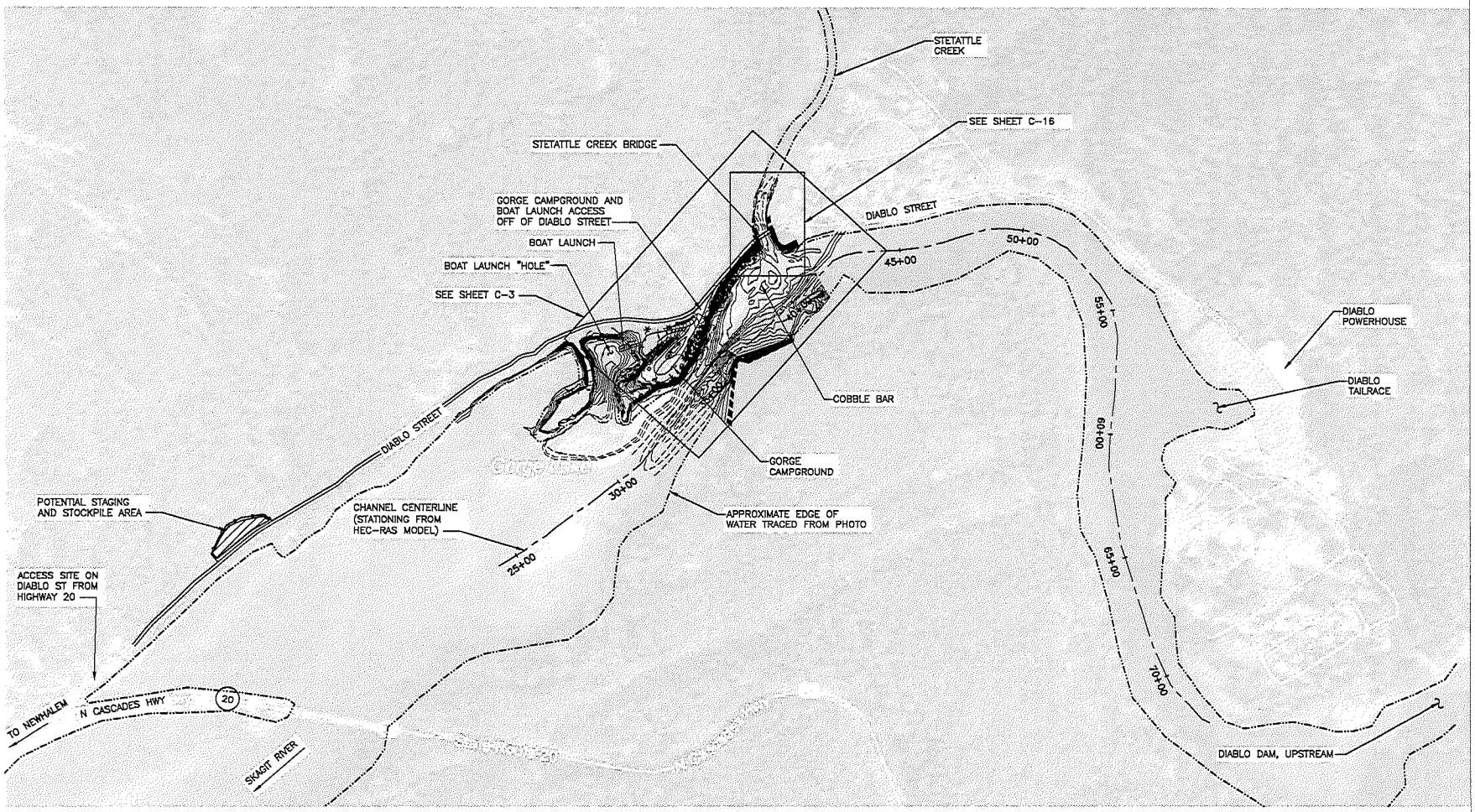
Seattle City Light
Power Production & Substations

APPROVED FOR SEATTLE CITY LIGHT

DATE

SUBJECT	GRADING FOR DRAINAGE
LOCATION	GORGE DAM & RESERVOIR
TITLE	STETATTLE CREEK BAR EXCAVATION COVER SHEET

SHEET	1 OF 17
CLASS \ SHEET	C-1
DRAWING NO.	D-49601
SCALE	NONE
REV. NO.	0



NOTE: BOAT LAUNCH AND CAMPGROUND TO BE CLOSED FOR DURATION OF CONSTRUCTION AND USED FOR CONSTRUCTION ACTIVITY.

200 0 100 200
SCALE: 1"=200'

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Seattle City Light
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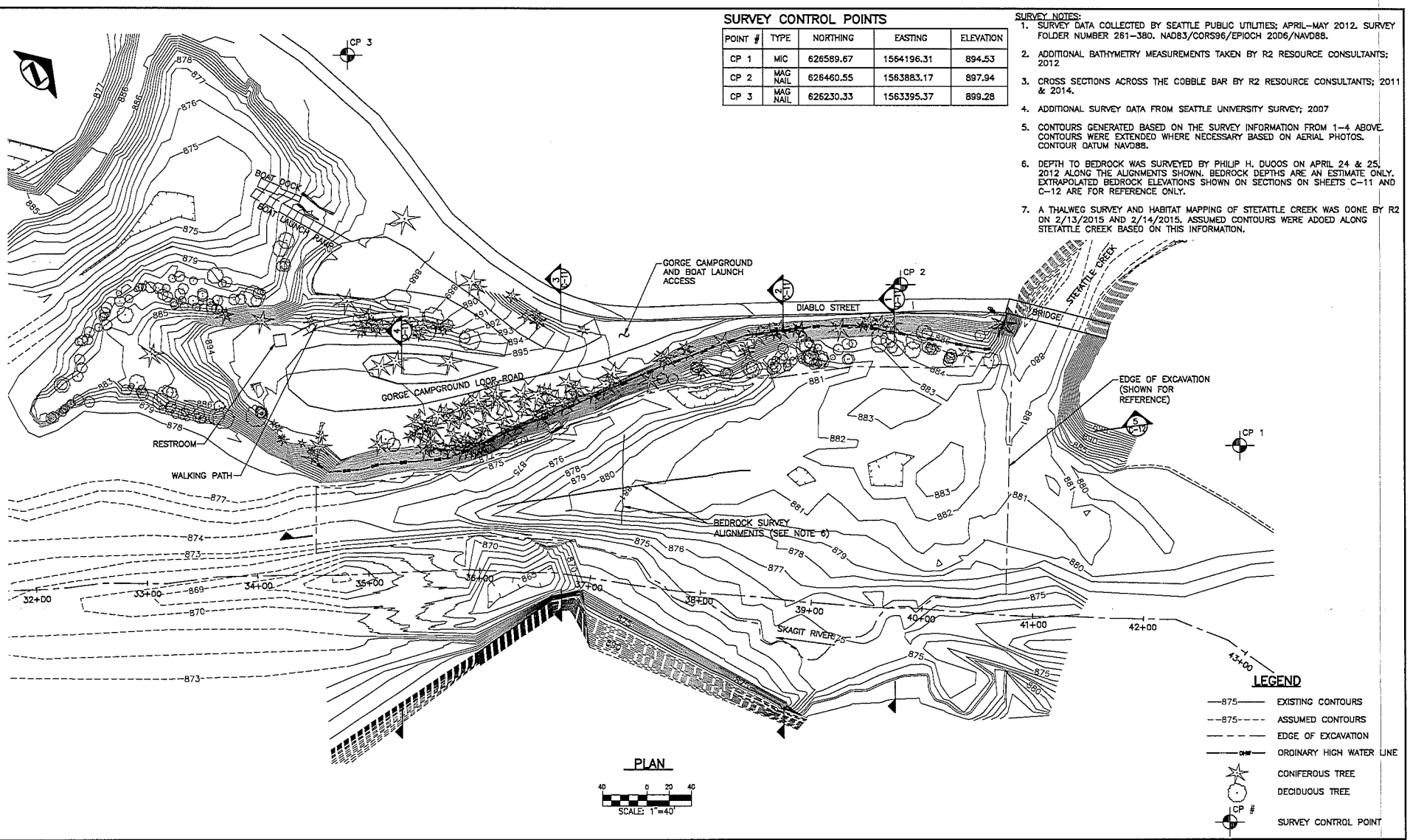
DATE

SUBJECT: GRADING FOR DRAINAGE
LOCATION: GORGE DAM & RESERVOIR
TITLE: STETATTLE CREEK BAR EXCAVATION EXISTING OVERALL SITE PLAN

SHEET: 2 OF 17
CLASS \ SHEET: C-2
DRAWING NO.: D-49602
SCALE: 1" = 200'
REV. NO.: 0



PLAN

40 0 20 40

SCALE: 1"=40'

SURVEY CONTROL POINTS

POINT #	TYPE	NORTHING	EASTING	ELEVATION
CP 1	MIC	626589.67	1564196.31	894.53
CP 2	MAG NAIL	626460.55	1563883.17	897.94
CP 3	MAG NAIL	626230.33	1563395.37	899.28

SURVEY NOTES:

1. SURVEY DATA COLLECTED BY SEATTLE PUBLIC UTILITIES; APRIL–MAY 2012. SURVEY FOLDER NUMBER 261–380. NAD83/CORS96/EPOCH 2006/NAVD88.
2. ADDITIONAL BATHYMETRY MEASUREMENTS TAKEN BY R2 RESOURCE CONSULTANTS; 2012
3. CROSS SECTIONS ACROSS THE COBBLE BAR BY R2 RESOURCE CONSULTANTS; 2011 & 2014.
4. ADDITIONAL SURVEY DATA FROM SEATTLE UNIVERSITY SURVEY; 2007
5. CONTOURS GENERATED BASED ON THE SURVEY INFORMATION FROM 1–4 ABOVE. CONTOURS WERE EXTENDED WHERE NECESSARY BASED ON AERIAL PHOTOS. CONTOUR DATUM NAVD88.
6. DEPTH TO BEDROCK WAS SURVEYED BY PHILIP H. DUOOS ON APRIL 24 & 25, 2012 ALONG THE ALIGNMENTS SHOWN. BEDROCK DEPTHS ARE AN ESTIMATE ONLY. EXTRAPOLATED BEDROCK ELEVATIONS SHOWN ON SECTIONS ON SHEETS C–11 AND C–12 ARE FOR REFERENCE ONLY.
7. A THALWEG SURVEY AND HABITAT MAPPING OF STETATTLE CREEK WAS DONE BY R2 ON 2/13/2015 AND 2/14/2015. ASSUMED CONTOURS WERE ADDED ALONG STETATTLE CREEK BASED ON THIS INFORMATION.

LEGEND

- 875 — EXISTING CONTOURS
- 875 – – – ASSUMED CONTOURS
- EDGE OF EXCAVATION
- OHW — ORDINARY HIGH WATER LINE
- CONIFEROUS TREE
- DECIDUOUS TREE
- CP # SURVEY CONTROL POINT

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REDMOND, WA.

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DESIGN: R2 CSA	04/24/2015
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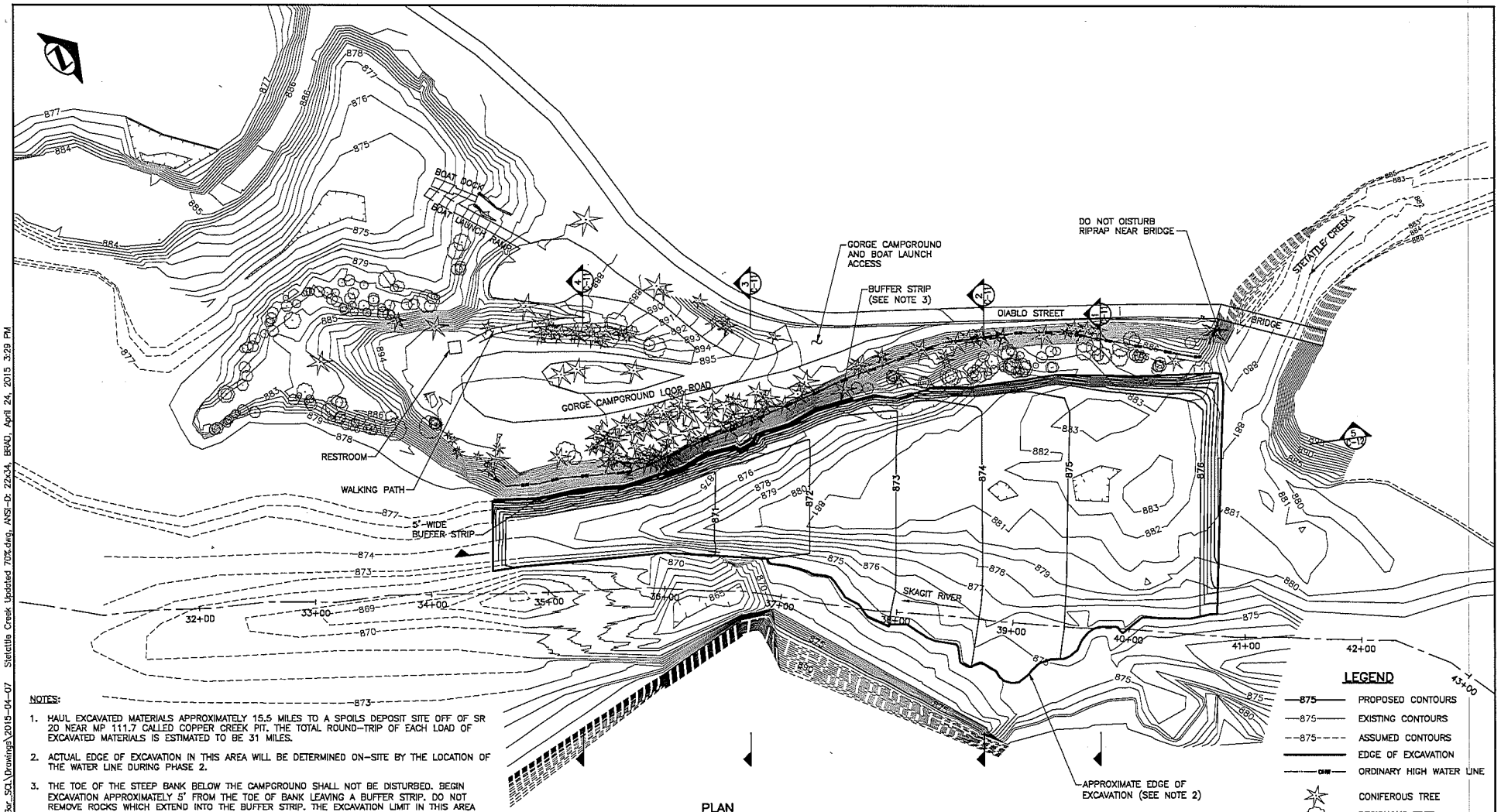
Seattle City Light
Power Production & Substations

APPROVED FOR SEATTLE CITY LIGHT

DATE

SUBJECT	GRADING FOR DRAINAGE
LOCATION	GORGE DAM & RESERVOIR
TITLE	STETATTLE CREEK BAR EXCAVATION EXISTING SITE PLAN
SHEET	3 OF 17
CLASS \ SHEET	C-3
DRAWING NO.	D-49603
SCALE	1" = 40'
REV. NO.	0



PLAN

NOTES:

1. HAUL EXCAVATED MATERIALS APPROXIMATELY 15.5 MILES TO A SPOILS DEPOSIT SITE OFF OF SR 20 NEAR MP 111.7 CALLED COPPER CREEK PIT. THE TOTAL ROUND-TRIP OF EACH LOAD OF EXCAVATED MATERIALS IS ESTIMATED TO BE 31 MILES.
2. ACTUAL EDGE OF EXCAVATION IN THIS AREA WILL BE DETERMINED ON-SITE BY THE LOCATION OF THE WATER LINE DURING PHASE 2.
3. THE TOE OF THE STEEP BANK BELOW THE CAMPGROUND SHALL NOT BE DISTURBED. BEGIN EXCAVATION APPROXIMATELY 5' FROM THE TOE OF BANK LEAVING A BUFFER STRIP. DO NOT REMOVE ROCKS WHICH EXTEND INTO THE BUFFER STRIP. THE EXCAVATION LIMIT IN THIS AREA SHALL BE ESTABLISHED IN COORDINATION WITH ENGINEER.
4. RIPRAP IN THE VICINITY OF STETATTLE CREEK BRIDGE SHALL NOT BE DISTURBED OR REMOVED DURING EXCAVATION.
5. ALL STOCKPILE AREAS SHALL BE PROTECTED BY TESC MEASURES.

LEGEND

- 875 PROPOSED CONTOURS
- 875 EXISTING CONTOURS
- 875 ASSUMED CONTOURS
- EDGE OF EXCAVATION
- ORDINARY HIGH WATER LINE
- CONIFEROUS TREE
- DECIDUOUS TREE

SCALE: 1"=40'

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WORK ORDER #:		

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DESIGN: R2 CSA	04/24/2015
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Seattle City Light
Power Production & Substations

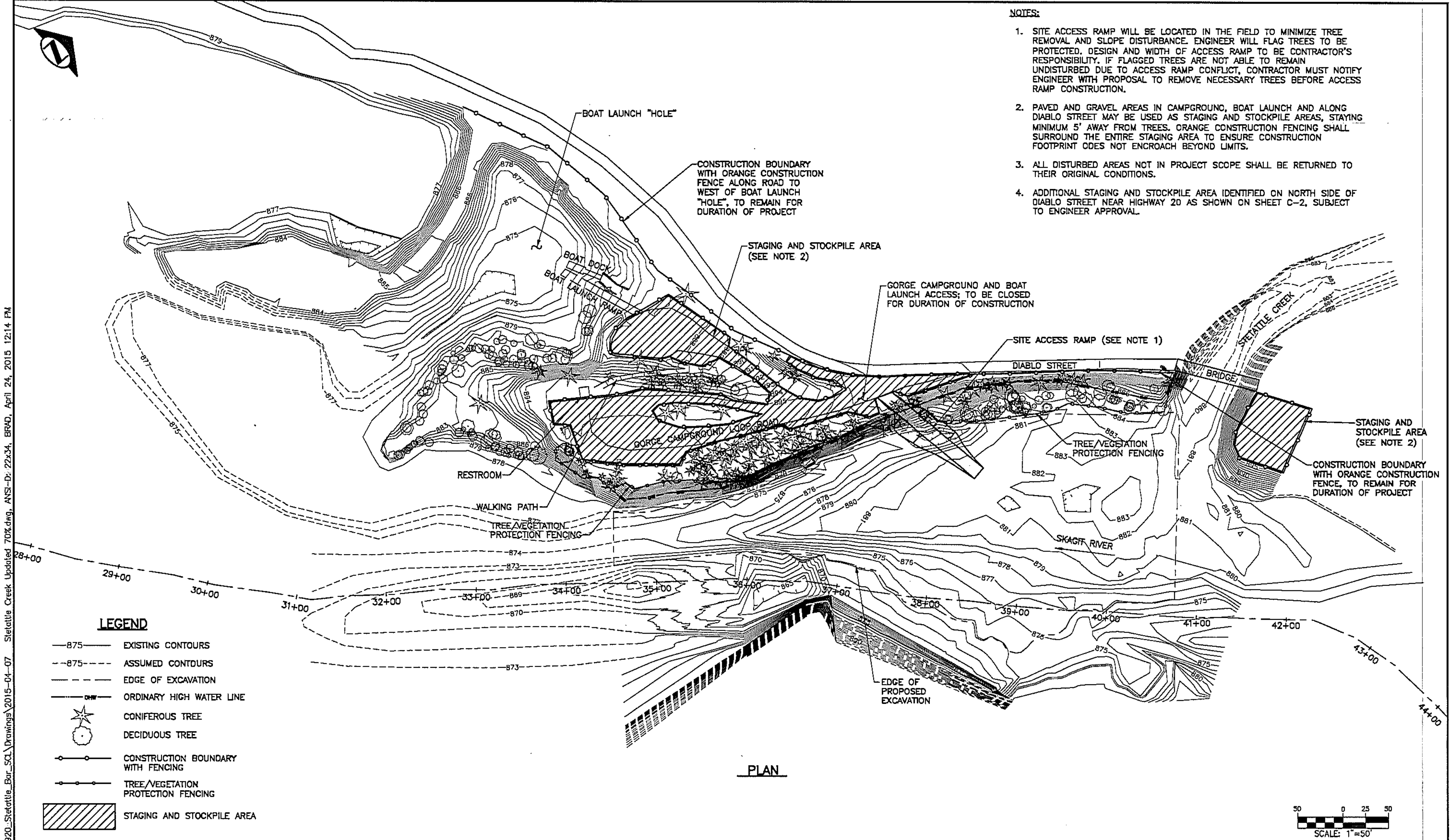
APPROVED FOR SEATTLE CITY LIGHT

DATE

SUBJECT	GRADING FOR DRAINAGE
LOCATION	GORGE DAM & RESERVOIR
TITLE	STETATTLE CREEK BAR EXCAVATION PROPOSED SITE PLAN
SHEET	4 of 17
CLASS \ SHEET	C-4
DRAWING NO.	D-49604
SCALE	1" = 40'
REV. NO.	0

NOTES:

1. SITE ACCESS RAMP WILL BE LOCATED IN THE FIELD TO MINIMIZE TREE REMOVAL AND SLOPE DISTURBANCE. ENGINEER WILL FLAG TREES TO BE PROTECTED. DESIGN AND WIDTH OF ACCESS RAMP TO BE CONTRACTOR'S RESPONSIBILITY. IF FLAGGED TREES ARE NOT ABLE TO REMAIN UNDISTURBED DUE TO ACCESS RAMP CONFLICT, CONTRACTOR MUST NOTIFY ENGINEER WITH PROPOSAL TO REMOVE NECESSARY TREES BEFORE ACCESS RAMP CONSTRUCTION.
2. PAVED AND GRAVEL AREAS IN CAMPGROUND, BOAT LAUNCH AND ALONG DIABLO STREET MAY BE USED AS STAGING AND STOCKPILE AREAS, STAYING MINIMUM 5' AWAY FROM TREES. ORANGE CONSTRUCTION FENCING SHALL SURROUND THE ENTIRE STAGING AREA TO ENSURE CONSTRUCTION FOOTPRINT DOES NOT ENCROACH BEYOND LIMITS.
3. ALL DISTURBED AREAS NOT IN PROJECT SCOPE SHALL BE RETURNED TO THEIR ORIGINAL CONDITIONS.
4. ADDITIONAL STAGING AND STOCKPILE AREA IDENTIFIED ON NORTH SIDE OF DIABLO STREET NEAR HIGHWAY 20 AS SHOWN ON SHEET C-2, SUBJECT TO ENGINEER APPROVAL.



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WORK ORDER #: 1307373-01			
DESCRIPTION			
WORK ORDER #:			

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R2 Resource Consultants, Inc.
REDMOND, WA.

THIS DRAWING IS THE PROPERTY OF THE CITY OF SEATTLE AND ITS SEATTLE CITY LIGHT DEPARTMENT. IT IS PRODUCED SOLELY FOR THE USE BY SEATTLE CITY LIGHT AND OTHER CITY DEPARTMENTS. THE USE, REPRODUCTION, AND TRANSFER OF THIS DRAWING AND/OR ANY INFORMATION CONTAINED IN THE DRAWING REQUIRES THE WRITTEN PERMISSION OF SEATTLE CITY LIGHT.

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DESIGN: R2 CSA	04/24/2015
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Seattle City Light
Power Production & Substations
APPROVED FOR SEATTLE CITY LIGHT
DATE

SUBJECT	GRADING FOR DRAINAGE
LOCATION	GORGE DAM & RESERVOIR
TITLE	STETATTLE CREEK BAR EXCAVATION SITE ACCESS AND CONSTRUCTION STAGING/STOCKPILE PLAN
SHEET	5 of 17
CLASS \ SHEET	C-5
DRAWING NO.	D-49605
SCALE	1" = 50'
REV. NO.	0

THIS SHEET IS FOR REFERENCE ONLY - A DETAILED WATER HANDLING PLAN AND CONSTRUCTION PLAN WILL BE PROVIDED BY THE CONTRACTOR AS A SUBMITTAL BEFORE CONSTRUCTION. THIS PLAN IS DEVELOPED AS AN OUTLINE OF ONE POSSIBLE WAY TO PHASE CONSTRUCTION AND PROVIDE FOR WATER HANDLING. THE CONTRACTOR'S DETAILED WATER HANDLING PLAN WILL SUPERCEDE THIS SHEET.

WATER HANDLING NOTES (BY PHASE OF CONSTRUCTION)

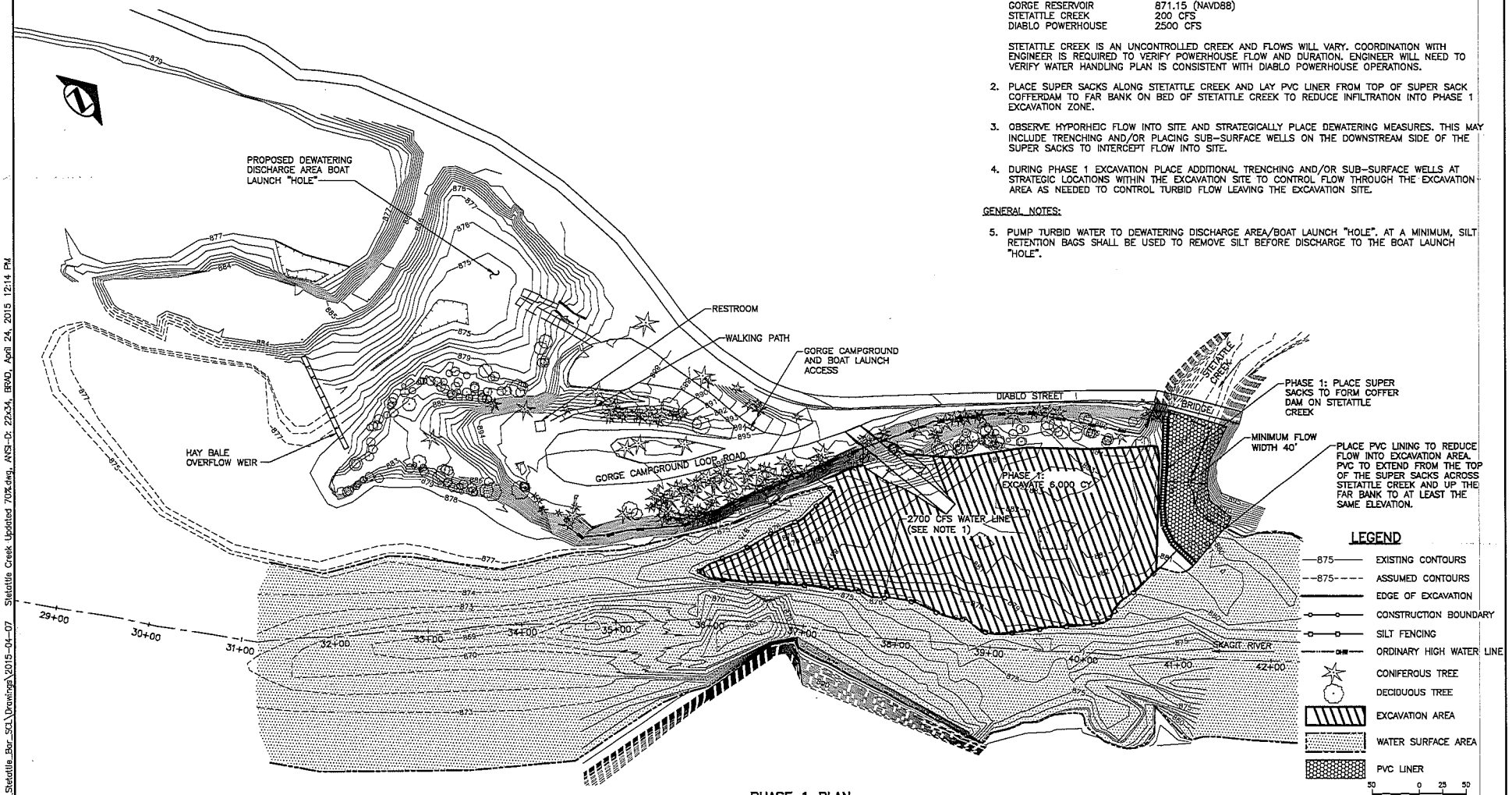
PHASE 1 – INITIAL EXCAVATION

1. PHASE 1 WSEL SHOWN WITH THE FOLLOWING ASSUMPTIONS:
   GORGE RESERVOIR 871.15 (NAVD88)
   STETATTLE CREEK 200 CFS
   DIABLO POWERHOUSE 2500 CFS

   STETATTLE CREEK IS AN UNCONTROLLED CREEK AND FLOWS WILL VARY. COORDINATION WITH ENGINEER IS REQUIRED TO VERIFY POWERHOUSE FLOW AND DURATION. ENGINEER WILL NEED TO VERIFY WATER HANDLING PLAN IS CONSISTENT WITH DIABLO POWERHOUSE OPERATIONS.
2. PLACE SUPER SACKS ALONG STETATTLE CREEK AND LAY PVC LINER FROM TOP OF SUPER SACK COFFERDAM TO FAR BANK ON BED OF STETATTLE CREEK TO REDUCE INFILTRATION INTO PHASE 1 EXCAVATION ZONE.
3. OBSERVE HYPORHEIC FLOW INTO SITE AND STRATEGICALLY PLACE DEWATERING MEASURES. THIS MAY INCLUDE TRENCHING AND/OR PLACING SUB-SURFACE WELLS ON THE DOWNSTREAM SIDE OF THE SUPER SACKS TO INTERCEPT FLOW INTO SITE.
4. DURING PHASE 1 EXCAVATION PLACE ADDITIONAL TRENCHING AND/OR SUB-SURFACE WELLS AT STRATEGIC LOCATIONS WITHIN THE EXCAVATION SITE TO CONTROL FLOW THROUGH THE EXCAVATION AREA AS NEEDED TO CONTROL TURBID FLOW LEAVING THE EXCAVATION SITE.

GENERAL NOTES:

5. PUMP TURBID WATER TO DEWATERING DISCHARGE AREA/BOAT LAUNCH "HOLE". AT A MINIMUM, SILT RETENTION BAGS SHALL BE USED TO REMOVE SILT BEFORE DISCHARGE TO THE BOAT LAUNCH "HOLE".



PHASE 1 PLAN

\\Nas\shared projects\1920_Stetattle_Bar_SCL\Drawings\2015-04-07 Stetattle Creek Updated 70%.dwg, ANSI-D: 22x34, BRAD, April 24, 2015 12:14 PM

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REV	DATE	IMAGE	DRAWN BY	CHECKED BY	APPROVED BY
WORK ORDER #: 1307373-01					
	DESCRIPTION				
WORK ORDER #:					

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DESIGN: R2 CSA	04/24/2015
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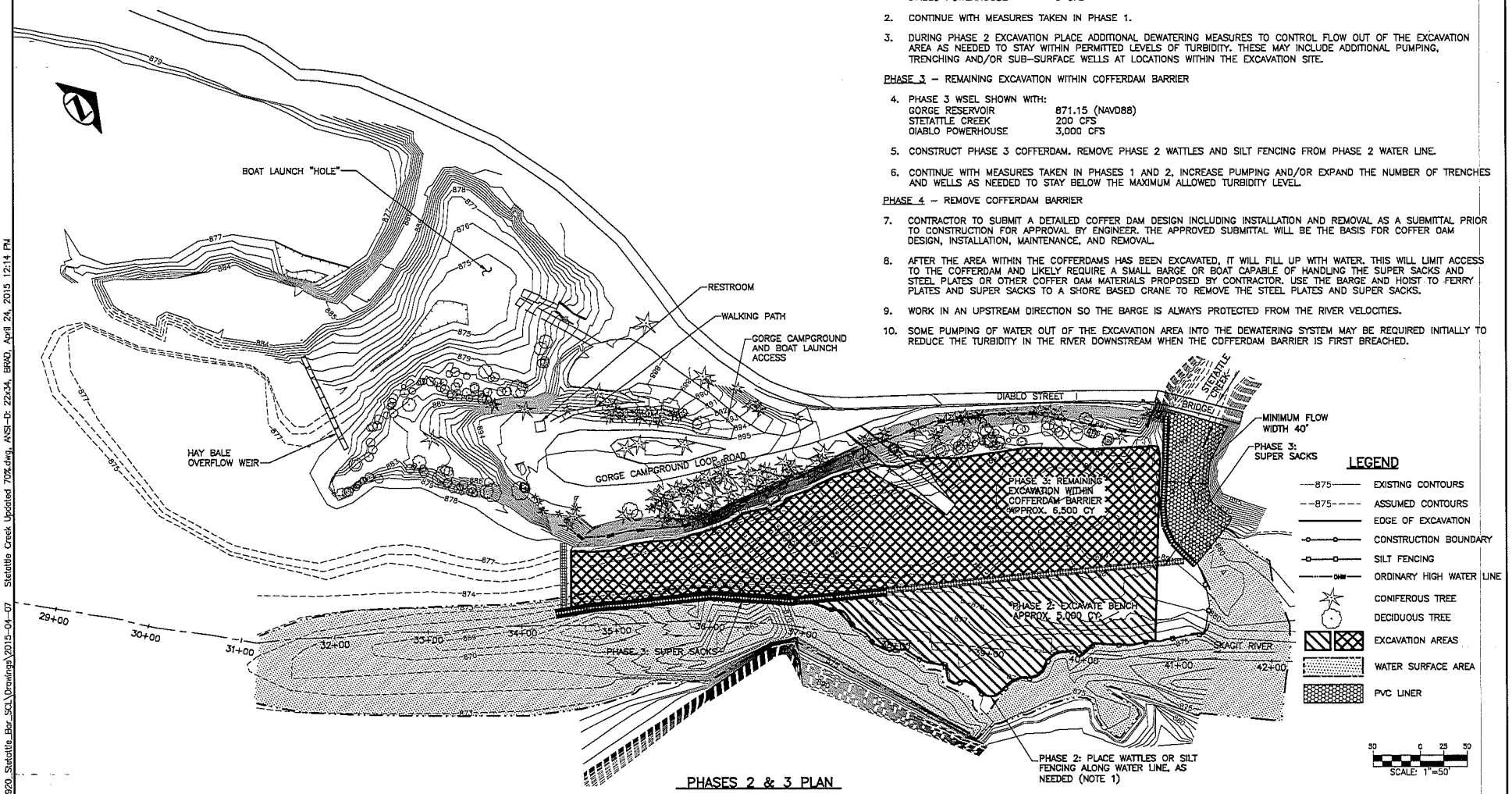
DATE

SUBJECT	GRADING FOR DRAINAGE
LOCATION	GORGE DAM & RESERVOIR
TITLE	STETATTLE CREEK BAR EXCAVATION PHASE 1 WATER HANDLING PLAN
SHEET	6 OF 17
CLASS \ SHEET	C-6
DRAWING NO.	D-49606
SCALE	1" = 40'
REV. NO.	0

THIS SHEET IS FOR REFERENCE ONLY - A DETAILED WATER HANDLING PLAN AND CONSTRUCTION PLAN WILL BE PROVIDED BY THE CONTRACTOR AS A SUBMITTAL BEFORE CONSTRUCTION. THIS PLAN IS DEVELOPED AS AN OUTLINE OF ONE POSSIBLE WAY TO PHASE CONSTRUCTION AND PROVIDE FOR WATER HANDLING. THE CONTRACTOR'S DETAILED WATER HANDLING PLAN WILL SUPERCEDE THIS SHEET.



PHASES 2 & 3 PLAN

WATER HANDLING NOTES (CONTINUED, BY PHASE OF CONSTRUCTION)

PHASE 2 – EXCAVATE BENCH

1. PHASE 2 WSEL SHOWN WITH:
   GORGE RESERVOIR 871.15 (NAVD88)
   STETATTLE CREEK 200 CFS
   DIABLO POWERHOUSE 0 CFS
2. CONTINUE WITH MEASURES TAKEN IN PHASE 1.
3. DURING PHASE 2 EXCAVATION PLACE ADDITIONAL DEWATERING MEASURES TO CONTROL FLOW OUT OF THE EXCAVATION AREA AS NEEDED TO STAY WITHIN PERMITTED LEVELS OF TURBIDITY. THESE MAY INCLUDE ADDITIONAL PUMPING, TRENCHING AND/OR SUB-SURFACE WELLS AT LOCATIONS WITHIN THE EXCAVATION SITE.

PHASE 3 – REMAINING EXCAVATION WITHIN COFFERDAM BARRIER

4. PHASE 3 WSEL SHOWN WITH:
   GORGE RESERVOIR 871.15 (NAVD88)
   STETATTLE CREEK 200 CFS
   DIABLO POWERHOUSE 3,000 CFS
5. CONSTRUCT PHASE 3 COFFERDAM. REMOVE PHASE 2 WATTLES AND SILT FENCING FROM PHASE 2 WATER LINE.
6. CONTINUE WITH MEASURES TAKEN IN PHASES 1 AND 2, INCREASE PUMPING AND/OR EXPAND THE NUMBER OF TRENCHES AND WELLS AS NEEDED TO STAY BELOW THE MAXIMUM ALLOWED TURBIDITY LEVEL.

PHASE 4 – REMOVE COFFERDAM BARRIER

7. CONTRACTOR TO SUBMIT A DETAILED COFFER DAM DESIGN INCLUDING INSTALLATION AND REMOVAL AS A SUBMITTAL PRIOR TO CONSTRUCTION FOR APPROVAL BY ENGINEER. THE APPROVED SUBMITTAL WILL BE THE BASIS FOR COFFER DAM DESIGN, INSTALLATION, MAINTENANCE, AND REMOVAL.
8. AFTER THE AREA WITHIN THE COFFERDAMS HAS BEEN EXCAVATED, IT WILL FILL UP WITH WATER. THIS WILL LIMIT ACCESS TO THE COFFERDAM AND LIKELY REQUIRE A SMALL BARGE OR BOAT CAPABLE OF HANDLING THE SUPER SACKS AND STEEL PLATES OR OTHER COFFER DAM MATERIALS PROPOSED BY CONTRACTOR. USE THE BARGE AND HOIST TO FERRY PLATES AND SUPER SACKS TO A SHORE BASED CRANE TO REMOVE THE STEEL PLATES AND SUPER SACKS.
9. WORK IN AN UPSTREAM DIRECTION SO THE BARGE IS ALWAYS PROTECTED FROM THE RIVER VELOCITIES.
10. SOME PUMPING OF WATER OUT OF THE EXCAVATION AREA INTO THE DEWATERING SYSTEM MAY BE REQUIRED INITIALLY TO REDUCE THE TURBIDITY IN THE RIVER DOWNSTREAM WHEN THE COFFERDAM BARRIER IS FIRST BREACHED.

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DESCRIPTION		
WORK ORDER #:		

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DESIGN: R2 CSA	04/24/2015
CHECK:	

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APPROVED FOR SEATTLE CITY LIGHT

DATE

SUBJECT	GRADING FOR DRAINAGE
LOCATION	GORGE DAM & RESERVOIR
TITLE	STETATTLE CREEK BAR EXCAVATION PHASES 2 & 3 WATER HANDLING PLAN
SHEET	7 of 17
CLASS \ SHEET	C-7
DRAWING NO.	D-49607
SCALE	1" = 40'
REV. NO.	0

THIS SHEET IS FOR REFERENCE ONLY - A DETAILED TESC PLAN AND CONSTRUCTION PLAN WILL BE PROVIDED BY THE CONTRACTOR AS A SUBMITTAL BEFORE CONSTRUCTION. THIS PLAN IS DEVELOPED AS AN OUTLINE OF ONE POSSIBLE WAY TO PHASE CONSTRUCTION AND PROVIDE FOR TESC. THE CONTRACTOR'S DETAILED TESC WILL SUPERCEDE THIS SHEET.

TESC NOTES (BY PHASE OF CONSTRUCTION):

FOLLOW ALL PERMIT REQUIREMENTS. PERMIT REQUIREMENTS TAKE PRECEDENCE OVER NOTES BELOW.

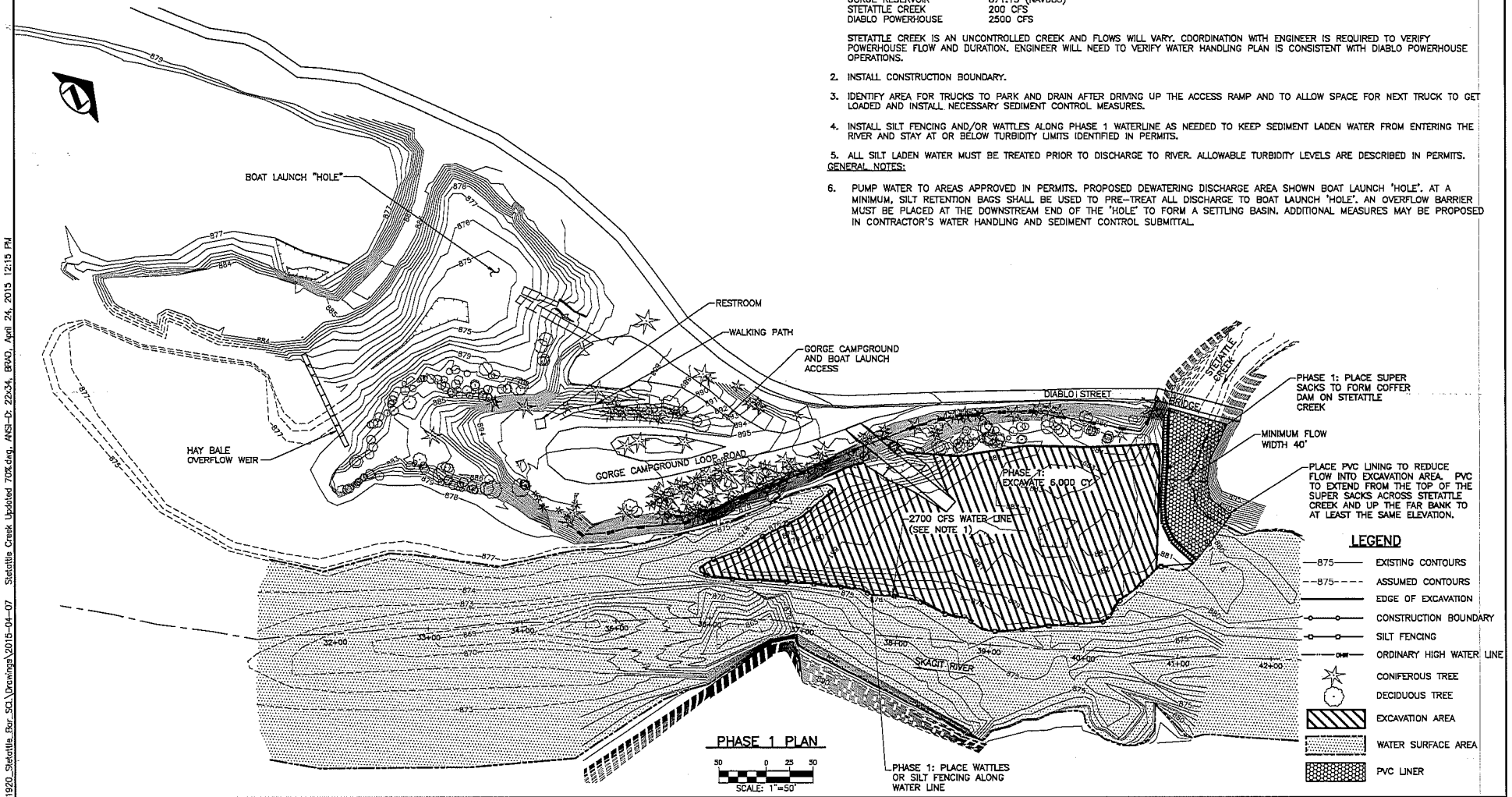
PHASE 1 – INITIAL EXCAVATION

1. PHASE 1 WSEL SHOWN WITH:
   GORGE RESERVOIR 871.15 (NAVD88)
   STETATTLE CREEK 200 CFS
   DIABLO POWERHOUSE 2500 CFS

   STETATTLE CREEK IS AN UNCONTROLLED CREEK AND FLOWS WILL VARY. COORDINATION WITH ENGINEER IS REQUIRED TO VERIFY POWERHOUSE FLOW AND DURATION. ENGINEER WILL NEED TO VERIFY WATER HANDLING PLAN IS CONSISTENT WITH DIABLO POWERHOUSE OPERATIONS.
2. INSTALL CONSTRUCTION BOUNDARY.
3. IDENTIFY AREA FOR TRUCKS TO PARK AND DRAIN AFTER DRIVING UP THE ACCESS RAMP AND TO ALLOW SPACE FOR NEXT TRUCK TO GET LOADED AND INSTALL NECESSARY SEDIMENT CONTROL MEASURES.
4. INSTALL SILT FENCING AND/OR WATTLES ALONG PHASE 1 WATERLINE AS NEEDED TO KEEP SEDIMENT LADEN WATER FROM ENTERING THE RIVER AND STAY AT OR BELOW TURBIDITY LIMITS IDENTIFIED IN PERMITS.
5. ALL SILT LADEN WATER MUST BE TREATED PRIOR TO DISCHARGE TO RIVER. ALLOWABLE TURBIDITY LEVELS ARE DESCRIBED IN PERMITS.

GENERAL NOTES:

6. PUMP WATER TO AREAS APPROVED IN PERMITS. PROPOSED DEWATERING DISCHARGE AREA SHOWN BOAT LAUNCH 'HOLE'. AT A MINIMUM, SILT RETENTION BAGS SHALL BE USED TO PRE-TREAT ALL DISCHARGE TO BOAT LAUNCH 'HOLE'. AN OVERFLOW BARRIER MUST BE PLACED AT THE DOWNSTREAM END OF THE 'HOLE' TO FORM A SETTLING BASIN. ADDITIONAL MEASURES MAY BE PROPOSED IN CONTRACTOR'S WATER HANDLING AND SEDIMENT CONTROL SUBMITTAL.



PHASE 1 PLAN

SCALE: 1"=50'

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DESCRIPTION			
WORK ORDER #:			

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APPROVED FOR SEATTLE CITY LIGHT

DATE

SUBJECT	GRADING FOR DRAINAGE
LOCATION	GORGE DAM & RESERVOIR
TITLE	STETATTLE CREEK BAR EXCAVATION PHASE 1 TESC PLAN
SHEET	8 of 17
CLASS \ SHEET	C-8
DRAWING NO.	D-49608
SCALE:	1" = 40'
REV. NO.	0

THIS SHEET IS FOR REFERENCE ONLY - A DETAILED TESC PLAN AND CONSTRUCTION PLAN WILL BE PROVIDED BY THE CONTRACTOR AS A SUBMITTAL BEFORE CONSTRUCTION. THIS PLAN IS DEVELOPED AS AN OUTLINE OF ONE POSSIBLE WAY TO PHASE CONSTRUCTION AND PROVIDE FOR TESC. THE CONTRACTOR'S DETAILED TESC WILL SUPERCEDE THIS SHEET.

PHASE 2 – EXCAVATE BENCH

1. PHASE 2 WSEL SHOWN WITH:
   GORGE RESERVOIR 871.15 (NAVD88)
   STETATTLE CREEK 200 CFS
   DIABLO POWERHOUSE 0 CFS
2. INSTALL SILT FENCING ALONG PHASE 2 WATERLINE, AS SHOWN ON PLAN.
3. ALL SILT LADEN WATER MUST BE TREATED PRIOR TO DISCHARGE TO RIVER. ALLOWABLE TURBIDITY LEVELS ARE DESCRIBED IN PERMITS.
4. FOLLOWING EXCAVATION OF BENCH, REMOVE WATTLES AND/OR SILT FENCING.

PHASE 3 – REMAINING EXCAVATION WITHIN COFFEROAM BARRIER

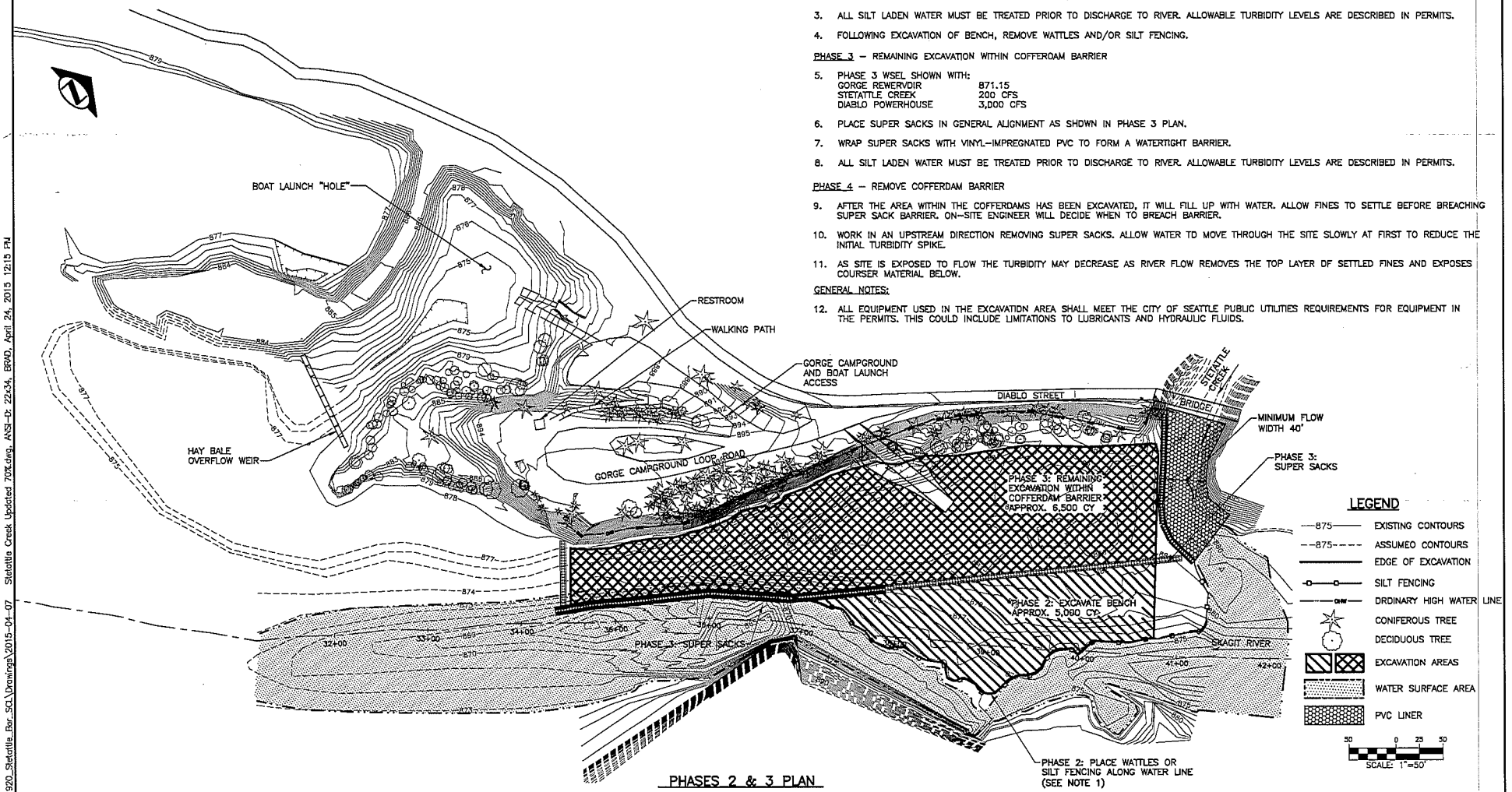
5. PHASE 3 WSEL SHOWN WITH:
   GORGE REWERVDIR 871.15
   STETATTLE CREEK 200 CFS
   DIABLO POWERHOUSE 3,000 CFS
6. PLACE SUPER SACKS IN GENERAL ALIGNMENT AS SHOWN IN PHASE 3 PLAN.
7. WRAP SUPER SACKS WITH VINYL–IMPREGNATED PVC TO FORM A WATERTIGHT BARRIER.
8. ALL SILT LADEN WATER MUST BE TREATED PRIOR TO DISCHARGE TO RIVER. ALLOWABLE TURBIDITY LEVELS ARE DESCRIBED IN PERMITS.

PHASE 4 – REMOVE COFFERDAM BARRIER

9. AFTER THE AREA WITHIN THE COFFERDAMS HAS BEEN EXCAVATED, IT WILL FILL UP WITH WATER. ALLOW FINES TO SETTLE BEFORE BREACHING SUPER SACK BARRIER. ON–SITE ENGINEER WILL DECIDE WHEN TO BREACH BARRIER.
10. WORK IN AN UPSTREAM DIRECTION REMOVING SUPER SACKS. ALLOW WATER TO MOVE THROUGH THE SITE SLOWLY AT FIRST TO REDUCE THE INITAL TURBIDITY SPIKE.
11. AS SITE IS EXPOSED TO FLOW THE TURBIDITY MAY DECREASE AS RIVER FLOW REMOVES THE TOP LAYER OF SETTLED FINES AND EXPOSES COURSER MATERIAL BELOW.

GENERAL NOTES:

12. ALL EQUIPMENT USED IN THE EXCAVATION AREA SHALL MEET THE CITY OF SEATTLE PUBLIC UTILITIES REQUIREMENTS FOR EQUIPMENT IN THE PERMITS. THIS COULD INCLUDE LIMITATIONS TO LUBRICANTS AND HYDRAULIC FLUIDS.



PHASES 2 & 3 PLAN

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DATE

SUBJECT	GRADING FOR DRAINAGE
LOCATION	GORGE DAM & RESERVOIR
TITLE	STETATTLE CREEK BAR EXCAVATION PHASES 2 & 3 TESC PLAN
SHEET	9 OF 17
CLASS \ SHEET	C-9
DRAWING NO.	D-49609
SCALE	1" = 40'
REV. NO.	0

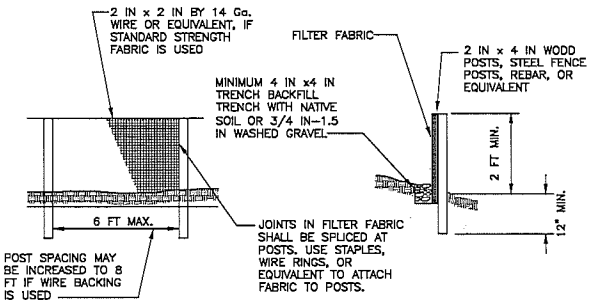
TEMPORARY EROSION AND SEDIMENT CONTROL NOTES

1. ALL IN-CHANNEL EXCAVATION WORK WILL BE CONDUCTED PER ALL PERMITS, IN-WATER CONDITIONS.
2. THE IMPLEMENTATION OF THESE TESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE TESC FACILITIES SHALL BE REVIEWED AND SUPERVISED BY AN INDIVIDUAL WITH CESCL CERTIFICATION AND EXPERIENCE IN IMPLEMENTING TESC PLANS.
3. BOUNDARIES OF CLEARING LIMITS IN RIPARIAN VEGETATION AREAS AND CAMPGROUND SHALL BE CLEARLY MARKED WITH ORANGE CONSTRUCTION FENCE PRIOR TO CONSTRUCTION; DURING CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE CLEARING LIMITS SHALL BE PERMITTED. THE CLEARING LIMITS SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
4. THESE TESC FACILITIES MUST BE CONSTRUCTED PRIOR TO OR IN CONJUNCTION WITH ALL CLEARING AND GRADING SO AS TO ENSURE THAT THE TRANSPORT OF SEDIMENT TO SURFACE WATERS IS MINIMIZED.
5. THESE TESC FACILITIES ARE THE MINIMUM REQUIREMENTS FOR THE ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD THESE TESC FACILITIES SHALL BE UPGRADED BY CONTRACTOR AND APPROVED BY THE ENGINEER AS NEEDED FOR UNEXPECTED STORM EVENTS AND MODIFIED TO ACCOUNT FOR CHANGING SITE CONDITIONS (E.G., SUMP PUMP, INSTALLATION/RELOCATION OF SILT FENCES, ETC.)
6. THE TESC FACILITIES SHALL BE INSPECTED DAILY BY CONTRACTOR TO ENSURE CONTINUED PROPER FUNCTIONALITY.
7. THE TESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A WEEK OR WITHIN 24 HOURS FOLLOWING A STORM EVENT.
8. ALL CONSTRUCTION MATERIALS, WASTE MATERIALS, AND DEMOLITION DEBRIS SHALL BE HANDLED AND DISPOSED OF IN A MANNER SO AS TO PREVENT CONTAMINATION OF STORMWATER RUNOFF AND ADJACENT WATERWAYS.
9. MAINTENANCE AND FUELING OF CONSTRUCTION EQUIPMENT SHALL BE PERFORMED AT THE STAGING AREA OR IN SUCH A MANNER TO MINIMIZE THE POTENTIAL CONTAMINATION OF STORMWATER RUNOFF AND ADJACENT WATERWAYS. SPILL CONTAINMENT AND CLEANUP KITS SHALL BE MAINTAINED ONSITE AND ANY SPILLS OF FUELS, HYDRAULIC FLUID, LUBRICANTS, OR OTHER HAZARDOUS MATERIAL SHALL BE CLEANED UP AND IMMEDIATELY AND PROPERLY DISPOSED OF.
10. EROSION CONTROL WILL MEET ALL COUNTY DESIGN AND CONSTRUCTION STANDARDS.
11. ALL CUT BANKS SHALL BE PLANTED WITH WILLOW STAKES.

THIS SHEET IS FOR REFERENCE ONLY - A DETAILED TESC PLAN WITH DETAILS WILL BE PROVIDED BY THE CONTRACTOR AS A SUBMITTAL BEFORE CONSTRUCTION.

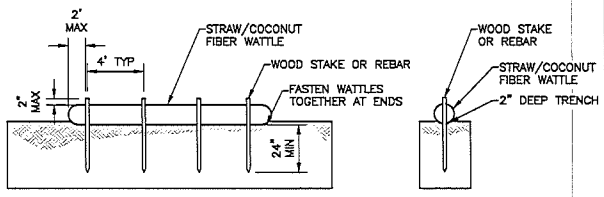
SILT FENCE NOTE:

1. SILT FENCE SHALL BE USED FOLLOWING THESE SPECIFICATIONS:
   - FABRIC SHALL BE EQUAL TO "MIRAFI" WITH 100 LB GRAB TENSILE STRENGTH,
   - 200 PSI BURST STRENGTH, AND 70-200 SIEVE # APPARENT OPENING.



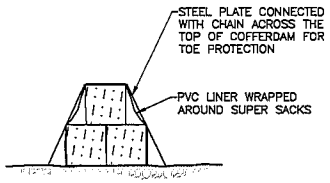
DETAIL 1 — NTS; SILT FENCE BARRIER

SILT FENCE ON COBBLE BAR WILL NEED TO BEND AROUND BOULDERS AND COBBLES SUCH THAT A CONTINUOUS CONNECTION WITH THE GROUND IS MAINTAINED. IF WOOD STAKES OR REBAR CANNOT BE INSTALLED, ALTERNATIVE METHODS MAY BE SUBMITTED.

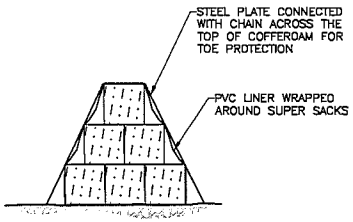


DETAIL 2 — NTS; STRAW WATTLE

WATTLES ON COBBLE BAR WILL NEED TO BEND AROUND BOULDERS AND COBBLES SUCH THAT A CONTINUOUS CONNECTION WITH THE GROUND IS MAINTAINED. IF WOOD STAKES OR REBAR CANNOT BE INSTALLED, ALTERNATIVE METHODS MAY BE SUBMITTED.

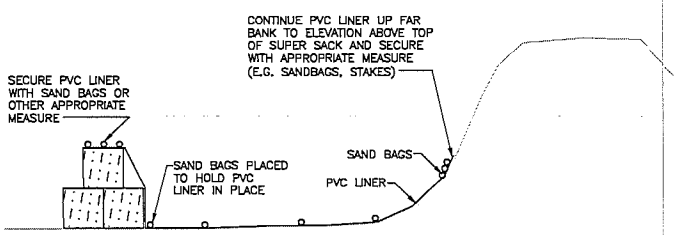


DETAIL 3 — NTS; 3 SUPER SACK COFFER DAM W/STEEL PLATES



DETAIL 4 — NTS; 6 SUPER SACK COFFER DAM W/STEEL PLATES

***DESIGN AND SIZE OF SUPER SACK COFFERDAM IS FOR EXAMPLE ONLY. CONTRACTOR WILL SUBMIT A COFFERDAM PLAN AND DESIGN.



DETAIL 5 — NTS; SUPER SACK ON STETATTLE CREEK

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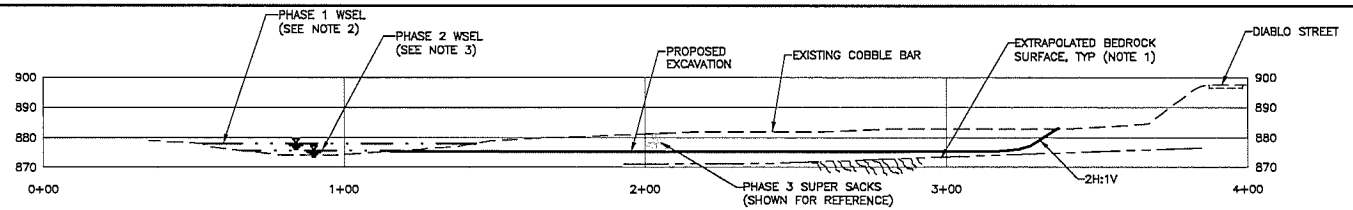
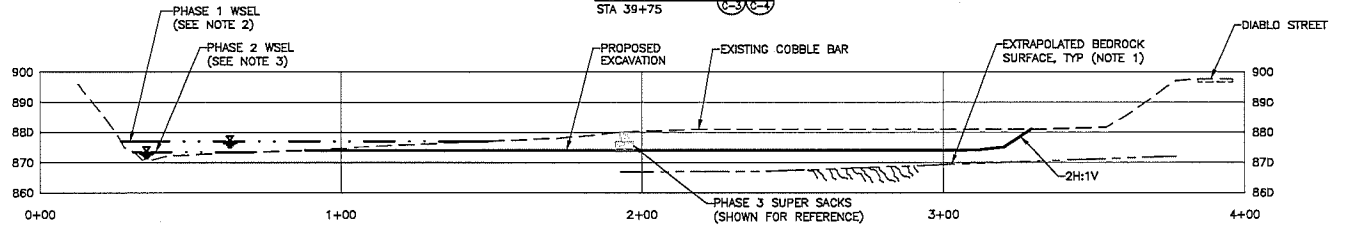
DATE

SUBJECT	GRADING FOR DRAINAGE
LOCATION	GORGE DAM & RESERVOIR
TITLE	STETATTLE CREEK BAR EXCAVATION TESC NOTES AND DETAILS

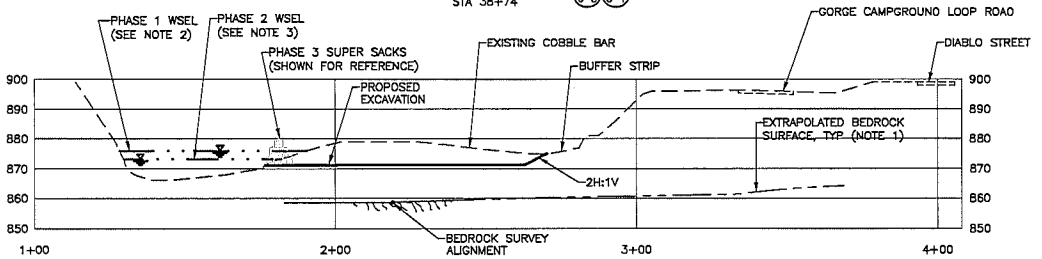
SHEET	10 OF 17
CLASS \ SHEET	C-10
DRAWING NO.	D-49610
SCALE	AS NOTED
REV. NO.	0



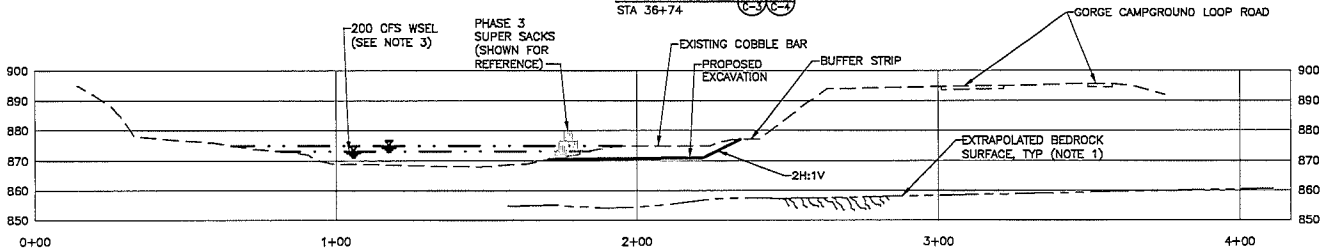
SECTION STA 39+75 (1 C-3 / 1 C-4)



SECTION STA 38+74 (2 C-3 / 2 C-4)



SECTION STA 36+74 (3 C-3 / 3 C-4)



SECTION STA 35+30 (4 C-3 / 4 C-4)

NOTES:

1. BEDROCK SURFACE LOCATIONS SHOWN ARE BASED ON EXTRAPOLATION FROM BEDROCK SURVEY LINES ON DRAWING C-3. SHOWN FOR REFERENCE ONLY.
2. PHASE 1 WSEL SHOWN BEFORE EXCAVATION WITH:
   GORGE RESERVOIR 871.15 (NAVD88)
   STETATTLE CREEK 200 CFS
   DIABLO POWERHOUSE 2500 CFS
3. PHASE 2 WSEL SHOWN BEFORE EXCAVATION WITH:
   GORGE RESERVOIR 871.15 (NAVD88)
   STETATTLE CREEK 200 CFS
   DIABLO POWERHOUSE 0 CFS

SCALE: 1"=20'

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WORK ORDER #:

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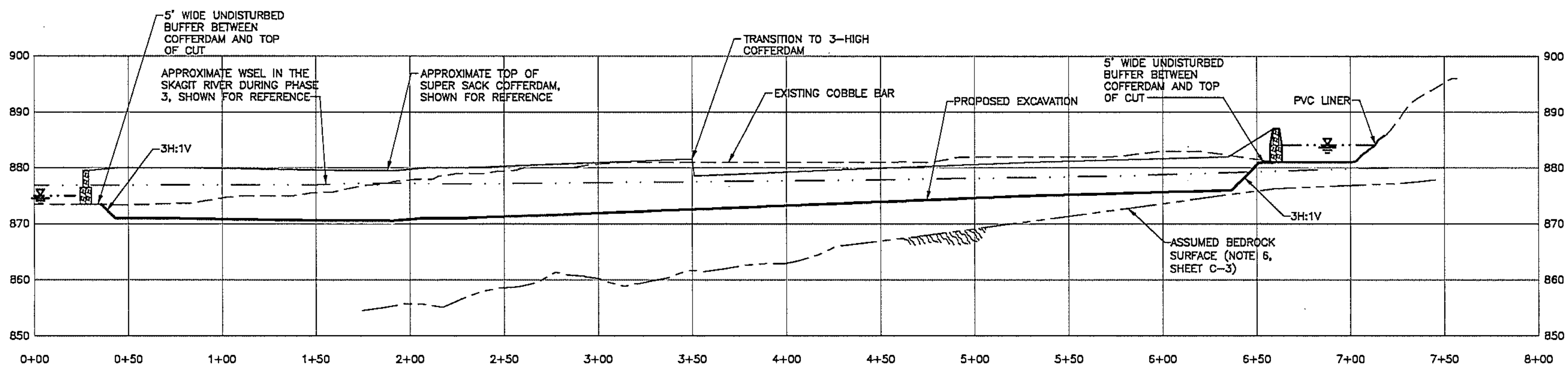
DATE

SUBJECT: GRADING FOR DRAINAGE
LOCATION: GORGE DAM & RESERVOIR
TITLE: STETATTLE CREEK BAR EXCAVATION CROSS SECTIONS

SHEET: 11 OF 17
CLASS \ SHEET: C-11
DRAWING NO.: D-49611
SCALE: 1" = 20'
REV. NO.: 0



STATIONING APPLIES TO SECTION 5 ONLY, NOT TO SKAGIT RIVER STATIONING
(PROFILE STATION 0+00 ≈ SKAGIT RIVER STATION 34+21)

COBBLE BAR PROFILE (5/C-3) (5/C-4)

10 0 5 10
SCALE: 1"=10'
VERTICAL SCALE

30 0 15 30
SCALE: 1"=30'
HORIZONTAL SCALE

ONE INCH AT FULL SIZE	REVISIONS
REV	DATE	IMAGE
DRAWN BY	CHECKED BY	APPROVED BY
WORK ORDER #: 1307373-01		
DESCRIPTION		
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04/24/2015

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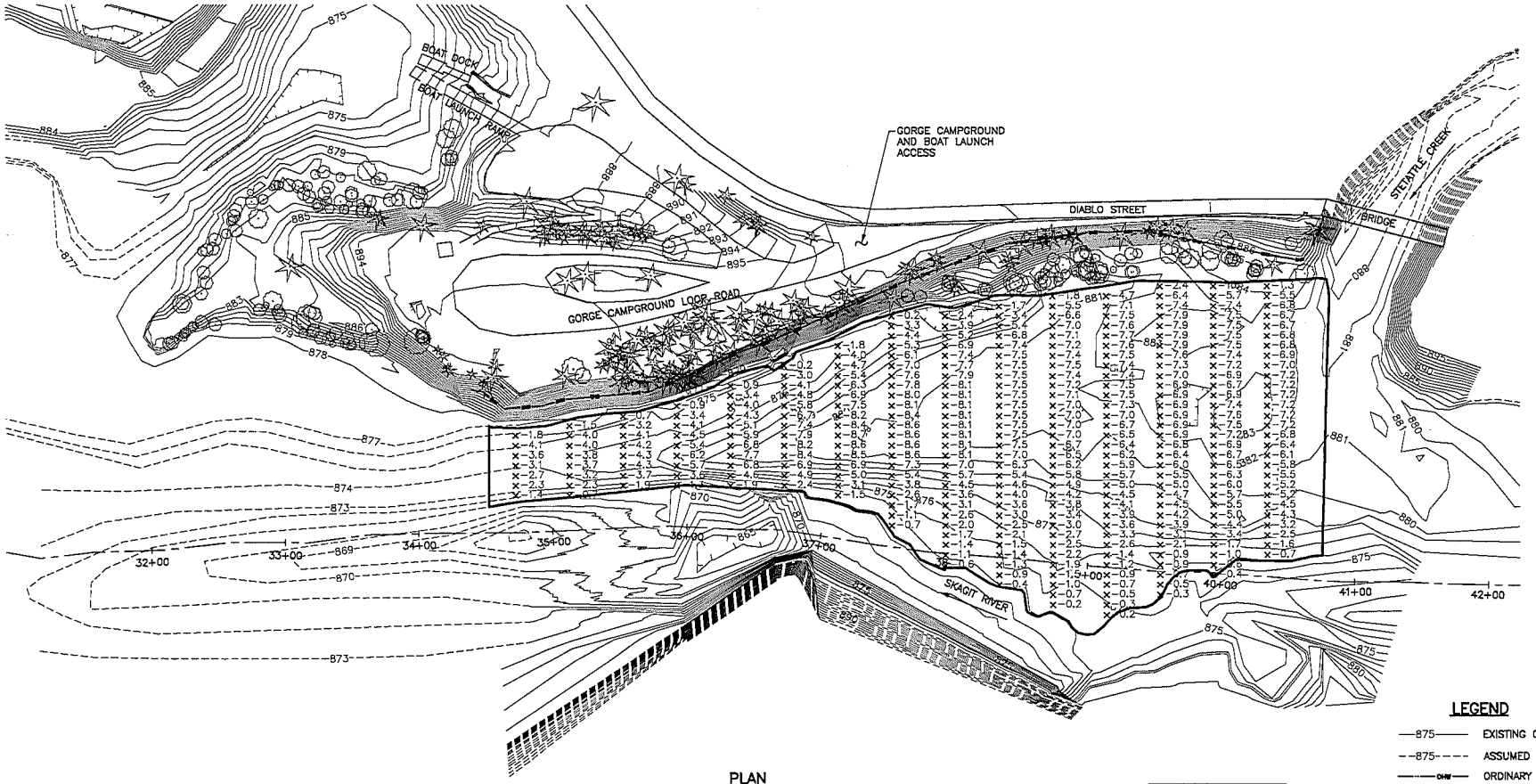
DESIGN: R2 GSA	04/24/2015
CHECK:	

Seattle City Light
Power Production & Substations
APPROVED FOR SEATTLE CITY LIGHT
DATE

SUBJECT	GRADING FOR DRAINAGE
LOCATION	GORGE DAM & RESERVOIR
TITLE	STETATTLE CREEK BAR EXCAVATION COBBLE BAR PROFILE
SHEET	12 OF 17
CLASS \ SHEET	C-12
DRAWING NO.	D-49612
SCALE	AS NOTED
REV. NO.	0

\\Nas\shared_projects\1920_Stetattle_Bar_SCL\Drawings\2015-04-07 Stetattle Creek Updated 70%.dwg, ANSI-D: 22x34, BRAD, April 24, 2015 12:15 PM



PLAN

TOTAL FILL: 0 CY
TOTAL CUT: 17,614 CY

LEGEND

- —875— EXISTING CONTOURS
- --875-- ASSUMED CONTOURS
- —O.H.W.— ORDINARY HIGH WATER LINE
- x-1.7 CUT

SCALE: 1"=40'

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Seattle City Light
Power Production & Substations

APPROVED FOR SEATTLE CITY LIGHT

DATE

SUBJECT: GRADING FOR DRAINAGE
LOCATION: GORGE DAM & RESERVOIR
TITLE: STETATTLE CREEK BAR EXCAVATION DETAILED CUT/FILL PLAN

SHEET: 13 OF 17
CLASS \ SHEET: C-13
DRAWING NO.: D-49613
SCALE: 1" = 40'
REV. NO.: 0

REVISIONS				
REV	DATE	BY/ACE	DRAWN BY/CHECKED BY/APPROVED BY	
			WORK ORDER #: 1307373-01	
			DESCRIPTION	
			WORK ORDER #:	

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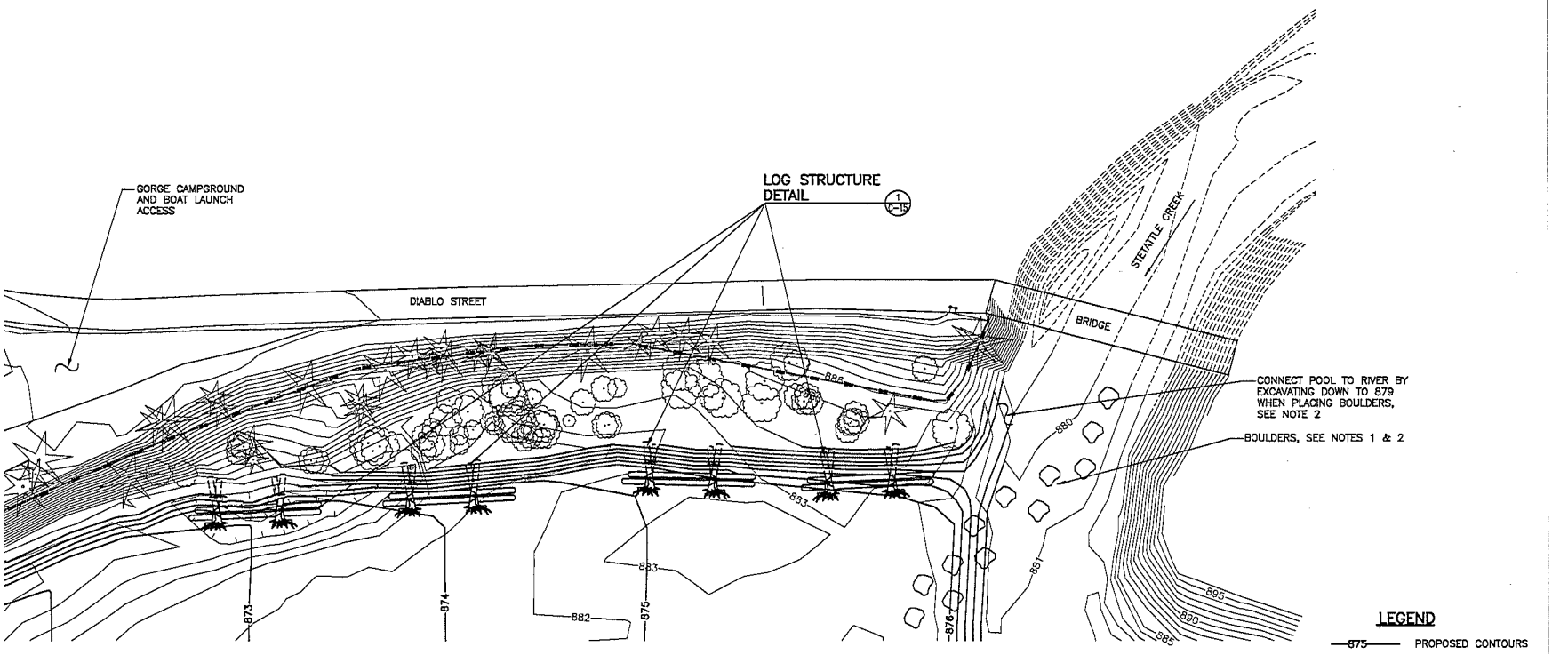
NOTES:

1. STOCKPILE ALL BOULDERS 18" DIA (AS MEASURED ON MEDIAN AXIS) AND GREATER FOR POSSIBLE ON-SITE REUSE. ENGINEER WILL SELECT LARGE EXCAVATED BOULDERS FOR PLACEMENT AT MOUTH OF STETATTLE CREEK AND STOCKPILE FOR MITIGATION. PLACEMENT DIRECTED BY ENGINEER.
2. AFTER REMOVAL OF COFFER DAM, EXCAVATE A NARROW CHANNEL AT ELEVATION 879, TO CONNECT THE POOL UNDER DIABLO STREET BRIDGE TO NEWLY EXCAVATED COBBLE BAR AREA. PLACE BOULDERS AS DIRECTED BY ENGINEER.



PLAN

LEGEND

- 875 PROPOSED CONTOURS
- 875 EXISTING CONTOURS
- 875 ASSUMED CONTOURS
- OHW ORDINARY HIGH WATER LINE

SCALE: 1"=20'

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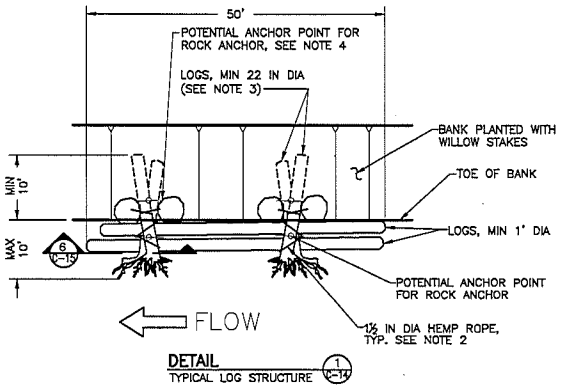
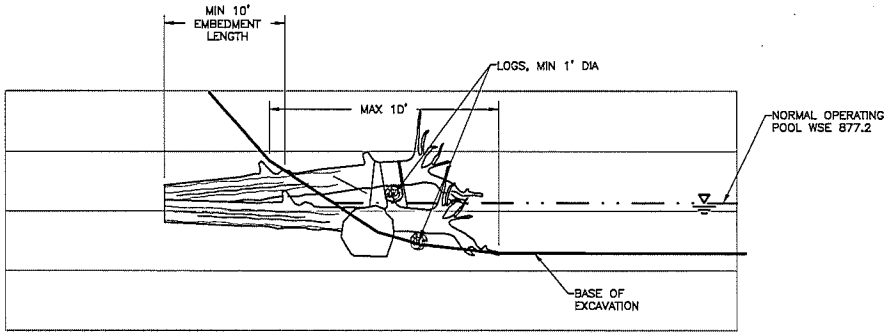
DATE

SUBJECT: GRADING FOR DRAINAGE
LOCATION: GORGE DAM & RESERVOIR
TITLE: STETATTLE CREEK BAR EXCAVATION MITIGATION HABITAT IMPROVEMENT PLAN

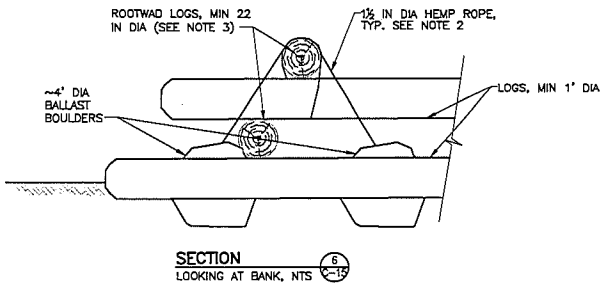
SHEET: 14 OF 17
CLASS \ SHEET: C-14
DRAWING NO.: D-49614
SCALE: 1"=40'
REV. NO.: 0



DETAIL
TYPICAL LOG STRUCTURE 1 C-14



TYPICAL SECTION
LOG STRUCTURE



SECTION
LOOKING AT BANK, NTS 6 C-15

NOTES

1. LOCATION OF LOG STRUCTURE WILL BE STAKED AND FLAGGED IN FIELD BY ENGINEER.
2. TIE ALL LOG STRUCTURE LOGS TOGETHER USING 1½ INCH DIA MANILA HEMP ROPE, MINIMUM THREE (3) WRAPS AROUND LOGS BEFORE TYING OFF WITH CARRICK BEND KNOT. DO NOT OVERTIGHTEN (ROPE WILL SHRINK 10-15% IN LENGTH WHEN WET).
3. MINIMUM DIAMETER OF ROOT WAD LOGS IS 22 INCHES. MINIMUM LENGTH OF ROOT WAD LOTS IS 20 FT. CEDAR LOGS TO BE USED FOR ALL LOGS.
4. INSTALL ROCK BALLAST FOLLOWING GUIDELINES IN WDFW 2012 STREAM RESTORATION GUIDELINES MANUAL, USING LOCAL AND IMPORTED ROCKS AS NECESSARY TO HOLD LOG STRUCTURES IN PLACE. AS AN ALTERNATIVE IF SHALLOW BEDROCK IS FOUND INSTALLATION OF ROCK ANCHORS WILL BE CONSIDERED AS A POSSIBLE ALTERNATIVE WITH A CONTRACTOR SUBMITTAL OF MATERIALS AND METHODS.
5. FOR ALL LOG STRUCTURES, CONTRACTOR TO SUBMIT A PLAN TO ENGINEER FOR LOG SIZE AND PLACEMENT, BALLAST SIZE, PLACEMENT, AND ANCHORAGE BASED ON LOGS AND BALLAST AVAILABLE.

ONE INCH AT FULL SIZE

REVISIONS

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WORK ORDER #: 1307313-01		
DESCRIPTION		

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DESIGN: R2 CSA	04/24/2015
CHECK:	

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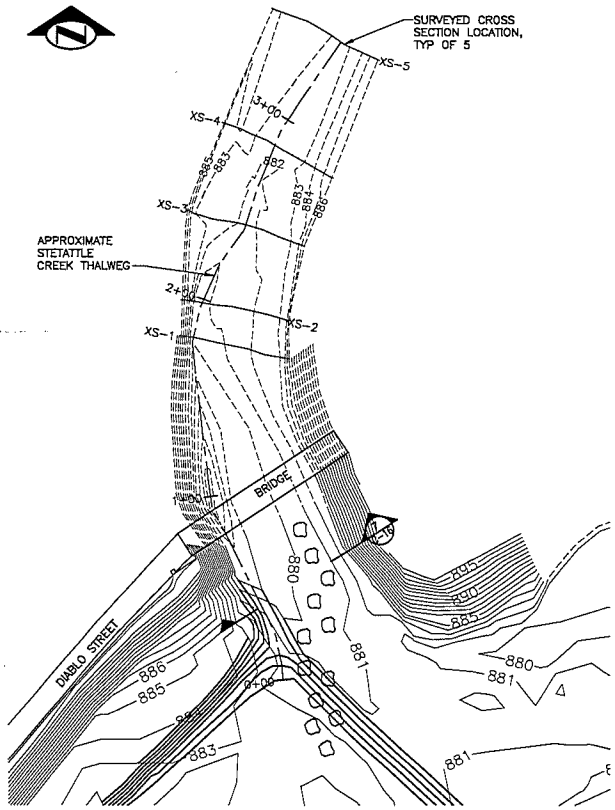
DATE

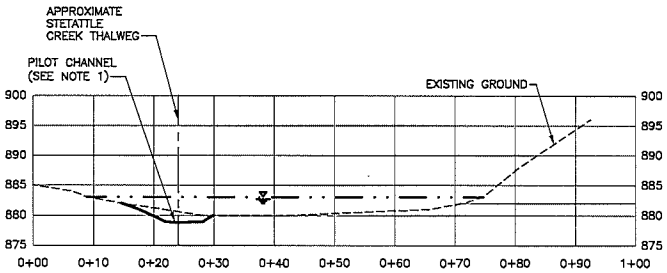
SUBJECT: GRADING FOR DRAINAGE
LOCATION: GORGE DAM & RESERVOIR
TITLE: STETATTLE CREEK BAR EXCAVATION MITIGATION HABITAT IMPROVEMENT NOTES AND DETAILS

SHEET: 15 OF 17
CLASS \ SHEET: C-15
DRAWING NO.: D-49615
SCALE: AS NOTED
REV. NO.: 0



STETATTLE CREEK PLAN

SCALE: 1"=30'

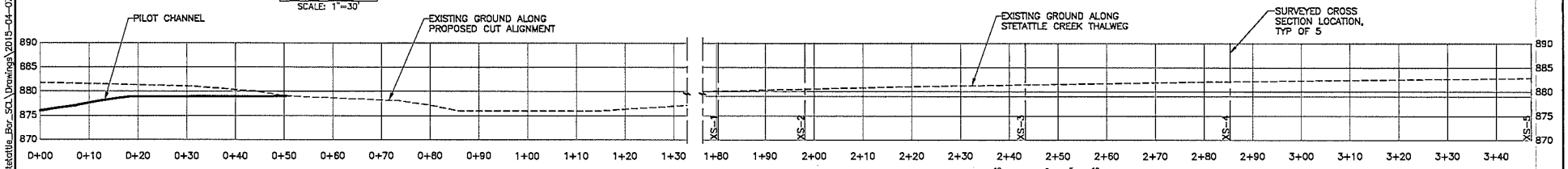


SECTION 7/C-16

SCALE: 1"=10'

NOTES

1. CONTRACTOR TO CUT PILOT CHANNEL WITH IE OF 879.0 WHEN PLACING MITIGATION BOULDERS.



STETATTLE CREEK THALWEG PROFILE

SCALE: 1"=10'

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ONE INCH AT FULL SIZE

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REV	DATE	BY	APPROVED BY
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DESCRIPTION			
WORK ORDER #			

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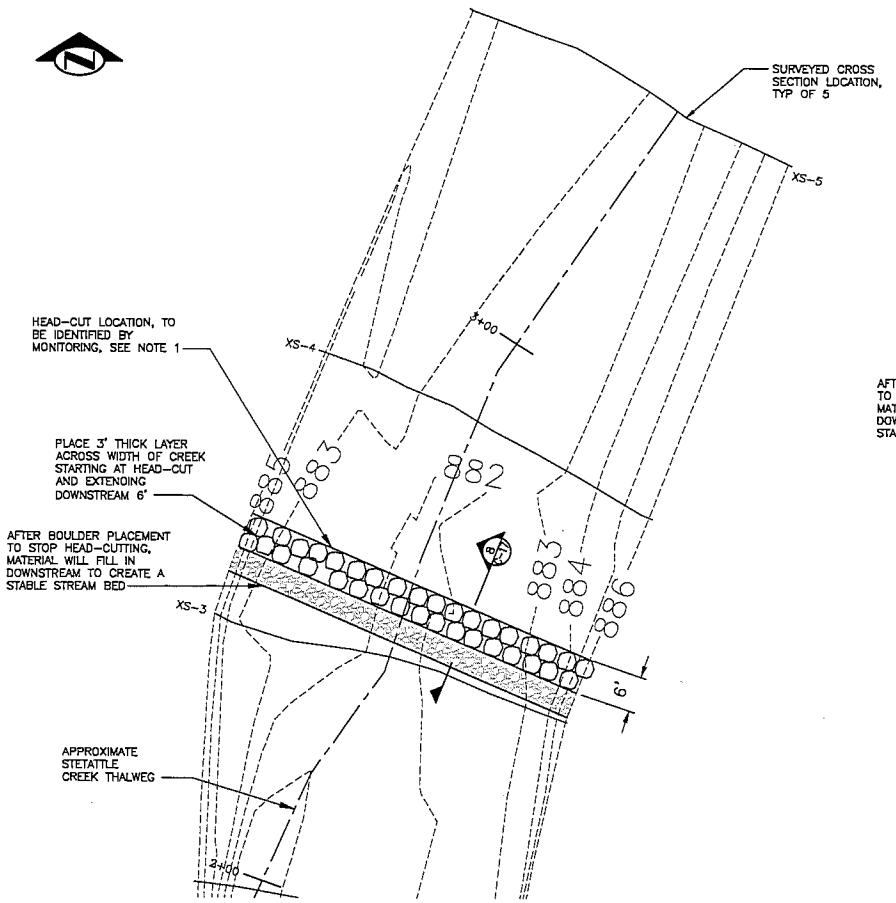
DATE

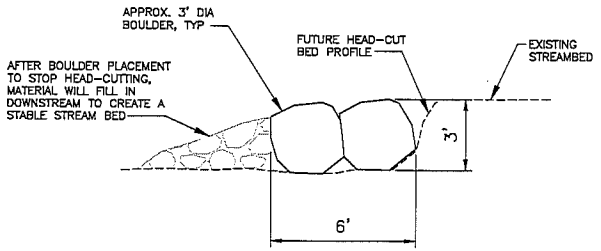
SUBJECT	GRADING FOR DRAINAGE
LOCATION	GORGE DAM & RESERVOIR
TITLE	STETATTLE CREEK BAR EXCAVATION STETATTLE CREEK MITIGATION PLAN, PROFILE AND SECTION
SHEET	16 OF 17
CLASS \ SHEET	C-16
DRAWING NO.	D-49616
SCALE	AS NOTED
REV. NO.	0

WORK SHOWN ON THIS SHEET WILL ONLY BE DONE IF HEAD-CUTTING IS OBSERVED. THIS WORK WILL BE DONE UNDER A SEPARATE CONTRACT.



STETATTLE CREEK PLAN

10 0 5 10
SCALE: 1"=10'



SECTION
N.T.S.
B C-17

NOTES

1. IF HEAD-CUTTING IS OBSERVED BY MONITORING IN FIELD, BOULDER PLACEMENT WILL FOLLOW PATTERN SHOWN ON THIS DRAWING. ACTUAL LOCATION WILL BE DETERMINED BY MONITORING IN FIELD.

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DESIGN: R2 CSA	04/24/2015
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DATE

SUBJECT	GRADING FOR DRAINAGE
LOCATION	GORGE DAM & RESERVOIR
TITLE	STETATTLE CREEK BAR EXCAVATION HEADCUT CONTINGENCY PLAN
SHEET	17 of 17
CLASS \ SHEET	C-17
DRAWING NO.	D-49617
SCALE	AS NOTED
REV. NO.	0