

*Just*  
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**CLARK COUNTY  
STAFF REPORT**

**DEPARTMENT/DIVISION:** Environmental Services / Policy & Planning / Legacy Lands

**DATE:** April 30, 2013

**REQUEST:** Authorize the County Administrator to execute the landowner agreement with Fish First to construct salmon habitat enhancement project 11-1266R on the Lower Daybreak property.

**CHECK ONE:**  Consent  Hearing  Chief Administrative Officer

**BACKGROUND:** Fish First successfully competed for Salmon Recovery Funding Board (SRFB) grant 11-1266R to construct a fish habitat enhancement project within a side channel of the East Fork Lewis River on the County's Lower Daybreak property. The project will improve fish rearing habitat in the side channel by adding large wood material to provide refuge, vegetation to provide shade and cover, and deepening the existing side channel to increase volume of pools at low-flow seasons.

This Agreement articulates the respective obligations of Fish First, which is undertaking the project, and Clark County, which owns the property.

**COMMUNITY OUTREACH:** The proposed project was identified as EF-24 in the Lower East Fork Lewis River Aquatic Habitat Restoration Plan, adopted by the Lower Columbia Fish Recovery Board (LCFRB) in 2009. The plan was prepared with the involvement of the 19-member East Fork Lewis River Working Group, including representatives from local, state and federal agencies, non-profit conservation organizations and citizens. Invitations to review and provide feedback on the draft plan were sent to all landowners adjacent to waterways in the Lower East Fork Lewis River basin. Written comments were also accepted from all interested parties prior to consideration of the draft plan by LCFRB.

Fish First's grant proposal was presented twice to the LCFRB Technical Advisory Committee and representatives of the SRFB Advisory Committee during the grant review process.

The project is consistent with the county's adopted Lower Daybreak Master Plan which shows the project site as a natural area.

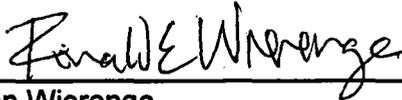
**BUDGET AND POLICY IMPLICATIONS:** Fish First is solely responsible for the management and construction of the project and for maintenance, monitoring and replacement, if necessary, during the ten-year term of the agreement. County obligations include amending the agricultural lease agreement on the Lower Daybreak Property to accommodate the project and providing access to Fish First and SRFB.

**FISCAL IMPACTS:**  Yes (see Fiscal Impacts Attachment)  No



**ACTION REQUESTED:** Authorize the County Administrator to execute the landowner agreement with Fish First to construct a salmon habitat enhancement project 11-1266R on the Lower Daybreak property.

**DISTRIBUTION:** Please forward a copy of the approved staff report to Environmental Services Administration.



\_\_\_\_\_  
Ron Wierenga  
Resource Policy and Planning Manager

APPROVED:   
\_\_\_\_\_  
CLARK COUNTY, WASHINGTON  
BOARD OF COMMISSIONERS



\_\_\_\_\_  
Anita Largent  
Interim Environmental Services Director

\_\_\_\_\_  
April 30, 2013

SR 070-13

(PTL/RW/bt)

Enclosures: Agreement

**AGREEMENT NO. \_\_\_\_\_**

**I. PURPOSE**

The purpose of this agreement is to identify and confirm the terms, conditions and obligations agreed upon between Fish First, hereafter referred to as Contractor, who is undertaking restoration project 11-1266R, West Daybreak Phase I, funded through the Salmon Recovery Funding Board (SRFB), and Clark County, hereafter referred to as County, who owns the property on which the project will take place.

**II. AUTHORITY**

Salmon Recovery Funding Board has adopted procedures required by RCW 77.85.130 that require project sponsor, Contractor, to enter into this agreement with the land owner, County.

**III. TERM**

County and Contractor intend that all terms of this agreement shall remain in effect from date of execution through a period of ten years from the date of project completion, and the agreement shall be binding on all successors in interest during this time. Grant Agreement No. 11-1266R, executed between the Salmon Recovery Funding Board and Contractor, establishes a project completion date of December 8, 2014.

**IV. AMENDMENT**

This agreement may be revised only by a written amendment that is signed by both parties. The Board of County Commissioners hereby authorizes the County Administrator to execute this agreement and any amendments thereto.

**V. ASSIGNMENT**

This Agreement shall not be assignable in whole or in part by the Contractor except with the express advance written consent of County.

**VI. TERMINATION**

Termination may be sought by either County or Contractor through written notice to the other party. Termination will be effective only after authorized representatives of both parties have agreed in writing to such termination and SRFB has been provided a thirty (30) day advance written notice of such termination.

**VII. RELATIONSHIP OF PARTIES**

Contractor shall be solely responsible for the management of project no. 11-1266R within the terms and conditions of this Agreement and all applicable law. Furthermore, County shall not be deemed a party to any contract between the Contractor and any third party by reason of having entered into this Agreement. County will not assume any responsibility for improving, managing or maintaining project no. 11-1266R during the ten year term of this agreement, unless specifically agreed in writing. Contractor will not acquire any ownership interest in the County property on which project no. 11-1266R is to be constructed by virtue of this Agreement. Should components of the Side Channel 1

project be intentionally or unintentionally removed, destroyed, or otherwise compromised in function, Contractor is solely responsible for reimbursement of project revenues appropriated by the SRFB under the aforementioned SRFB Project Agreement No. 11-1266R.

#### VIII. CONTRACTOR PERFORMANCE

The purpose of SRFB project no. 11-1266R is to improve fish rearing habitat values in Side Channel No. 1 as described in the Attachment A, Final Design Drawings dated 1-3-2013, by adding large wood material to provide refuge, vegetation to provide shade and cover, and deepening of the existing side channel to increase volume of wetted pools at low-flow seasons. In the course of project no. 11-1266R, Contractor shall perform the following activities on County property:

- A. Contractor shall develop a temporary construction equipment access route, including a staging area, from the existing boat launch parking lot along existing defined footpaths to the edge of the main stem East Fork Lewis River at the downstream end of Side Channel No. 1 work site. Final alignment of the access road and location of the staging area will be determined at a pre-construction meeting among Contractor, County, and any subcontractors that will assist in construction of the project. Contractor will ensure that the access route and staging area will avoid the agricultural lease area to the maximum extent possible. Contractor may construct access spurs from the edge of the agricultural lease area to the side channel about mid-way between the upstream and downstream ends of the side channel at approximately station 450 and at the furthest downstream end of the side channel near station 0 as shown on Attachment A. Following construction, Contractor will restore the walking trail by smoothing, and will restore ecological functions of adjoining disturbed areas to the satisfaction of County.
- B. Contractor shall excavate approximately 620 cubic yards to deepen Side Channel No. 1 between station 0 and station 420 by an average of 2 feet and to a maximum of 6 feet deeper than the existing bed. The area to be excavated is approximately 420 feet long and 20 feet wide. Contractor will ensure that the excavation will avoid all mature trees. Contractor may dispose of clean soil material excavated during construction on County's Lower Daybreak property at a location that is approved by County and determined at a pre-construction meeting among Contractor, County, and any subcontractors that will assist in construction of the project. The soil disposal area will avoid the agricultural lease area to the maximum extent possible. Soil disposed of on the property shall be graded smooth, not over 3 feet in height, seeded with pasture grass mix approved by County and mulched with straw to prevent erosion. Contractor shall legally dispose of all rubble and waste encountered or generated during construction at a location that is off the County property.
- C. Contractor shall enhance 950-foot long Side Channel No. 1 by placement of approximately 95 pieces of large wood as directed by the field engineer. Contractor shall ensure that wood is anchored by partial burial and other means as necessary to minimize risk of wash out at the 100-year recurrence interval peak flow; provided, that Contractor may insert wood between existing mature vegetation, without anchoring, if the field engineer determines there is minimal risk of wash-out at the 100-year recurrence interval peak flow. During the ten year term of this agreement Contractor shall monitor the condition of the project site at least twice annually (during Fall prior to first ordinary high water flow as best can be anticipated and during Winter/Spring after ordinary high water flows have been experienced) to inspect and record data regarding actual wash-out of wood, imminent

threat of wash-out, excessive erosion and scour, sediment deposition in pools and risk of avulsion of East Fork Lewis River main-stem into Side Channel No. 1. Contractor will be responsible for remediating all immediate project-related public health threats as determined by County.

- D. Contractor shall enhance approximately 0.55 acres along Side Channel No. 1, including all areas disturbed during construction, by planting native shrub and tree species. Plant materials may include native species transplanted on-site that may be impacted by project construction, as well as live stakes obtained on-site. Contractor shall consult with County on final planting plan regarding species mix, source locations for on-site procurement of live stakes and timing of harvest of live stakes. Contractor shall also consult with County before any treatment of toxic, invasive or nuisance plant species occurs as part of the project. Contractor shall monitor the project site at least twice annually during the growing season through the 10-year term of this agreement to inspect and record data regarding vegetation survivorship and need for replacement, if any, and to determine the need for invasive species control. During the first 2 years following construction Contractor shall use mechanical means twice per year (during spring and late summer) to control invasive species so they do not outcompete planted materials. Thereafter, Contractor shall control invasive species as needed following monitoring.
- E. Contractor shall provide adequate safeguards, safety devices, protective equipment, signage, flaggers and any other needed actions to protect the life, health and safety of the public and to protect County property in execution of the project. Prior to commencing construction, Contractor shall erect a sign visible from the Daybreak boat launch parking lot in a location approved by County, advising public of pending construction, its purpose, estimated duration of construction and warning that public access is precluded while the Side Channel No. 1 project is under construction. Any acknowledgement signs erected by Contractor in fulfillment SRFB Project Agreement No. 11-1266R shall also acknowledge County as a project partner.
- F. Contractor is responsible for obtaining all required permits to construct the project and responsible for implementing all erosion control, water quality, and other requirements of County Code, state and federal law.
- G. Within 30 days of the signing of this agreement, or by the time of the pre-construction meeting, whichever is earlier, Contractor shall inspect the property and notify County in writing of any safety hazards on the property that might affect or result from construction. If Contractor fails to timely provide the required notice to County, Contractor assumes full responsibility for safety hazards that it fails to disclose and that are not known by County.

IX. County Performance

- A. County shall notify Contractor of changes in ownership of the property on which the project is located within thirty (30) days of transfer. In the event of such transfer of ownership, the County shall provide a copy of this agreement to the succeeding owner prior to such transfer.
- B. County will amend the agricultural lease agreement on the Lower Daybreak Property as necessary to accommodate the Side Channel No. 1 project.

- C. County will not intentionally compromise the integrity of the Side Channel 1 project. County will not unduly delay or withhold from contractor any approvals, consultations and communications required by this agreement.
- D. Within 30 days of the signing of this agreement, or at the pre-construction meeting, whichever is earlier, County will inform Contractor in writing of all safety hazards on the property that are then known to County and that might affect, or result from, project construction.
- E. County shall provide reasonable property access to Contractor, its subcontractors and volunteers, if any, to plan, implement, and complete the project, and to conduct the long-term maintenance and monitoring activities described in this agreement.
- F. County will provide Contractor and the Salmon Recovery Funding Board, their employees, agents, representatives, or assignees, the right to enter the land, at reasonable times, and upon reasonable notice for project implementation and management purposes, to inspect completed work, and to monitor long-term success of the completed project. Except in case of emergency, reasonable notice shall be given at least 48 hours prior to entry. County has no obligation to provide access to parties other than Contractor or SRFB. For the purposes of viewing the project for information or educational purposes, County and contractor must mutually agree before such third-party access is offered.
- G. After it is fully signed, County may provide of its own volition, or authorize Contractor to provide, a copy of this Agreement, and any amendment to this Agreement, to the SRFB: Washington State Salmon Recovery Funding Board, PO Box 40917 Olympia, WA 98504-0917.

#### X. REMEDIES

If the Contractor fails to comply with any or all of its obligations under this Agreement, specific performance shall be the remedy preferred by County; provided, however, that the remedy of specific performance shall not be the sole remedy and does not serve to exclude any and all other remedies available to County. County may choose to exercise any and all other remedies available together with, or as an alternative to, specific performance, at the sole option of County. Venue for any suit brought to enforce any provision of this agreement shall be in the Superior Court for the State of Washington in Clark County.

#### XI. HOLD HARMLESS

Contractor agrees to defend and hold harmless Clark County, Washington, the Board of Clark County Commissioners and any employees, officials, agents, or elected officials thereof from any and all suits at law or equity or claims or demands, or any loss of any nature, including but not limited to costs and attorneys' fees, suffered, or alleged to be suffered, on the premises, or arising out of use, improvements, operation, or management of the subject property and/or the project.

#### XII. NOTICES

Any notices, requests, consents, approvals, and other communications shall be in writing and shall be deemed to have been sufficiently given for all purposes when delivered by hand, or within three days of being mailed by U.S. mail first class postage or certified mail, postage prepaid, addressed as follows:

A. Notice to County

TO: Conservation Futures Program Manager  
Clark County Environmental Services Department  
P.O. Box 9810  
Vancouver, Washington 98666-9810

B. Notice to the Contractor

TO: Robert Corbett  
Fish First General Manager  
537 Bryant Hill Road  
Woodland, WA 98674

Or, to such other person at such address as is furnished in writing by the Contractor to the Conservation Futures Program Manager.

Signed by the Contractor on this 26<sup>th</sup> day of April, 2013  
FISH FIRST

By: Robert W. Corbett Print name: Robert W. Corbett Title: Fish First Administrator

Signed by Clark County on this 30<sup>th</sup> day of April, 2013  
CLARK COUNTY

Bill Barron By: Bill Barron, County Administrator

APPROVED AS TO FORM ONLY:

ANTHONY F. GOLIK, CLARK COUNTY PROSECUTING ATTORNEY

Christine Cook  
By: Christine Cook, Deputy Prosecuting Attorney

**ATTACHMENT A**  
**FINAL DESIGN DRAWINGS, DATED 1-3-2013**

# LOWER EAST FORK LEWIS RIVER RESTORATION PROJECT - PHASE 1

to ENHANCE ECOLOGICAL FUNCTIONING AND RECREATIONAL VALUES, ESPECIALLY AS THEY RELATE TO SALMON AND STEELHEAD  
 by LARGE WOODY MATERIAL INSTALLATION, SIDE CHANNEL ENHANCEMENT, AND NATIVE PLANTINGS  
 located near WEST DAYBREAK PARK, CLARK COUNTY, WA



**FISH FIRST**  
 balancing the needs of fish and people  
 P.O. BOX 1505  
 WOODLAND, WA 98674  
 RICHARD DYRLAND 360-887-0866



**CLARK COUNTY**  
 DEPARTMENT OF ENVIRONMENTAL SERVICES  
 FRANKLIN STREET, P.O. BOX 9810  
 VANCOUVER, WA 98666-9810  
 PATRICK LEE, LANDS MANAGER 360-397-2121

**RECKENDORF AND ASSOCIATES**  
 fluvial geomorphologists  
 950 MARKET STREET NE  
 SALEM, OR 97301-1130  
 DR. FRANK RECKENDORF 503-364-6681



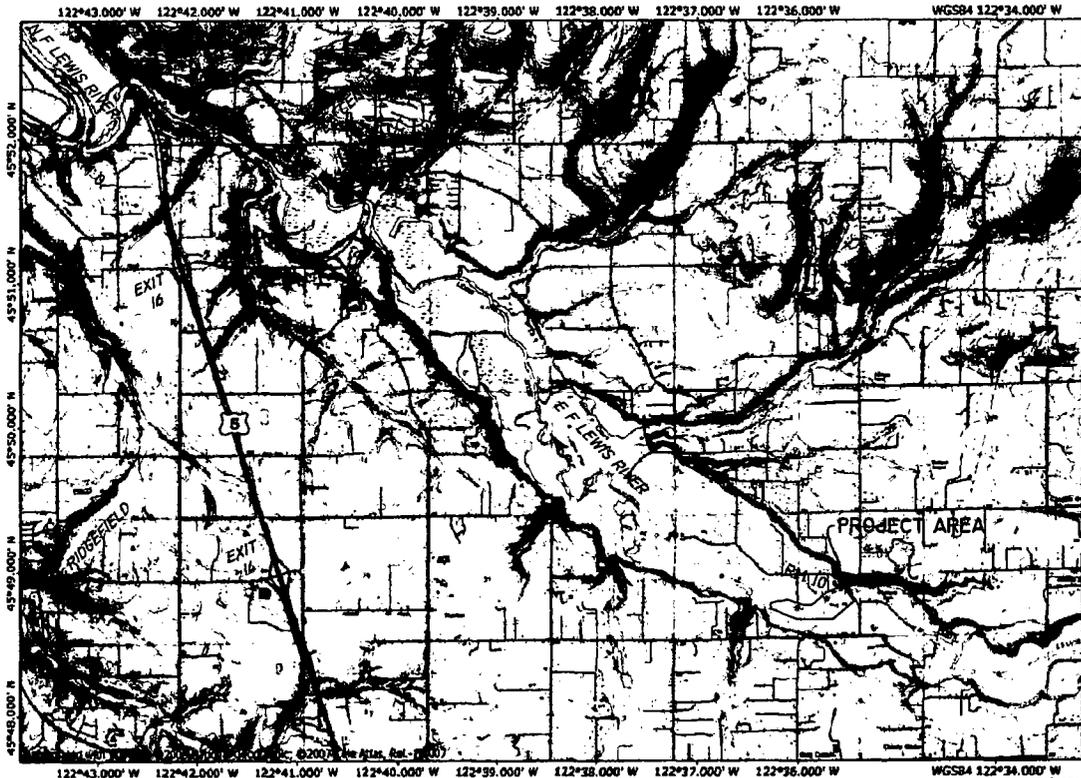
**SMAYDA ENVIRONMENTAL ASSOCIATES, INC.**  
 civil engineering and biological science  
 139 NE 61ST STREET  
 SEATTLE, WA 98115  
 TOM SMAYDA, P.E. 206-522-6199

**CALL BEFORE YOU DIG**  
 1-800-424-5555

REVISED 1-3-2012 TO ADD SHEET 7  
 SHOWING SIDE CHANNEL #2 PROFILE  
 AND SECTIONS.



1-3-2013

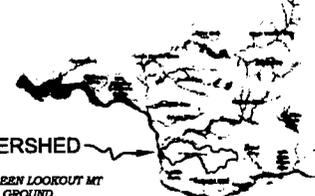
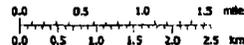


**NATIONAL GEOGRAPHIC**



**PROJECT VICINITY**

CLARK COUNTY, WA  
 45°49' N 122°36' W



**E F LEWIS RIVER WATERSHED**

WATERSHED = 235 SQ MI  
 HIGHEST ELEVATION = 4442 FT AT GREEN LOOKOUT MT  
 PRECIPITATION = 52 IN/YR AT BATTLE GROUND

**FINAL  
 DESIGN DRAWINGS**

**PHASE 1  
 SIDE CHANNELS**

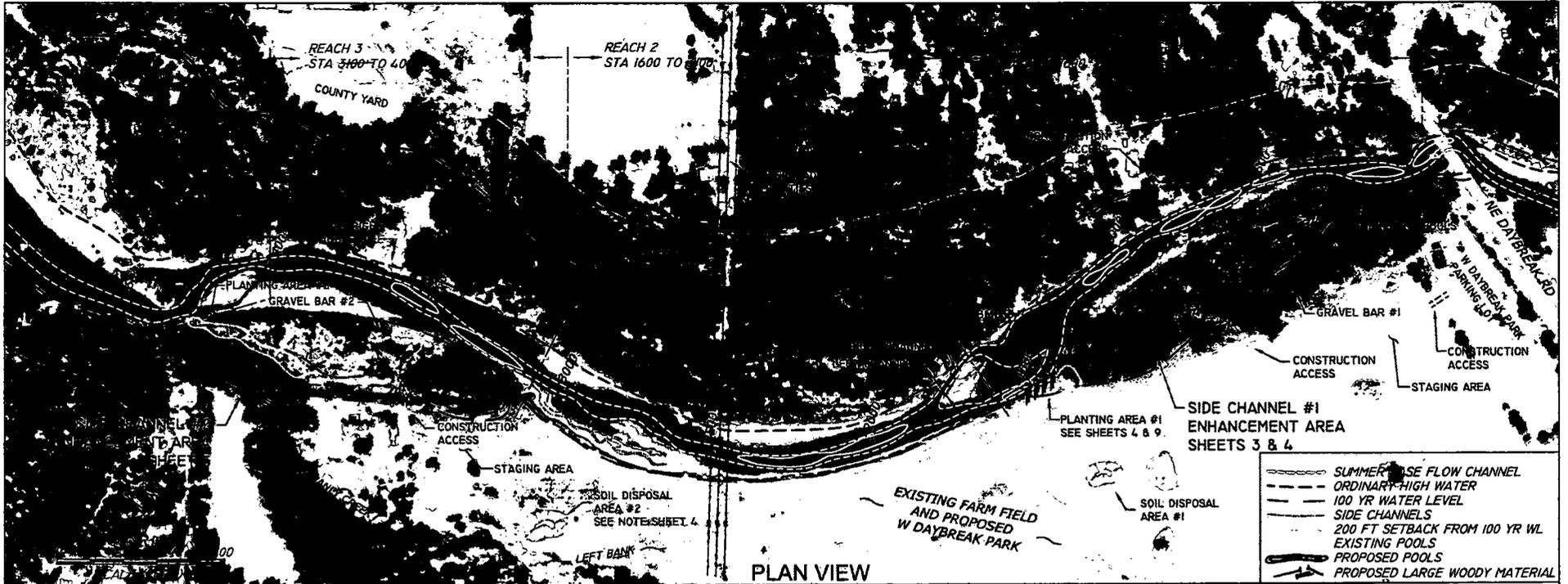
**EAST FORK LEWIS  
 RIVER RESTORATION  
 PROJECT**

JANUARY 3, 2013

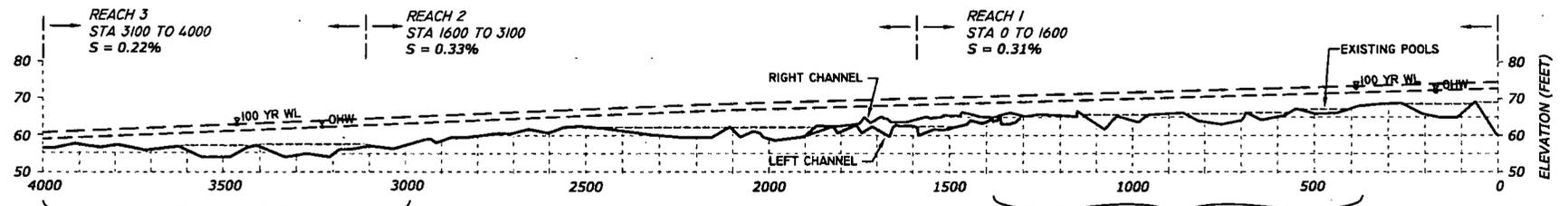
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- 10 QUANTITIES AND NOTES
- 11 EROSION CONTROL PLAN

SHEET 1 OF 11



PLAN VIEW



SIDE CHANNEL #2

SIDE CHANNEL #1

PROFILE

VERTICAL EXAGGERATION 10:1  
 OVERALL RIVER SLOPE = 0.30%



1-3-2013



**SMAYDA ENVIRONMENTAL ASSOCIATES, INC.**  
 139 NE 61ST STREET, SEATTLE, WA 98115  
 206-522-6199



**FISH FIRST**  
 PO BOX 1505, WOODLAND, WA 98674  
 360-887-0866

E FORK LEWIS RIVER AT W DAYBREAK PARK  
 PHASE 1

PROJECT PLAN & PROFILE

SHEET  
 2  
 OF  
 11



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**E FORK LEWIS RIVER AT W DAYBREAK PARK**  
**SIDE CHANNEL #1**  
**STATION 0 - 500**

**SHEET 3 OF 11**

**SOIL DISPOSAL AREA NOTES**

1. CLEAN SOIL REMOVED FROM EXCAVATION AREAS SHALL BE PLACED AT TWO SOIL DISPOSAL AREAS LOCATED BEYOND THE 200 FT SETBACK FROM THE 100 YR WATER LEVEL AS SHOWN ON SHEET 2.
2. SOILS SHALL BE GRADED SMOOTH, NOT OVER 3 FT HIGH AND SHAPED AS A PARK-LIKE AMENITY.
3. SOILS SHALL BE SEEDED WITH PASTURE GRASS MIX AND COVERED WITH STRAW MULCH.
4. ALL RUBBLE AND WASTE SHALL BE DISPOSED OFF SITE.

**PLANTING AREA NOTES**

1. PLANTING AREA #1, 7700 SQ FT, INSTALL 77 STEMS OF NATIVE SPECIES AS DESCRIBED ON SHEET 10 TO ACHIEVE A PLANTING DENSITY OF 1 PLANT PER 100 SQ FT.
2. PLANTING AREA #2, 12,950 SQ FT, INTER-PLANT AMONG THE SPARSE EXISTING VEGETATION 60 STEMS OF NATIVE SPECIES TO ACHIEVE A PLANTING DENSITY OF 1 PLANT PER 225 SQ FT.
3. ADDITIONAL INTER-PLANTING 200 STEMS SHALL OCCUR AMONG THE DENSE VEGETATION OF GRAVEL BARS #1 AND #2.
4. FOR THE PURPOSES OF THIS PROJECT, THESE PLANTING AREAS ARE CONSISTENT WITH THE OVERALL GOAL OF 1.2 ACRES TO BE PLANTED.

**SIDE CHANNEL #1 NOTES**

1. DEVELOP TEMPORARY ACCESS ROUTES ALONG EXISTING TRAILS AS NECESSARY TO RECEIVE LWD AND REMOVE SOILS. FOLLOWING CONSTRUCTION, RESTORE TO WALKING TRAIL CONDITIONS BY SMOOTHING, AND RESTORE ECOLOGICAL FUNCTIONING OF ADJOINING DISTURBED AREAS BY ADDING LWD AND TRANSPLANTING NEARBY VEGETATION.
2. KEEP EQUIPMENT ON THE TEMPORARY ACCESS ROUTE AND ALONG THE GRAVEL BEDDED SIDE CHANNEL. AVOID AREAS WITH TOPSOIL THAT WOULD BECOME COMPACTED BY EQUIPMENT.
3. FURNISH AND INSTALL LWD AT LOCATIONS SHOWN ON SHEETS 3 AND 4, USING LWD LISTED ON SHEET 10, AND METHODS DESCRIBED ON SHEETS 7, 8 AND 9.
4. DEEPEN THE EXISTING POOL FROM STA 0 TO 420 BY AN AVERAGE OF 2 FEET AND TO A MAXIMUM OF 6 FEET DEEPER THAN THE EXISTING BED BY EXCAVATION AND REMOVAL OF THE SOIL. THE AREA TO BE EXCAVATED IS ABOUT 420 FT LONG AND 20 FT WIDE, TOTALING 620 CU YD. THE SOIL IS SANDY GRAVELLY MATERIAL AND OTHER SOIL TYPES.
5. SIDE CHANNEL #1 SHALL HAVE MOST LWD BETWEEN BETWEEN STA 0 AND STA 420 INSTALLED BY PARTIAL BURIAL, AND THE REMAINING PIECES INSTALLED BY INSERTION BETWEEN EXISTING VEGETATION UP ON THE BANKS. THIS LWD SHOULD INCLUDE BRANCH, ROOTS, AND OTHER FEATURES THAT IMPROVE HABITAT CONDITIONS FOR SMALL FISH. FURTHER UP THE SIDE CHANNEL, STA 420 TO 950, MOST WOOD SHALL BE INSTALLED BY INSERTION BETWEEN EXISTING VEGETATION, AND SOME SHALL BE PARTIALLY BURIED. THESE PIECES DO NOT NEED TO BE AS BRUSHY AS THE LWD DOWNSTREAM.
6. THE FIELD ENGINEER SHALL BE ONSITE TO ASSIST WITH THE PLACEMENT OF LWD.



1-3-2013



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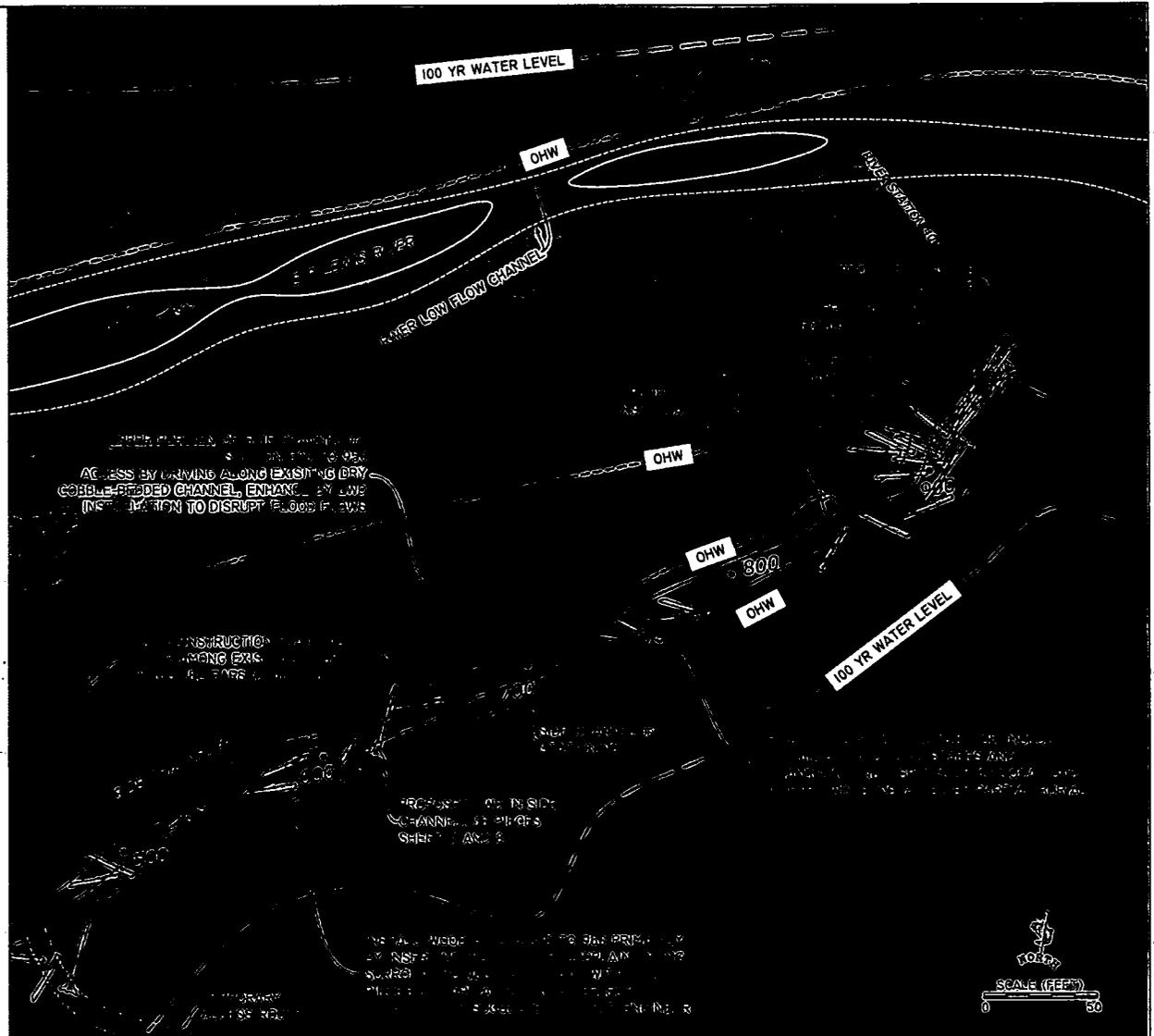


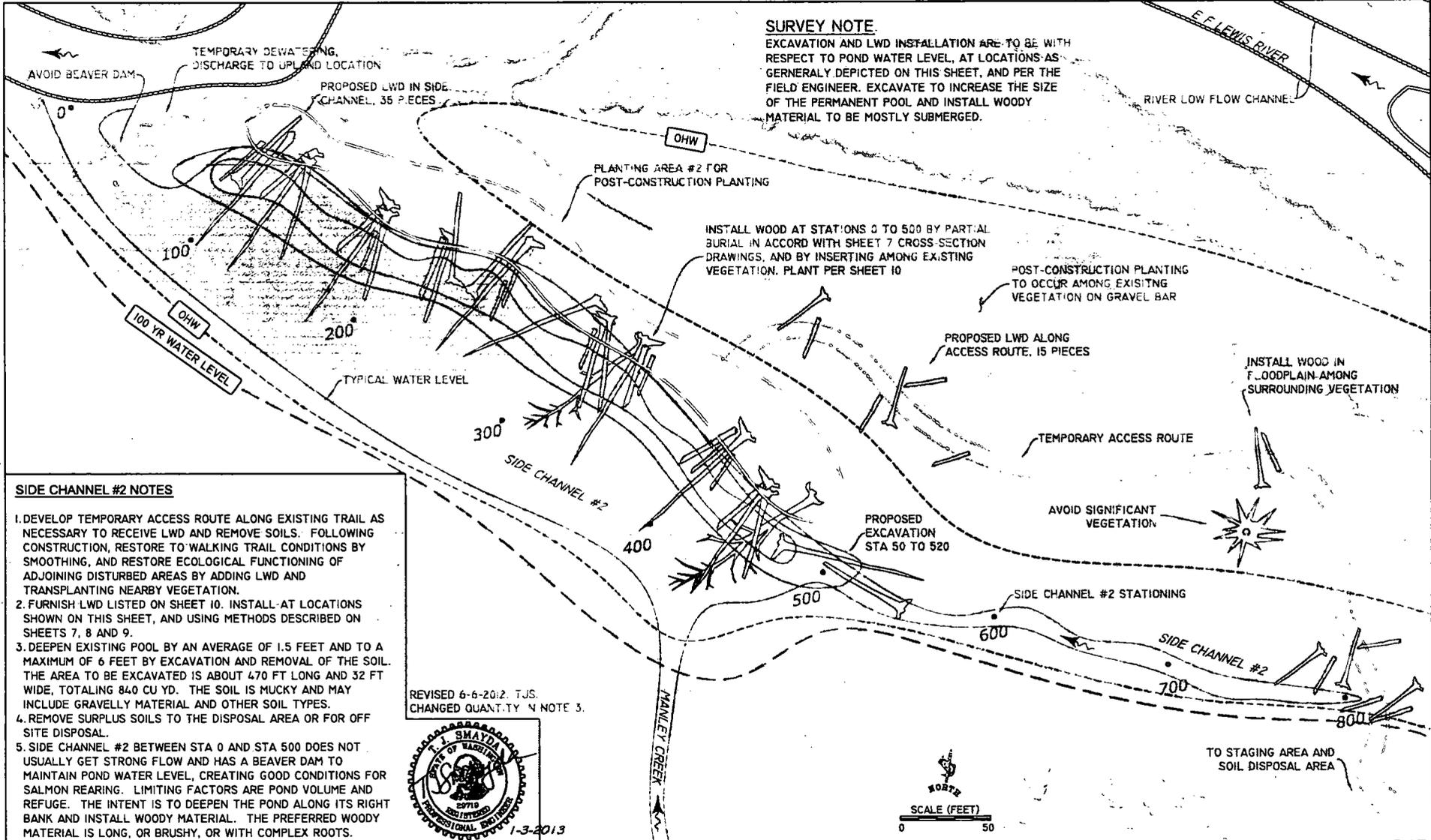
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E FORK LEWIS RIVER AT W DAYBREAK PARK

**SIDE CHANNEL #1  
STATION 500 - 950**

**SHEET  
4  
OF  
11**





**SURVEY NOTE**  
 EXCAVATION AND LWD INSTALLATION ARE TO BE WITH RESPECT TO POND WATER LEVEL, AT LOCATIONS AS GENERALLY DEPICTED ON THIS SHEET, AND PER THE FIELD ENGINEER. EXCAVATE TO INCREASE THE SIZE OF THE PERMANENT POOL AND INSTALL WOODY MATERIAL TO BE MOSTLY SUBMERGED.

**SIDE CHANNEL #2 NOTES**

1. DEVELOP TEMPORARY ACCESS ROUTE ALONG EXISTING TRAIL AS NECESSARY TO RECEIVE LWD AND REMOVE SOILS. FOLLOWING CONSTRUCTION, RESTORE TO WALKING TRAIL CONDITIONS BY SMOOTHING, AND RESTORE ECOLOGICAL FUNCTIONING OF ADJOINING DISTURBED AREAS BY ADDING LWD AND TRANSPLANTING NEARBY VEGETATION.
2. FURNISH LWD LISTED ON SHEET 10. INSTALL AT LOCATIONS SHOWN ON THIS SHEET, AND USING METHODS DESCRIBED ON SHEETS 7, 8 AND 9.
3. DEEPEN EXISTING POOL BY AN AVERAGE OF 1.5 FEET AND TO A MAXIMUM OF 6 FEET BY EXCAVATION AND REMOVAL OF THE SOIL. THE AREA TO BE EXCAVATED IS ABOUT 470 FT LONG AND 32 FT WIDE, TOTALING 840 CU YD. THE SOIL IS MUCKY AND MAY INCLUDE GRAVELLY MATERIAL AND OTHER SOIL TYPES.
4. REMOVE SURPLUS SOILS TO THE DISPOSAL AREA OR FOR OFF SITE DISPOSAL.
5. SIDE CHANNEL #2 BETWEEN STA 0 AND STA 500 DOES NOT USUALLY GET STRONG FLOW AND HAS A BEAVER DAM TO MAINTAIN POND WATER LEVEL, CREATING GOOD CONDITIONS FOR SALMON REARING. LIMITING FACTORS ARE POND VOLUME AND REFUGE. THE INTENT IS TO DEEPEN THE POND ALONG ITS RIGHT BANK AND INSTALL WOODY MATERIAL. THE PREFERRED WOODY MATERIAL IS LONG, OR BRUSHY, OR WITH COMPLEX ROOTS. DIAMETER OF THE WOOD IS NOT AS IMPORTANT AS THESE OTHER SHAPES.
6. THE FIELD ENGINEER SHALL BE ONSITE TO ASSIST WITH THE PLACEMENT OF LWD.

REVISED 6-6-2012 T.J.S.  
 CHANGED QUANTITY 4 NOTE 3.

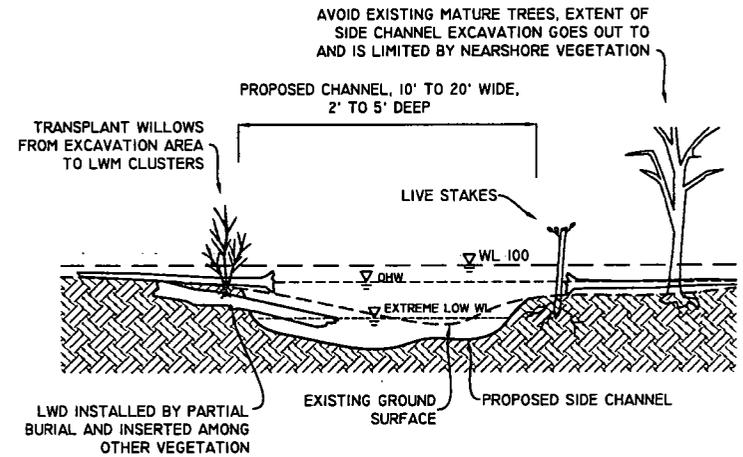
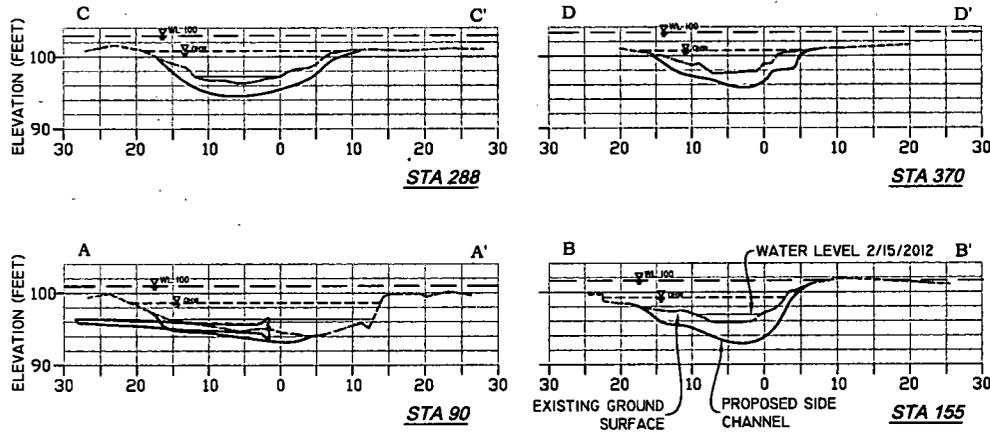
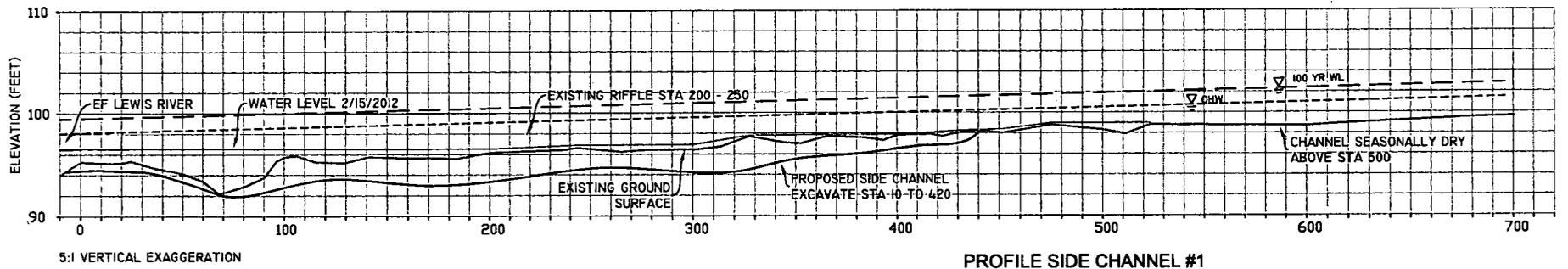


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 139 NE 61ST STREET, SEATTLE, WA 98115  
 206-522-6199

**FISH FIRST**  
 PO BOX 1505, WOODLAND, WA 98674  
 360-887-0866

**E FORK LEWIS RIVER AT W DAYBREAK PARK**  
**SIDE CHANNEL #2**

**SHEET 5 OF 11**



**SIDE CHANNEL ENHANCEMENT DETAILS**  
TYPICAL CROSS SECTION



**CROSS-SECTIONS SIDE CHANNEL #1**



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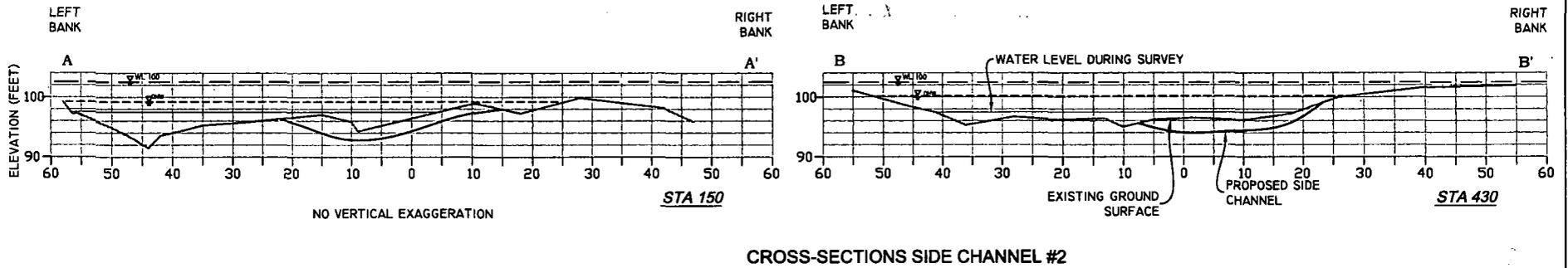
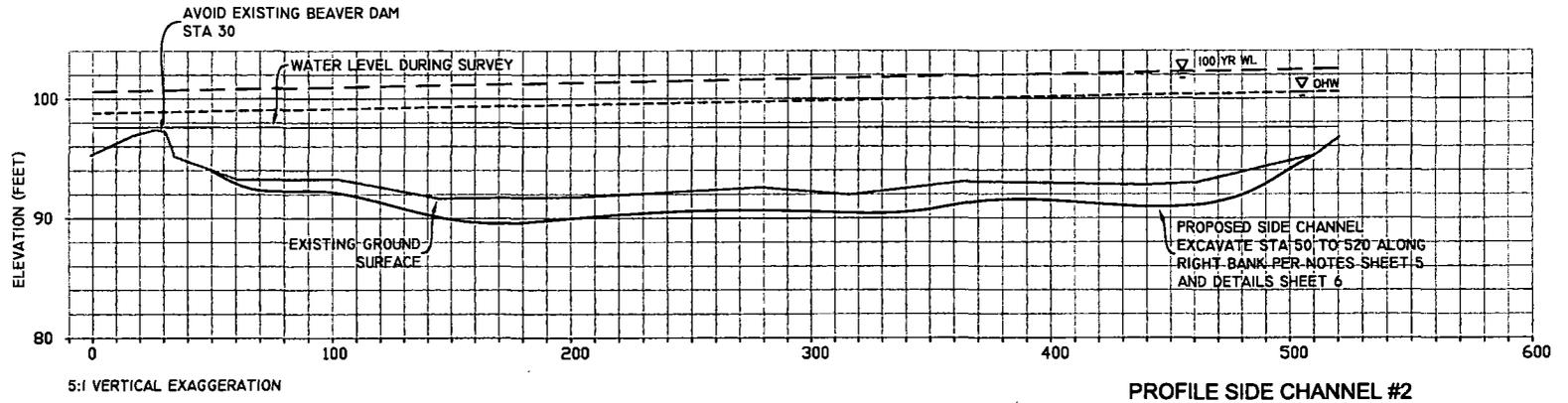


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**E FORK LEWIS RIVER AT W DAYBREAK PARK**

**CROSS SECTIONS**  
**SIDE CHANNEL #1**

**SHEET**  
**6**  
**OF**  
**11**



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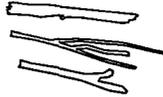
E FORK LEWIS RIVER AT W DAYBREAK PARK

CROSS SECTIONS  
SIDE CHANNEL #2

SHEET  
7  
OF  
11



**ROOT WADS**  
 THESE ARE ROOTS WITH ATTACHED TRUNK. INSTALL AS FOR LOGS WITH ROOT BURIED OR EXPOSED. WHOLE TREES ARE ACCEPTABLE. MINIMUM SIZE FOR THIS PROJECT 10' AT BUTT AND 16' LONG, MOST PIECES SHALL BE MINIMUM 14" x 24". AT LEAST 12 PIECES GREATER THAN 22" x 40' LONG ARE REQUIRED.



**LOGS**  
 LOGS OF ANY SPECIES, ANY SIZE, ANY STAGE OF DECAY. PREFERABLY WITH "DEFECT" THAT MAKES THEM POORLY SUITED AS SAW LOGS. THESE ARE THE BACKBONE OF THE FOUNDATION PLAN. AVOID CONSTRUCTION OF WEIR-LIKE SHAPES BECAUSE ROUGHENED CHANNEL DESIGNS ARE MORE DURABLE AND PROVIDE BETTER HABITAT VALUES. MINIMUM SIZE FOR THIS PROJECT 10' AT BUTT AND 16' LONG, MOST PIECES SHALL BE MINIMUM 12" x 24". AT LEAST 10 PIECES GREATER THAN 40' LONG ARE REQUIRED.



**TREE TOPS**  
 THESE ARE TOPS OF TREES WITH BRANCHING INTACT. THESE ARE FRAGILE, ROLLING THEM OR EXCESSIVE HANDLING BREAKS OFF THE BRANCHES AND REDUCES THEIR VALUE. SIZES RANGE FROM 16' TO 40' LONG.



**ROOTS**  
 CAN BE HUGE OR SMALL. INSTALL UPRIGHT OR TILTED. IN-STREAM INSTALLATION IS TRICKY BECAUSE OF THE POTENTIAL FOR WASHOUT DUE TO BUOYANCY. INSTALL DEEPLY AND AS FILLER IN TRENCHES THAT HAVE BEEN OPEN FOR LOG INSTALLATION. LEAVE OPEN WATER ACCESS TO THE MAZE OF SMALL BRANCHES SO THAT FISH HAVE PLACES TO HIDE.



**SMALL PIECES**  
 ANY SHAPE WEIGHING 200 POUNDS OR LESS. INSTALL TOGETHER WITH BIGGER PIECES TO HELP FILL TRENCHES AND ESTABLISH LIMITS OF SCOUR HOLE DEVELOPMENT. OR INSTALL IN CLUSTERS OF SEVERAL PIECES. SMALL PIECES ARE USUALLY NOT SHOWN ON THE PLANS.

## LARGE WOODY DEBRIS (LWD) 2

AS DEFINED FOR THE PURPOSES OF THIS PROJECT.

**NOTE**  
 LWD IS WOOD THAT WEIGHS 200 POUNDS OR MORE. PROJECT SUCCESS DEPENDS ON LWD INSTALLATION. IT MUST BE INSTALLED TO NOT WASH OUT. CONTRACTOR SHALL FOLLOW THE PLANS AND FOLLOW THE DIRECTION OF THE FIELD ENGINEER. ARTIFICIAL ANCHORS ARE NOT NECESSARY FOR THIS PROJECT. PARTIAL BURIAL IN NATIVE SOIL WILL BE PERFORMED FOR MOST OF THE PIECES TO PREVENT WASH-OUT. LWD WILL FORM THE FOUNDATION OF SIDE CHANNEL #1 - SOME SHALL BE BURIED DEEPLY TO PREVENT DOWNCUTTING. LWD IS FOR THE FISH, MOST SHALL BE INSTALLED BELOW OHW WITHIN THE PERMANENT POOL FOR HABITAT BENEFITS. INSTALLED WOOD SHALL BE ANY SPECIES, ANY SIZE AND ANY STAGE OF DECAY, EXCEPT AS NOTED ABOVE. WOOD PLACED IN THE FLOODPLAIN IS OFTEN SIMPLY PLACED ON THE GROUND SURFACE, PROVIDED THAT WASH-OUT IS NOT ANTICIPATED.

SEE SIDE CHANNEL ENHANCEMENT DETAILS, SHEET 6



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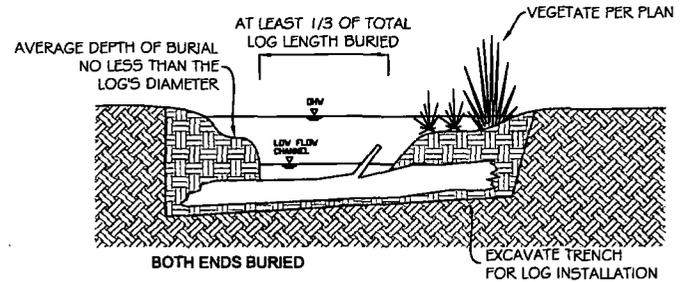


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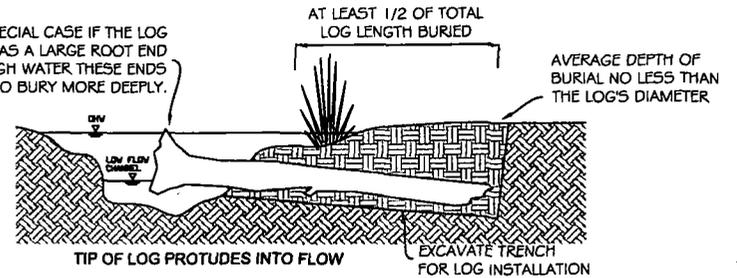
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LWD NOTES

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NOTE THAT IT IS A SPECIAL CASE IF THE LOG IS MASSIVE OR HAS A LARGE ROOT END BECAUSE DURING HIGH WATER THESE ENDS TEND TO FLOAT, SO BURY MORE DEEPLY.



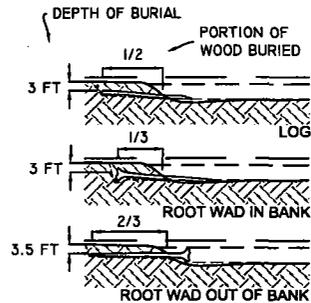
## HABITAT LOG INSTALLATION DETAIL 1

### NOTES

1. THE INTENT IS TO INSTALL WOOD THAT CREATES HYDRAULIC CONDITIONS THAT FISH FAVOR AND THAT CREATES LOCALIZED SCOUR HOLES AND DEPOSITIONAL AREAS. AT LOCATIONS WHERE THE INTENT IS TO PREVENT DOWNCUTTING OF THE STREAM BED, THEN SIMILAR LOOKING INSTALLATION MAY RESULT, BUT WITH SIGNIFICANTLY GREATER STRUCTURAL STABILITY AS SPECIFIED ELSEWHERE FOR "BED CONTROL LOGS".
2. THE LOGS SHALL BE INSTALLED IN NARROW TRENCHES, EXCAVATED JUST LARGE ENOUGH TO ACCEPT THE LOG AND WITH ADJACENT VEGETATION LEFT INTACT.
3. LOGS SHALL BE SKEWED TO THE CHANNEL AND AT ELEVATIONS AS SHOWN ON PLANS. IF NO ELEVATIONS ARE CALLED OUT, THEN INSTALL DEEPLY ENOUGH SO THAT AT LEAST A PORTION OF THE LOG IS WITHIN THE LOW FLOW CHANNEL.
4. BACKFILL TRENCH WITH NATIVE SOIL. IN ALL CASES THE EXTENT OF BURIAL AS SHOWN ABOVE SHALL BE COMPLETED. ADDITIONAL ANCHORING MAY BE NECESSARY AT LOCATIONS WITH ANTICIPATED SCOUR, AS DIRECTED ELSEWHERE ON THESE PLANS OR BY THE FIELD ENGINEER.
5. REVEGETATE AREA WITH WHOLE PLANTS OR SLIPS PER PLANTING PLAN.
6. TRENCHES MAY ROUTINELY BE IN EXCESS OF 4 FEET DEEP. NO PERSON SHALL BE ALLOWED NEAR OR IN ANY TRENCH AND THE TRENCH IS TO BE FILLED IMMEDIATELY AFTER EXCAVATION.
7. WATER IN THE TRENCH MAY FLOAT THE LOG. IN THESE CASES OTHER LOGS SHALL BE TEMPORARILY STACKED ON TOP OF THE LOG AND SUNK USING THE WEIGHT OF THE EXCAVATOR TO PUT THE LOG AT THE PROPER ELEVATION PRIOR TO BACKFILLING.

### ROOTWAD STACK NOTES

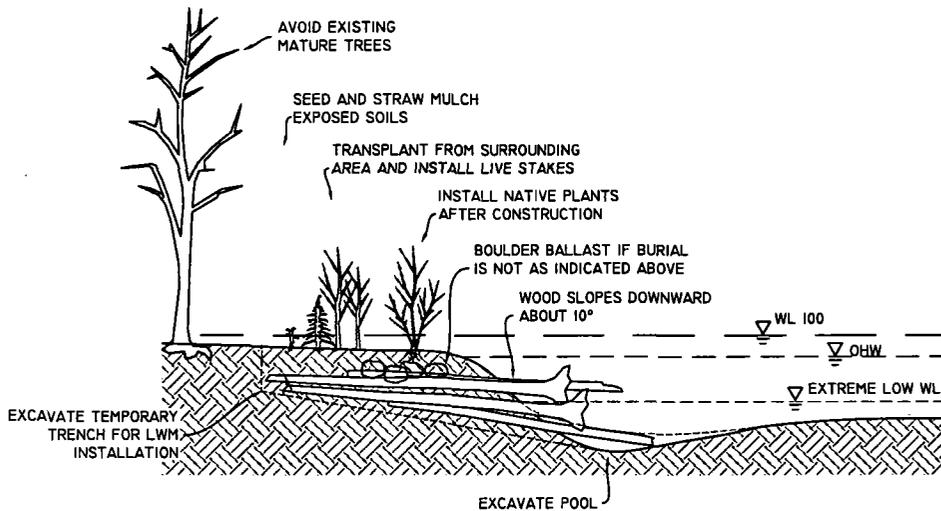
1. THE INTENT IS TO INSTALL WOOD THAT CREATES HYDRAULIC CONDITIONS THAT FISH FAVOR AND THAT CREATES LOCALIZED SCOUR HOLES AND DEPOSITIONAL AREAS.
2. THE LOGS SHALL BE INSTALLED IN NARROW TRENCHES, EXCAVATED JUST LARGE ENOUGH TO ACCEPT THE LOG AND WITH ADJACENT VEGETATION LEFT INTACT.
3. LOGS SHALL BE SKEWED TO THE CHANNEL, POINTING 20° TO 35° UPSTREAM, AND ALSO SHALL NOT BE LEVEL, SLOPING ABOUT 10° DOWN INTO THE CHANNEL.
4. BACKFILL TRENCH WITH NATIVE SOIL. IN ALL CASES THE EXTENT OF BURIAL AS SHOWN ABOVE SHALL BE COMPLETED. ADDITIONAL ANCHORING MAY BE NECESSARY AT LOCATIONS WITH ANTICIPATED SCOUR, AS MAY BE DIRECTED ELSEWHERE ON THESE PLANS OR BY THE FIELD ENGINEER.
5. REVEGETATE AREA WITH WHOLE PLANTS OR SLIPS PER PLANTING PLAN.
6. TRENCH DEPTHS MAY ROUTINELY BE IN EXCESS OF 4 FEET DEEP. NO PERSON SHALL BE ALLOWED NEAR OR IN ANY TRENCH AND THE TRENCH IS TO BE FILLED IMMEDIATELY AFTER EXCAVATION.
7. WATER IN THE TRENCH MAY FLOAT THE LOG. IN THESE CASES OTHER LOGS SHALL BE TEMPORARILY STACKED ON TOP OF THE LOG AND SUNK USING THE WEIGHT OF THE EXCAVATOR TO PUT THE LOG AT THE PROPER ELEVATION PRIOR TO BACKFILLING.



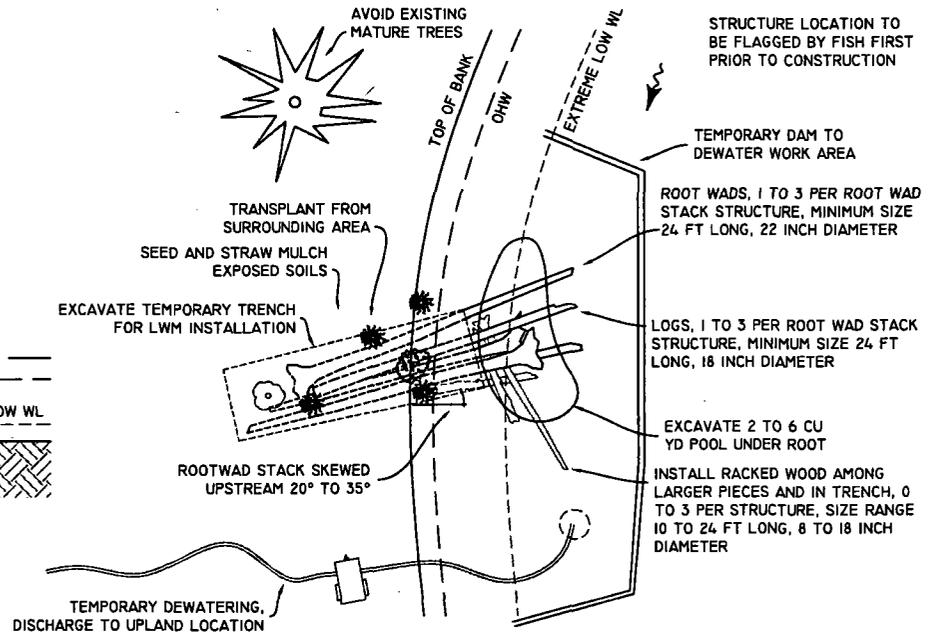
WOOD BURIAL REQUIREMENTS

ITEM	SIZE	QUANTITY
ROOT WAD	24' LONG, 22"Ø, 4'Ø ROOT	3
LOG	24' LONG, 18"Ø	2
	20' LONG, 18"Ø	2
BOULDERS	3-MAN, ROUNDED	4
TRANSPLANTS	15' TALL WITH ROOTS	5
LIVE STAKES	3'x1"Ø	10

ROOTWAD STACK  
TYPICAL MATERIALS LIST



ROOTWAD STACK - CROSS SECTION



ROOTWAD STACK - PLAN VIEW



1-3-2013



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ROOTWAD STACK DETAIL

SHEET  
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**GENERAL NOTES**

1. SURVEY DATA HAS BEEN COMPILED FROM BASE MAPS PREPARED BY APEX ENGINEERING. ADDITIONAL SURVEY DATA HAS BEEN COMPILED BY SMAYDA ENVIRONMENTAL ASSOCIATES, INC. IN THE VICINITY OF THE PROPOSED CREEK RE-ALIGNMENT AREA USING BENCHMARKS ESTABLISHED BY APEX ENGINEERING. SMAYDA ENVIRONMENTAL ASSOCIATES, INC. DOES NOT WARRANT THE ACCURACY OF THE TOPOGRAPHIC OR ELEVATION DATA CONTAINED HEREIN, OTHER THAN TO BE SUITABLE FOR THE PURPOSES OF THIS PROJECT.
2. THE CONTRACTOR AND FISH FIRST ARE RESPONSIBLE FOR COORDINATING ALL WORK.
3. THE HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING FEATURES PROVIDED ON THIS SET OF PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY EXACT LOCATIONS TO PROTECT AND UTILIZE SITE FEATURES. THE CONTRACTOR SHALL ENSURE THAT THE NEW CREEK BED IS CONSTRUCTED WITH AN APPROPRIATE SLOPE BETWEEN DIVERSION AND CONFLUENCE POINTS AND SHALL CONSTRUCT SMOOTH TRANSITIONS FOR WATER FLOW AT THE DIVERSION AND CONFLUENCE.
4. THESE DRAWINGS AND THE IDEAS AND DESIGNS INCORPORATED HEREIN ARE NOT TO BE USED, IN WHOLE OR IN PART, WITHOUT THE WRITTEN AUTHORIZATION OF SMAYDA ENVIRONMENTAL ASSOCIATES, INC.
6. A COPY OF THESE PLANS MUST BE ON THE JOB SITE AT ALL TIMES DURING CONSTRUCTION.
7. BEFORE ANY CONSTRUCTION OR DEVELOPMENT ACTIVITY, A PRE CONSTRUCTION MEETING MUST BE HELD BETWEEN THE ENGINEER, CONTRACTOR AND OWNER. CONSTRUCTION ROUTES ACROSS THE PROPERTY SHALL BE RESOLVED AND THE EXTENT OF THE EXCAVATION VERSUS HAND DIGGING SHALL BE RESOLVED. SCHEDULING MULCHING SHALL OCCUR SO THAT EXPOSED SOILS ARE COVERED IN A TIMELY AND EFFICIENT WAY.
8. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL CALL THE UNDERGROUND UTILITIES LOCATION CENTER AT 1-800-424-5555 FOR UTILITY LOCATIONS (WATER, SANITARY SEWER, STORM SEWER, GAS, POWER, TELEPHONE, AND TELEVISION).
9. CONSTRUCTION NOISE SHALL BE LIMITED IN ACCORDANCE WITH COUNTY CODE; NORMALLY, THIS IS 7 A.M. TO 10 P.M. ON WEEKDAYS AND 9 A.M. TO 10 P.M. ON WEEKENDS.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE SAFEGUARDS, SAFETY DEVICES, PROTECTIVE EQUIPMENT, FLAGGERS, AND ANY OTHER NEEDED ACTIONS TO PROTECT THE LIFE, HEALTH, AND SAFETY OF THE PUBLIC, AND TO PROTECT PROPERTY IN CONNECTION WITH THE PERFORMANCE OF WORK COVERED BY THE CONTRACTOR. ANY WORK WITHIN THE TRAVELED RIGHT-OF-WAY THAT MAY INTERRUPT NORMAL TRAFFIC FLOW SHALL REQUIRE AT LEAST ONE FLAGGER FOR EACH LANE OF TRAFFIC AFFECTED. SECTION 1-07.23, "TRAFFIC CONTROL," OF THE WSDOT STANDARD SPECIFICATIONS SHALL APPLY IN ITS ENTIRETY.
11. THE EXACT LOCATION OF THE STREAM ALIGNMENT, MOUNDS AND OTHER SITE FEATURES MAY BE FIELD-ADJUSTED BY THE ONSITE ENGINEER TO TAKE ADVANTAGE OF SITE CONDITIONS. THESE ADJUSTMENTS SHALL BE CONSISTENT WITH THE PROJECT INTENT.
12. WASTE OR RUBBLE THAT IS ENCOUNTERED OR GENERATED SHALL BE HAULED OFFSITE FOR DISPOSAL AT A LANDFILL OR OTHER APPROPRIATE LOCATION. WASTE MATERIALS MAY BE TEMPORARILY STOCKPILED IN THE STAGING AREA UNTIL DISPOSAL.

**LIVE STAKE INSTALLATION.** INSTALL 200 LIVE STAKES AT THE LWD INSTALLATION SITES AT ELEVATIONS AT AND BELOW OHW.

**PLANTING.** PLANTS FOR THE PROJECT SITE SHALL BE FROM THE BELOW LIST. NO SPECIAL GUIDANCE IS PROVIDED EXCEPT THAT IT IS RECOMMENDED THAT DURING THE FIRST WINTER FOLLOWING CONSTRUCTION A MINIMUM OF 50 STEMS OF SITKA SPRUCE, WESTERN RED CEDAR AND WESTERN HEMLOCK BE PLANTED IN PLANTING AREAS 1 AND 2, AND PLANTED AMONG THE EXISTING VEGETATION OF GRAVEL BARS 1 AND 2. PLANT AT MOIST LOCATIONS, AND MULCH EACH PLANT WITH WOOD CHIPS SO THAT IRRIGATION WILL NOT BE NECESSARY.

**PLANTING FOLLOWING CONSTRUCTION**

3

**TREES, SHRUBS AND FERNS**

- |   |                       |
|---|-----------------------|
| <i>Acer circinatum</i>                      | Vine maple            |
| <i>Alnus rubra</i>                          | Red alder             |
| <i>Cornus sericea</i>                       | Red-osier dogwood     |
| <i>Gaultheria shallon</i>                   | Salal                 |
| <i>Holodiscus discolor</i>                  | Oceanspray            |
| <i>Lonicera involucrata</i>                 | Black twinberry       |
| <i>Mahonia nervosa</i>                      | Dull Oregon grape     |
| <i>Oemilena cerasiformis</i>                | Indian plum           |
| <i>Physocarpus capitatus</i>                | Pacific nine bark     |
| <i>Picea sitchensis</i>                     | Sitka spruce          |
| <i>Polystichum munitum</i>                  | Swordfern             |
| <i>Populus balsamifera ssp. trichocarpa</i> | Black cottonwood      |
| <i>Pseudotsuga menziesii</i>                | Douglas fir           |
| <i>Rhamnus purshiana</i>                    | Cascara               |
| <i>Rosa nutkana</i>                         | Nootka rose           |
| <i>Rubus parviflorus</i>                    | Thimbleberry          |
| <i>Rubus spectabilis</i>                    | Salmonberry           |
| <i>Salix lucida ssp. lasiandra</i>          | Pacific willow        |
| <i>Salix sitchensis</i>                     | Sitka willow          |
| <i>Sambucus racemosa</i>                    | Red elderberry        |
| <i>Symphoricarpos alba</i>                  | Snowberry             |
| <i>Thuja plicata</i>                        | Western red cedar     |
| <i>Tsuga heterophylla</i>                   | Western hemlock       |
| <i>Vaccinium ovatum</i>                     | Evergreen huckleberry |

**LIST OF PLANTS RECOMMENDED FOR POST-CONSTRUCTION PLANTING**

4



**TRANSPLANTING.** TRANSPLANT 40 LIVE SHRUBS DURING CONSTRUCTION, ESPECIALLY WILLOW, TO THE WOOD INSTALLATION LOCATIONS. THE PLANTS SHALL INCLUDE ANY SUITABLE SPECIMENS SALVAGED FROM SIDE CHANNEL CONSTRUCTION AREAS, AND INSTALLED IN WET AND MOIST LOCATIONS WITHIN AND ALONG THE PROJECT AREA AND ACCESS ROUTES TO HELP STABILIZE LWD AND TO PROVIDE SHADE.

**LIVE STAKE INSTALLATION.** INSTALL 400 LIVE STAKES, ESPECIALLY OF PACIFIC WILLOW AND COTTONWOOD ALONG PROJECT AREA. OBTAIN LIVE STAKES ONSITE.

**NO WATERING NEEDED.** PLANTS SHALL BE INSTALLED IN THE MOIST AREAS DURING CONSTRUCTION. THESE AREAS WILL NOT REQUIRE IRRIGATION.

**SEED AND MULCH EXPOSED SOILS.** APPLY PASTURE GRASS SEED AND STRAW MULCH TO EXPOSED SOILS.

**PLANTING DURING CONSTRUCTION**

2

1. SELECT FROM LOCAL COTTONWOOD, DOGWOOD, ELDERBERRY, WILLOW, TWINBERRY, SALMONBERRY, NINEBARK, COTTONWOOD, OCEANSPRAY, SNOWBERRY, CURRANT, OR OTHER AS AVAILABLE ONSITE.
2. CLEANLY CUT INTO STAKES OF ANY SIZE FROM SMALLER THAN A PENCIL TO AS LARGE AS THE DONOR PLANT WILL ALLOW. SMALL STAKES ARE MUCH EASIER TO INSTALL, LARGE STAKES CAN STAND ABOVE AND BE DRIVEN BELOW THE ROOTS OF COMPETING VEGETATION.
3. REMOVE LEAVES AND SMALL BRANCHES. EACH STAKE SHOULD HAVE AT LEAST 2 NODES (BUDS).
4. BUNDLE STAKES INTO GROUPS OF 50, RIGHT SIDE UP AND STORE IN THE STREAM UNTIL USE.
5. INSTALL BY SLIDING INTO GROUND AT A RANGE OF LOCATIONS, SOME HIGH AND SOME LOW WITH RESPECT TO ORDINARY HIGH WATER, AND ESPECIALLY AT MOIST OR WET LOCATIONS.
6. NEATLY TRIM ENDS THAT ARE MASHED BY POUNDING.
7. INSTALL ANY TIME OF YEAR, BUT SURVIVORSHIP IS USUALLY BEST DURING NOV THROUGH FEB.

**LIVE STAKE METHODS**

1

	Lower Side Channel #1	Upper Side Channel #1	Total Side Channel #1	Channel #2	TOTALS
<b>OVERALL PROJECT SIZE</b>					
Enhanced Side Channel Length (ft)	500	450	950	540	1490
Enhanced Side Channel Area (ac)	0.34	0.21	0.55	0.34	0.89
<b>EXCAVATION</b>					
Length (ft)	420	10	430	470	900
Average Width (ft)	20	10	20	32	26
Average Depth (ft)	2.0	1.5	2.0	1.5	1.7
Area (sq ft)	8,400	100	8,500	15,000	23,500
Volume (cu yd)	620	6	626	840	1,466
<b>WOODY MATERIAL</b>					
Root Wads	30	10	40	25	65
Logs	30	15	45	25	70
Tree Tops	5	0	5	5	10
Roots	5	0	5	5	10
Small Pieces	35	10	45	30	75
Total LWD*	70	25	95	60	155

\* Total LWD does not include small pieces.

SOIL DISPOSAL	Area #1	Area #2	Totals
Diameter (ft)	100	113	-
Average Depth (ft)	2.1	2.3	-
Area (sq ft)	8,000	10,000	18,000
Volume (cu yd)	626	840	1,466

**QUANTITIES**

Also see list of Erosion Control Supplies, Sheet 11.



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**E FORK LEWIS RIVER AT W DAYBREAK PARK**

**QUANTITIES AND NOTES**

**SHEET**  
10  
**OF**  
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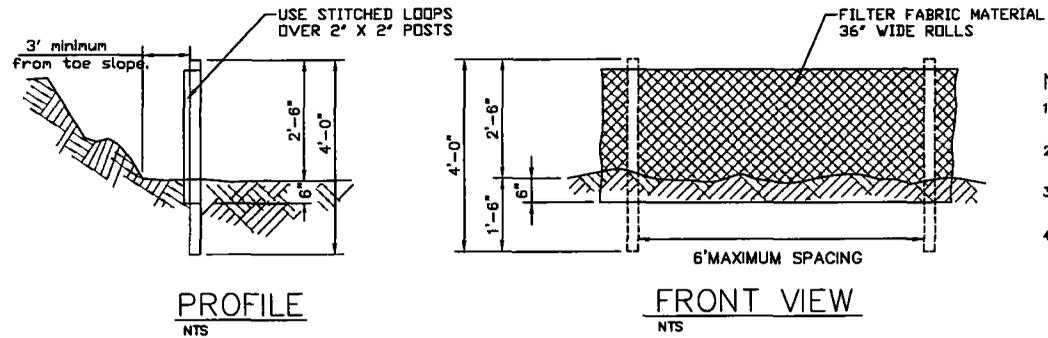
**STANDARD TEMPORARY EROSION CONTROL NOTES**

1. IF SEDIMENT LADEN WATER IN EXCESS OF WATER QUALITY STANDARDS LEAVES THE SITE, THEN EROSION CONTROL MEASURES ARE INADEQUATE AND ADDITIONAL CONTROL FACILITIES AND/OR MAINTENANCE MUST BE IMPLEMENTED.
2. NO MORE AREA SHALL BE DISTURBED EACH DAY THAN CAN BE STABILIZED BY THE END OF THE WORKING DAY.
3. SOIL EXPOSURE SHALL BE MINIMIZED BY COVERING WITH STRAW, VEGETATION, MATTING, MULCHING OR OTHER BMP. DUST PRODUCING SURFACES SHALL BE SPRINKLED TO CONTROL DUST. PAVED STREETS SHALL BE SWEEPED DAILY DURING CONSTRUCTION.
4. CONSTRUCTION ACCESS SHALL BE LIMITED TO ONE ROUTE, IF POSSIBLE. ACCESS POINTS SHALL BE STABILIZED WITH QUARRY SPALL OR STRAW TO MINIMIZE TRACKING OF SOILS AND DEBRIS ONTO PUBLIC ROADS.
5. FLOW SHALL BE DIVERTED AROUND THE WORK AREAS EXCEPT FROM PERMANENT POOL AREAS. THE DIVERSION OUTFALL AREA SHALL BE PROTECTED BY SECURING THE PIPE END AND PROVIDING ENERGY DISSIPATION TO THE SATISFACTION OF THE FIELD ENGINEER. THE ONLY PORTION OF THE CREEK TO BE DEWATERED IS WITHIN THE WORK AREA TO PREVENT STRANDING OF FISH.
6. PROPERTIES LOCATED DOWNSTREAM SHALL BE PROTECTED FROM EROSION, AND SHALL BE PROTECTED FROM EXCESSIVE SEDIMENT ACCUMULATION FROM THE PROJECT SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL OF EXCESSIVE SEDIMENT THAT ACCUMULATES ON DOWNSTREAM LOCATIONS.
7. REMOVAL OF ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE DONE AFTER THE WORKING AREA IS STABILIZED OR AS DIRECTED BY THE FIELD ENGINEER.
8. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED DAILY.
9. THE ANTICIPATED PEAK FLOW FOR THE CONSTRUCTION PERIOD IS APPROXIMATELY 5 CFS.
10. A STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROVIDED AND MAINTAINED AT EACH TRUCK AND EQUIPMENT ACCESS POINT TO PUBLIC ROADWAY.
11. THE CONTRACTOR SHALL UTILIZE WHATEVER MEANS NECESSARY, SUCH AS STEEL PLATES OR MATTING, TO PROTECT THE EXISTING ROAD AND ADJACENT PROPERTY FROM DAMAGE. ALL DAMAGE SHALL BE REPAIRED TO THE SATISFACTION OF THE COUNTY. COST FOR PROTECTION AND RESTORATION SHALL BE INCIDENTAL AND INCLUDED IN OTHER ITEMS OF WORK.

**EROSION CONTROL SUPPLIES**

- THE FOLLOWING SUPPLIES SHALL BE AVAILABLE ONSITE:
- 200 FT SILT FENCE
  - 50 STAKES
  - 2 TRASH PUMPS WITH 200' OF OUTLET HOSE EACH
  - CREEK BYPASS SUPPLIES
  - FISH BLOCK NET
  - CHECK DAM SUPPLIES
  - 75 BALES STRAW
  - 50 POUNDS PASTURE GRASS SEED MIX
  - 40 TRANSPLANTED PLANTS (OBTAIN ONSITE)
  - 400 LIVE STAKES (OBTAIN ONSITE)

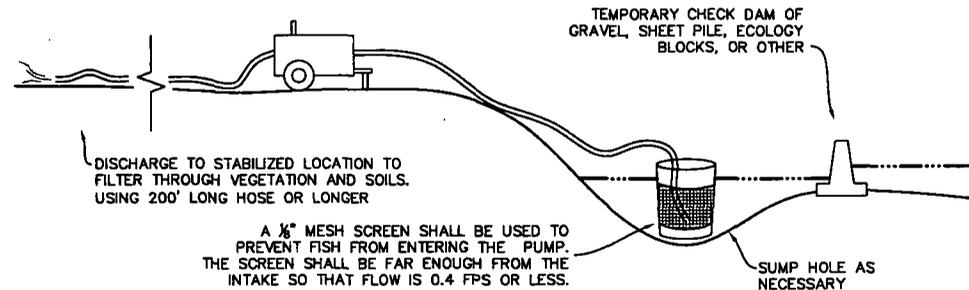
THE STRAW AND THE PASTURE GRASS SEED MIX SHALL BE APPLIED TO THE SOIL DISPOSAL AREAS, AND TO OTHER DISTURBED SOILS.



**SILT FENCE**  
NOT TO SCALE

**NOTES:**

1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. 2" x 2" FIR, PINE OR STEEL FENCE POSTS.
3. POSTS TO BE INSTALLED ON UPHILL SIDE OF SLOPE.
4. COMPACT BOTH SIDES OF FILTER FABRIC TRENCH.



**TEMPORARY DE-WATERING DETAIL**  
NOT TO SCALE



1-3-2013



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**TEMPORARY EROSION CONTRL**

**SHEET**  
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