STATE OF WASHINGTON

DEPARTMENT OF FISH & WILDLIFE

HABITAT PROGRAM

Salmonid Screening, Habitat Enhancement & Restoration Division (SSHEAR)

OFF-CHANNEL SITE INVENTORY DATA

General Information:

Region: North Coast

Observer(s): Powell

River System: Sol Duc River

Date: 2/14/96

Site Identifier: S-R2-03

WRIA: 20.0302D

River Mile Location: 13.3 mi

RB/LB: RB

Local Name: Powell Springs

Trib. to: Sol Duc (20.0096)

Legal Description: NE¼ Sec11 T28N R14W

County: Clallam

Habitat Type: Terrace tributary

Landowner: () Federal (X) State () County () Other Government (X) Private
- Rayonier Timber Co.
- Washington Department of Natural Resources

Directions to site: Head north from Forks on Hwy 101. Turn left just beyond mp 193 (1.0 mi. north of Forks) onto the La Push Rd. Proceed west on La Push Rd about 3.1 miles. Turn right onto the Quillayute Rd. and take the first right into the Rayonier Timber Co. yard. Take an immediate left onto a road that leads to a concrete bridge that crosses the Sol Duc River. There is a gate on this bridge (all keys can be obtained, or arrangements can be made at the ROTC office). S-R2-03 is the first culvert crossing (0.05 mi) on this road (RY-5000) after crossing the bridge. The mid reach of this system can be accessed by following the RY-5000 for 0.1mi from the bridge crossing. There is a right spur with another locked gate. Follow this road for 0.3 mi and you will see the channel flowing along the road ditch.

Site Overview: This channel's headwater is a small pond which maybe fed by a wooded wetland. The upper-mid section of this channel contains some gravel for spawning. The gravel is recruited by steep sloughing slopes which may have changed the course of the original egress; there is a large alluvial deposit in the questionable area. The channel flows down a narrow road ditch, into a wetland, then proceeds through a mud channel that has several problems: undersized culverts and a failing road grade. This channel offers good rearing opportunities that can be improved on.

Habitat Information:

Water source:
- Springs and surface runoff

Intermittent/year-around:
- Year-around

Estimated flows (cfs): 1 - 1.5

Water temperatures: Did not take

Adjacent stream temperature: 6.5°C (20.0096)

Other water observations:

Site area measurements: () Indirect () Direct (X) Combination

Width: Channel- 0.5 - 4.5 m	Lower Pond- 7.5 m	Upper Pond- 6 - 9 m
Depth: Channel- 7.5 cm - 1 m	Lower Pond- 1 m	Upper Pond- 1.2+ m
Total length surveyed: 1600 m		

Total existing habitat area (est.): 2175+ m^2

Spawning area: 475 m^2
Impounded area: 400 m^2
Other rearing area: 1300+ m^2

Spawning habitat conditions: () None () Poor (X) Fair () Good () Excellent

Describe spawning habitat:

- Upper mid reach has gravel due to slough steep slopes. This area is suitable for some spawning.
- Adult fish can now access this channel due to replacement of the culverts in 1997.
- Spawning gravel was added above each plank weir in 1997.

Rearing habitat conditions: () None () Poor () Fair (X) Good () Excellent

Describe pond and other rearing habitat:

- Lower and upper channel has cover of brush, LOD, and a canopy of mature alder and conifers.
- The lower channel has a small pond and sedge wetland behind it. There are numerous small poles in the wetland from prior logging. The pond may have developed by these poles forming a jam.
- Above the wetland, the channel flows through a road ditch.
- The upper channel appears to experience flushing flows. It has steep, gravel slopes, and cover of LOD, brush, alders and conifers.
- There is a small pond at the upper end of this system that has LOD and sedges. This may be fed by a forested wetland.

Unaccessible habitat:

- Since the culvert replacements in 1997, the habitat is accessible up to the narrow channel in the area above the wetland.
-Within the narrow channel there are blockages formed by exposed wood debris which create steep plunges.

Wetland information: () Bog () Marsh (X) Scrub-shrub Wetland (X) Forested Wetland

- The lower wetland was not fully measured.
- The lower wetland is sedges, water parsley, and brush.
- The upper wetland is alder and sedges.

Flooding potential: (X) Low () Medium () High

Fish Information:

Site entry condition to: () Poor (X) Fair () Good

- Egresses into a fast glide.

Coho access and use: Juvenile- () Unknown () None () Poor () Fair (X) Good
Adult- () Unknown () None () Poor () Fair (X) Good

Other species access and use: () Chum () Pink () Sockeye (X) Res. trout (X) Trout

Habitat Improvements:

Enhancement opportunities:

- Replace undersized culverts. ***(Replaced in 1997 by WDFW construction in a cooperative project with the Quileute tribe and RTOC)***
- Dig out failing grade. Grade sits on old timbers which have mostly collapsed into channel. Debris is accumulating behind this. ***(Grade was dug out in 1997 and plank controls were installed to maintain gradient)***
- Controls for pools.
- Spawning pads. ***(Spawning gravel was placed upstream of each plank weir)***

Additional Comments:

- Free floating poles in the lower pond could form an obstruction by accumulating at the pond's outlet.

GPS: (decimal degrees, Datum WGS84): 12/02
upper project, 2nd culvert - N47.955000, W124.46661
lower project, 1st culvert - N47.95422, W124.46634
egress - N47.95342, W124.546660

Attachments Available:

Contact respective SSHEAR habitat biologist for the following checked items:

(X) Aerials	(X) Sketch	(X) Maps	(X) Culvert Report
( ) Other references	( ) Spawning surveys	(X) Juvenile trapping	( ) Fishway Report
(X) Project drawings			

DATE: 3/8/96 **OBSERVER:** Powell

MINNOW TRAPPING REPORT

TRAP	DATE SET	TEMP	DATE PULLED	TEMP	CATCH COHO MRK	COHO UNMRK	RBT	CUTT	COTTID
1	3/7/96	7°C	3/8/96	8°C	0	4	6	0	2
2	3/7	7°C	3/8	8°C	0	14	6	0	11
3	3/7	7°C	3/8	8°C	0	0	2	0	8
4	3/7	7°C	3/8	8°C	0	1	2	0	1
5	3/7	7°C	3/8	8°C	0	2	0	0	0
6	3/7	7°C	3/8	8°C	0	4	2	1	1
7	3/7	7°C	3/8	8°C	0	1	2	0	1
8	3/7	7°C	3/8	8°C	0	0	0	5	3
9	3/7	7°C	3/8	8°C	0	2	0	0	5
10	3/7	7°C	3/8	8°C	0	1	0	1	25
11	3/7	7°C	3/8	8°C	0	0	1	8	0
			TOTALS:		0	29	21	15	57

COMMENTS:
-Traps 1, 2, 3, and 4 were placed below the RY-5000 culvert crossing.
-Traps 5, 6, and 7 were placed directly above second culvert crossing (above old grade failing).
-Traps 8, 9, and 10 were placed where the channel is left bank of the lower reach wetland, along the road.
-Trap 11 was placed where the channel turns into the road ditch from the alluvial area.

DATE: 8/21/96 **OBSERVER:** Powell

On 7/10/96 water was still flowing throughout the channel and numerous 0+ salmonids were observed. This summer has been drier than normal. The channel is mostly dry now with a few standing pools below the RY-5000 crossing and directly above the road. The first crossing on the spur road, the channel upstream had a ~35 m pooled area with a meager flow of ~10 - 15 g.p.m. flowing into it. Observed some 0+ salmonids (no ID) in this area. The area where the channel flows along the road ditch, the water was ~ 6 - 10 inches deep and larger salmonids (40 - 50 mm) were observed. The temperature of the channel was 11° C.

DATE: Summer 1997 **OBSERVER:** King

During August and September of 1997, the construction crew of the Salmonid Screening Habitat Enhancement and Rehabilitation unit within WDFW with cooperation from the Quileute Tribe and RTOC, replaced two undersized culverts and removed a third failing culvert. Six plank controls were installed in the opening left by the removal of the third culvert to maintain the stream bed gradient. Spawning gravel was placed upstream from each plank weir. This system is now readily accessible for juvenile and adult salmonids.

DATE: 12/14/97 **OBSERVER:** Darrow

TRAP	DATE SET	TEMP	DATE PULLED	TEMP		CATCH COHO UMRK	COHO MRK	RBT	CUTT	COTTID
1	12/13	8°C	12/14	8°C	3	0	0	1	0	
2	12/13	8°C	12/14	8°C	6	0	0	0	16	
3	12/13	8°C	12/14	8°C		9	0	0	1	14
4	12/13	8°C	12/14	8°C	0	0	0	1	3	
5	12/13	8°C	12/14	8°C	2	0	0	4	9	
				TOTALS:		20	0	0	7	42

COMMENTS:
-Trap 1 was upstream end of second culvert crossing - crossing on the pump house road.
-Trap 2 was placed ~ 12 m upstream of beaver dam in pooled area.
-Trap 3 was placed ~ 45 m upstream of trap 2, in the downstream area of ditchline.
-Trap 4 was placed ~ 60 m upstream of trap 3, in the mid-upstream area of ditchline.
-Trap 5 was placed ~ 15 m upstream where channel flows from timbered area into ditchline.

POWELL SPRINGS - COHO FORK LENGTHS (mm)									
Trap 1	112	107	103						
Trap 2	95	92	91	108	87	100			
Trap 3	87	93	88	94	94	103	95	91	93
Trap 5	102	98							
AVG	**96.65**	**STD**	**7.21**	**MIN**	**87**	**MAX**	**112**		

DATE: 3/25/98 **OBSERVER:** Darrow

TRAP	DATE SET	TEMP	DATE PULLED	TEMP		CATCH COHO UMRK	COHO MRK	RBT	CUTT	COTTID
1	3/24	8°C	3/25	8°C	2	0	0	1	1	
2	3/24	8°C	3/25	8°C	5	0	0	0	7	
3	3/24	8°C	3/25	8°C		4	0	0	1	10
4	3/24	8°C	3/25	8°C	1	0	0	1	0	
5	3/24	8°C	3/25	8°C	1	0	0	2	3	
				TOTALS:		13	0	0	5	21

COMMENTS:
-Trap 1 was upstream end of second culvert crossing - crossing on the pump house road.
-Trap 2 was placed ~ 15 m upstream of beaver dam in pooled area.
-Trap 3 was placed ~ 40 m upstream of trap 2, in the downstream area of ditchline.
-Trap 4 was placed ~ 65 m upstream of trap 3, in the mid-upstream area of ditchline.
-Trap 5 was placed in wooded area - upstream where channel flows from timbered area into ditchline.

POWELL SPRINGS - COHO FORK LENGTHS (mm)							
Trap 1	94	123					
Trap 2	87	114	108	101	112		
Trap 3	113	102	95	95			
Trap 4	108						
Trap 5	93						
AVG	**103.5**	**STD**	**10.5**	**MIN**	**87**	**MAX**	**123**

DATE:10/26/98 **OBSERVER:** Darrow

Site looks good. Control notches are clear. Bank vegetation is flourishing. No problems were encountered other than a small beaver dam in upper sedge marsh alongside the road which does not prevent passage. Salmonids were observed in mid and upper weir.

DATE: 1/10/99 **OBSERVER:** Darrow

MINNOW TRAPPING REPORT

TRAP	DATE SET	TEMP	DATE PULLED	TEMP	CATCH COHO	TROUT RBT	TROUT CUTT	TROUT 0+	COTTID
1	1/9	7.5°C	1/10	7.5°C	2	4	2	0	0
2	1/9	7.5°C	1/10	7.5°C	0	4	2	0	0
3	1/9	7.5°C	1/10	7.5°C	2	1	1	0	0
4	1/9	7.5°C	1/10	7.5°C	0	6	1	0	0
5	1/9	7.5°C	1/10	7.5°C	2	3	0	0	1
6	1/9	7.5°C	1/10	7.5°C	3	3	0	0	0
7	1/9	7.5°C	1/10	7.5°C	1	6	4	0	0
8	1/9	7.5°C	1/10	7.5°C	4	0	1	0	0
9	1/9	7.5°C	1/10	7.5°C	3	5	4	0	0
10	1/9	7.5°C	1/10	7.5°C	1	0	1	0	0
				TOTALS:	18	32	16	0	1

COMMENTS:
-Trap 1 was placed upstream of the first culvert, in the plank control area.
-Trap 2 was placed upstream of trap 1, immediately above last plank in that area.
-Trap 3 was placed at the downstream end of the second culvert.
-Trap 4 was placed ~ 30 m upstream of trap 3.
-Trap 5 was placed ~ 35 m upstream of trap 4.
-Trap 6 was placed ~ 65 m upstream of trap 5.
-Trap 7 was placed at the edge of the timber and grassy slough. An adult male coho was observed.
-Trap 8 was placed ~ 60 m upstream of trap 7, where the aquatic vegetation is thick.
-Trap 9 was placed upstream of the beaver dam, where the channel loops back towards the road.
-Trap 10 was placed ~ 95 m upstream of trap 9, along the ditch line flow.

POWELL SPRINGS - COHO FORK LENGTHS (mm) 1/99					
Trap 1	87	83			
Trap 3	105	91			
Trap 5	97	106			
Trap 6	97	92	103		
Trap 7	97				
Trap 8	100	104	112	94	
Trap 9	99	96	91		
Trap 10	90				
AVG	**96.89**	**STD**	**7.356**	**MIN**	**83**
MAX	**112**	**COUNT**	**18**		

DATE: 4/12/99 **OBSERVER:** Darrow
No problems were encountered - controls and culvert had no obstructions. Observed numerous fry in every control bay and saw some smolt size salmonids downstream of the culvert.

DATE: 5/4/99 **OBSERVER:** Darrow

MINNOW TRAPPING REPORT

TRAP	DATE SET	TEMP	DATE PULLED	TEMP		CATCH COHO	TROUT RBT	TROUT CUTT	TROUT 0+	COTTID
1	5/4	8°C	5/5	8°C	1	0	0	1	0	
2	5/4	8°C	5/5	8°C	0	2	0	0	0	
3	5/4	8°C	5/5	8°C	0	0	0	0	0	
4	5/4	8°C	5/5	8°C	3	0	1	0	0	
5	5/4	8°C	5/5	8°C	3	0	4	0	0	
6	5/4	8°C	5/5	8°C	3	0	0	1	0	
7	5/4	8°C	5/5	8°C	0	0	0	0	14	
8	5/4	8°C	5/5	8°C	4	0	0	0	7	
9	5/4	8°C	5/5	8°C	0	0	0	0	19	
10	5/4	8°C	5/5	8°C	0	0	0	0	5	
				TOTALS:		14	2	5	2	45

COMMENTS:
-Trap 1 was placed upstream of the first culvert, in the plank control area.
-Trap 2 was placed upstream of trap 1, in the area of the last plank control.
-Trap 3 was placed upstream of trap 2, at the channel bend (~25 m upstream).
-Trap 4 was placed ~ 40 m downstream of 2nd culvert.

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-Trap 5 was placed ~ 35 m upstream of 2nd culvert.
-Trap 6 was placed ~ 40 m downstream of open wetland area.
-Trap 7 was placed where the channel turns from road ditch into wetland area.
-Trap 8 was placed road ditch line flow.
-Trap 9 was placed upstream of trap 8 in road ditch line flow.
-Trap 10 was placed upstream of trap 9, where the channel flows from forest into road ditch.

POWELL SPRINGS - COHO FORK LENGTHS (mm) 1/99					
Trap 1	106				
Trap 4	110	103	98		
Trap 5	102	103	111		
Trap 6	91	113	108		
Trap 8	98	98	100	103	
AVG	**103.14**	**STD**	**6.05**	**MIN**	**91**
MAX	**113**	**COUNT**	**14**		

DATE: 11/2/99 **OBSERVER:** Darrow/Pichahchy

This follow-up check revealed that a planks controls and gravel beds were in proper working condition. A few pre-smolts were observed between the planks, however no adults were spotted. There were no signs of spawning activity.

DATE: 4/10/00 **OBSERVER:** Darrow

Controls and culvert free of debris. Every control bay contained both coho fry and smolts, especially upper bays. Flow was about 1.5 CFS. Site looked good.

DATE: 10/29/00 **OBSERVER:** Darrow

Good flow on this date. No problems encountered. Did not observe any spawning activity but did see juvenile salmonids in the channel section that parallels the road, about 40 m downstream of the pump house.

DATE: 3/7/01 **OBSERVER:** Darrow

Lower than average winter and early spring precipitation. Outflow is lower than previous seasons. Observed juvenile salmonids near the 5000 road culvert. This site received a tote of coho carcasses from the Sol Duc Hatchery for nutrient enrichment.

DATE: 10/11/01 **OBSERVER:** Nettnin

Project in good shape. Honor Camp Crew cut scotchbroom and alder growing along the banks.

DATE: 10/8/01 **OBSERVER:** Darrow

No beaver activity encountered. Observed fingerling sized coho in the control bays. Active logging in the mid area of the system.

DATE: 11/3/01 **OBSERVER:** Darrow

The Pacific Salmon Coalition distributed about a tote of salmon carcasses throughout the system for nutrient enrichment.

DATE: 4/28/02 **OBSERVER:** Darrow

There were about seven coho redds this past season. Fry were observed in the project area. Everything is okay here.

DATE: 10/2/02 **OBSERVER:** Nettnin

Cut and bundled alder and placed in the channel as cover structures.

DATE: 12/31/02 **OBSERVER:** Powell

Routinely checked project for spawning surveys from November through December. A total of three redds were observed this season, and three adult coho.
GPS: (decimal degrees, Datum WGS84):
upper project, 2nd culvert - N47.955000, W124.46661
lower project, 1st culvert - N47.95422, W124.46634
egress - N47.95342, W124.546660

DATE: 3/28/03 **OBSERVER:** King

Weirs and culvert look good. A problem is developing downstream.

DATE: 8/7/03 **OBSERVER:** Nettnin

Installed two bedload controls below culvert to replace the natural control that eroded away. Channel had trickle of water.

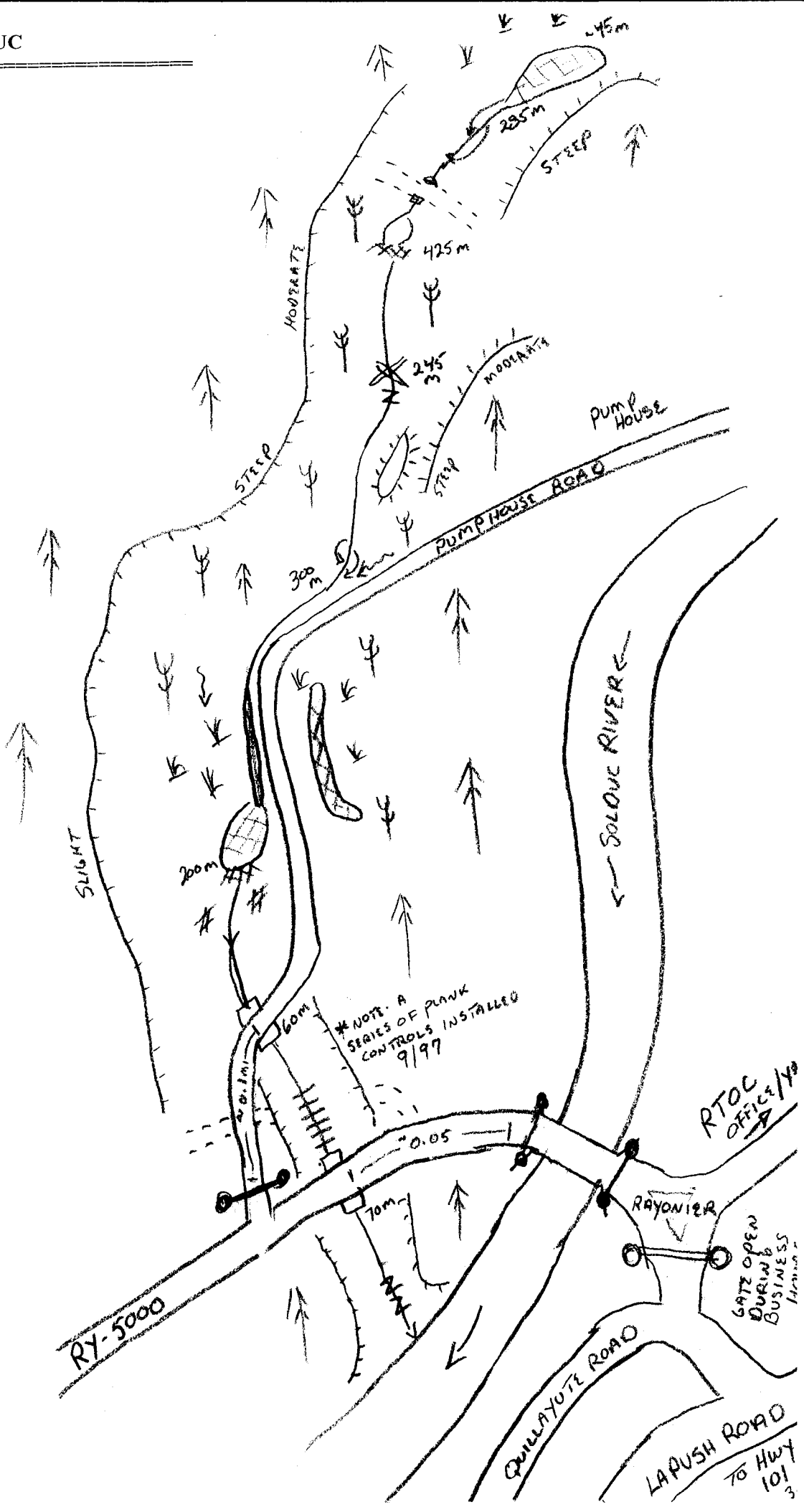
DATE: 10/24/03 **OBSERVER:** King

Controls look good. Culvert backwatered by 2 inches due to tree across stream. Flow is going around the right bank end of tree. There is fish access on that end. New downstream controls backwatered during recent heavy rainfall event.

RIVER: SOL DUC

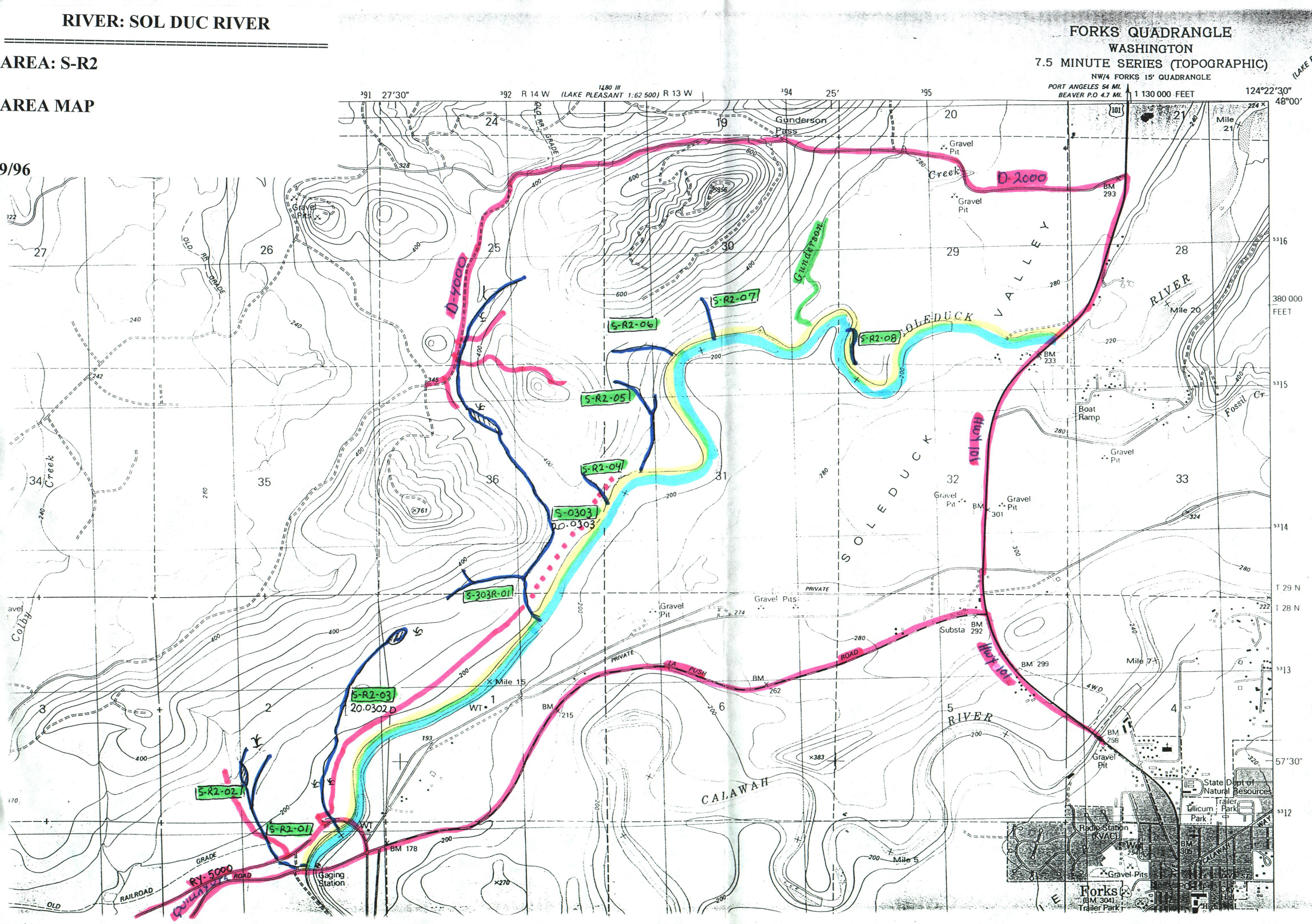
AREA: S-R2
SITE: S-R2-03
WRIA: 20.0302D
NAME: Powell Springs

REV. DATE: 10/97



RIVER: SOL DUC RIVER

AREA: S-R2

AREA MAP

9/96