BAKER RIVER PROJECT RELICENSE

Aquatic Resources Working Group

September 13, 2001

9:00 a.m. – 2:30 p.m.
U.S. Forest Service
Conference Room A/B (425-775-9702)
21905 64th Avenue West, Mountlake Terrace, WA

AGENDA

1. Review agenda and minutes
2. Review action items
3. Report from Fish Passage Technical Working Group
4. Wild & Scenic River Presentation (Jim Chu, USFS)
5. Char Delta Survey Results (Chuck Ebel)
6. Continue review of study plans and requests
7. Additional Issues • Update on Ramping Rates • Others?
8. Set agenda for October 23 meeting (location TBD)
9. Evaluate meeting

September 13, 2001

Upper Baker River Delta

Tributary Passage Reconnaissance

Potential Spawning Habitat

Snorkel Survey Reconnaissance

Task 1

- While the reservoir is at the flood control elevation (707.8 feet), the Corps and Service will determine if any of the fish bearing tributaries are obstructed to either upstream or downstream passage for adult adfluvial bull trout.
- If passage is obstructed, then the Corps will provide a plan to the Service describing the measures the Corps would take to remove the blockage.

Task 2

- The Corps will conduct a potential bull trout spawning habitat assessment on the upper Baker River delta.
- The methods used in the assessment included:
- bathymetry of the delta area,
- measurements of the average width,
- water depth,
- water velocity
- water temperature velocity measurements
- Data collected for three pool elevations: high (720 feet), intermediate (715feet), and low (708 feet).

Task 3

- The Corps conducted a reconnaissance level survey for bull trout presence on the upper baker river delta.
- The survey was conducted in October and November 2000.
- Known bull trout holding areas in the Upper Baker River were surveyed at the same time to confirm that prespawning or spawning fish are present in the system.

Summary of Task 1 Results

- Preliminary reconnaissance conducted Oct 2000, pool elevation 700 ft. (accompanied PSE and SCS on sockeye spawning survey).
- All tributaries reconnaissance May 2000, pool elevation 705ft.
- Stream features examined were water depth, water velocity and slope of channel.
- No obvious passage problems detected.

Summary of Task 2 Results

- The amount Potential spawning habitat was estimated at pool elevations 707.8 ft, 715 ft., and 720 ft.
- A hip chain was utilized for channel length and tape was used for width.
- Stream width measurements taken apprx Every 67 meters.
- Stream widths were used rather than channel width (bankfull width) due to the dynamic nature of the delta.
- Depth and velocity measurements were taken at each of the locations that widths were taken.

Task 2 Continued

- Potential spawning habitat estimated by averaging channel widths and multiplying these with the appropriate channel lengths to obtain area.
- This method ignored known bull trout redd characteristics such as, water velocity, depth, substrate, and temperature.
- Water temperature and substrate are not limiting characteristics.
- However, using minimum mean depths over redds (0.28 m) and minimum mean velocities (0.29 m/sec) over redds, portions of the delta were eliminated as potential spawning habitat (Goetz 1989).

Task 2 Continued

- Using depth and velocity criteria for every depth and velocity data point, the potential bull trout spawning area available is 18,089 m^2, 8787 m^2, and 5,184 m^2 for the entire delta at pool elevations 707.8 ft, 715 ft, and 720 ft respectively.
- Using entire channel means for depth and velocity, the criteria does not eliminate any potential spawning habitat in Delta Right or Delta Middle Channels but eliminates the entire Delta Left Channel resulting in 26,639 m^2, 12,595 m^2, and 8,114 m^2 for pool elevations 707.8 ft, 715 ft, and 720 ft respectively.

Pool Elevation 707.8

	Delta Right	Delta Middle	Delta Left	Entire Delta
Meters[2]	16,115	10,524	2,906	29,545
V&D [a] % Elim.[b]	36%	38%	57%	
V&D Meters[c]	10,314	6,525	1,250	18,089

*a Velocity and depth measurements taken at pool elevation 700 ft. in November 2000 were utilized for all lake elevations. It was determined that the velocity and depth measurments taken at the full pool and intermediate pool elevations during the spring and summer of 2001 did not represent typical fall flows as measured at elevation 700 ft in November 2000.

*b Using November 2000 velocity and depth measurements along with velocity and depth criteria from Goetz 1999 (min depth 0.28 m, min velocity 0.29 m/sec) this percentage of potential habitat eliminated.

*c Potentail spawning habitat available after applying velocity and depth criteria from Goetz 1999.

	Pool Elevation 715			
	Delta Right	Delta Middle	Delta Left	Entire Delta
Meters[2]	10,235	2,360	1,800	14,395
V&D [a] % Elim.[b]	36%	38%	57%	
V&D Meters[c]	6,550	1,463	774	8,787

*a Velocity and depth measurements taken at pool elevation 700 ft. in November 2000 were utilized for all lake elevations. It was determined that the velocity and depth measurments taken at the full pool and intermediate pool elevations during the spring and summer of 2001 did not represent typical fall flows as measured at elevation 700 ft. in November 2000.

*b Using November 2000 velocity and depth measurements along with velocity and depth criteria from Goetz 1999 (min depth 0.28 m, min velocity 0.29 m/sec) this percentage of potential habitat eliminated.

*c Potentail spawning habitat available after applying velocity and depth criteria from Goetz 1999.

Pool Elevation 720

	Delta Right	Delta Middle	Delta Left	Entire Delta
Meters[2]	7,468	646	0[d]	8,114
V&D [a] % Elim.[b]	36%	38%	N/A	
V&D Meters[c]	4,780	404	0	5,184

*a Velocity and depth measurements taken at pool elevation 700 ft. in November 2000 were utilized for all lake elevations. It was determined that the velocity and depth measurments taken at the full pool and intermediate pool elevations during the spring and summer of 2001 did not represent typical fall flows as measured at elevation 700 ft. in November 2000.

*b Using November 2000 velocity and depth measurements along with velocity and depth criteria from Goetz 1999 (min depth 0.28 m, min velocity 0.29 m/sec) this percentage of potential habitat eliminated.

*c Potentail spawning habitat available after applying velocity and depth criteria from Goetz 1999.

*d Water velocity 0.0 therfore no potential spawning habitat available.

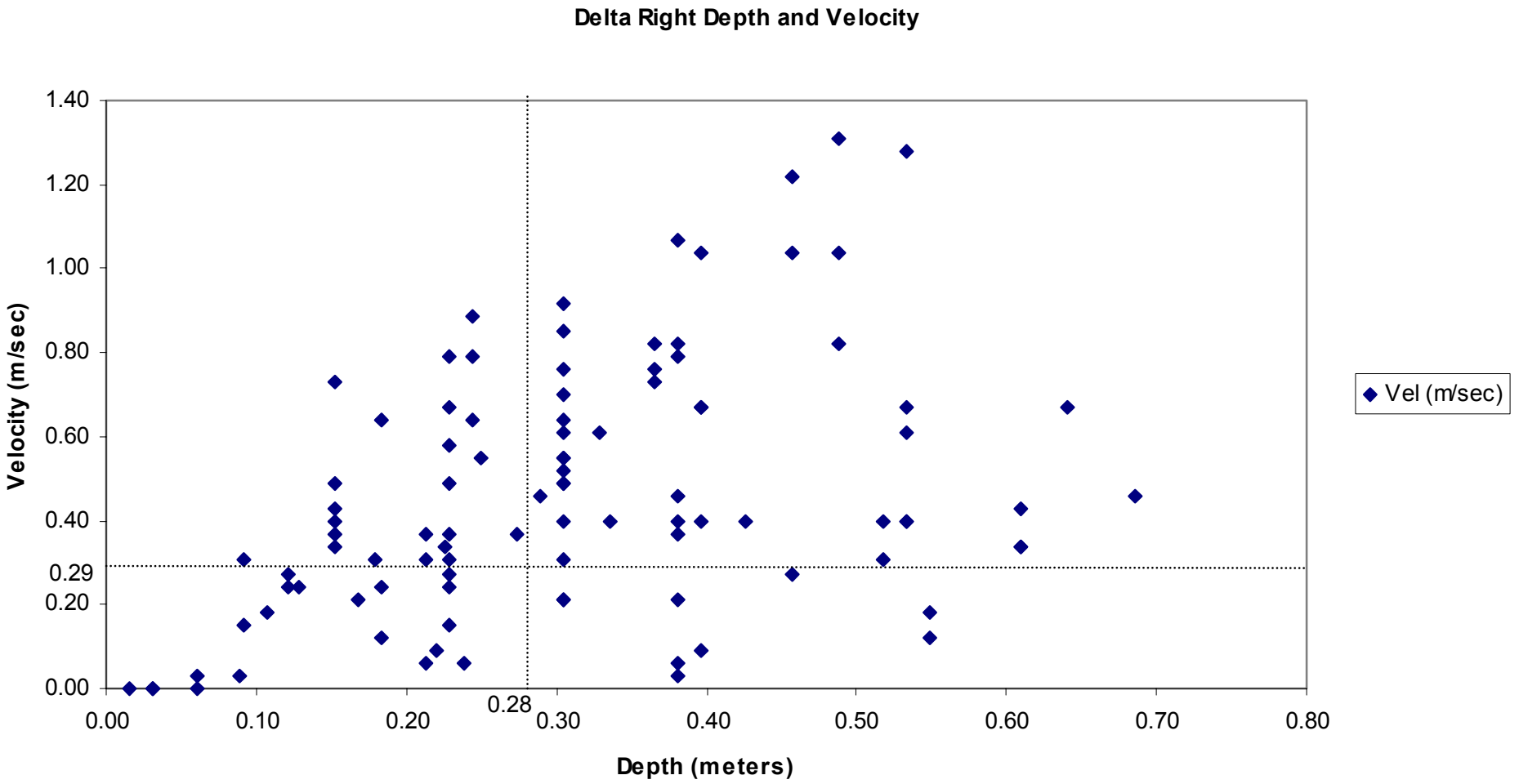


Figure 2. Depth and velocity data points with dotted lines showing bull trout spawning criteria.

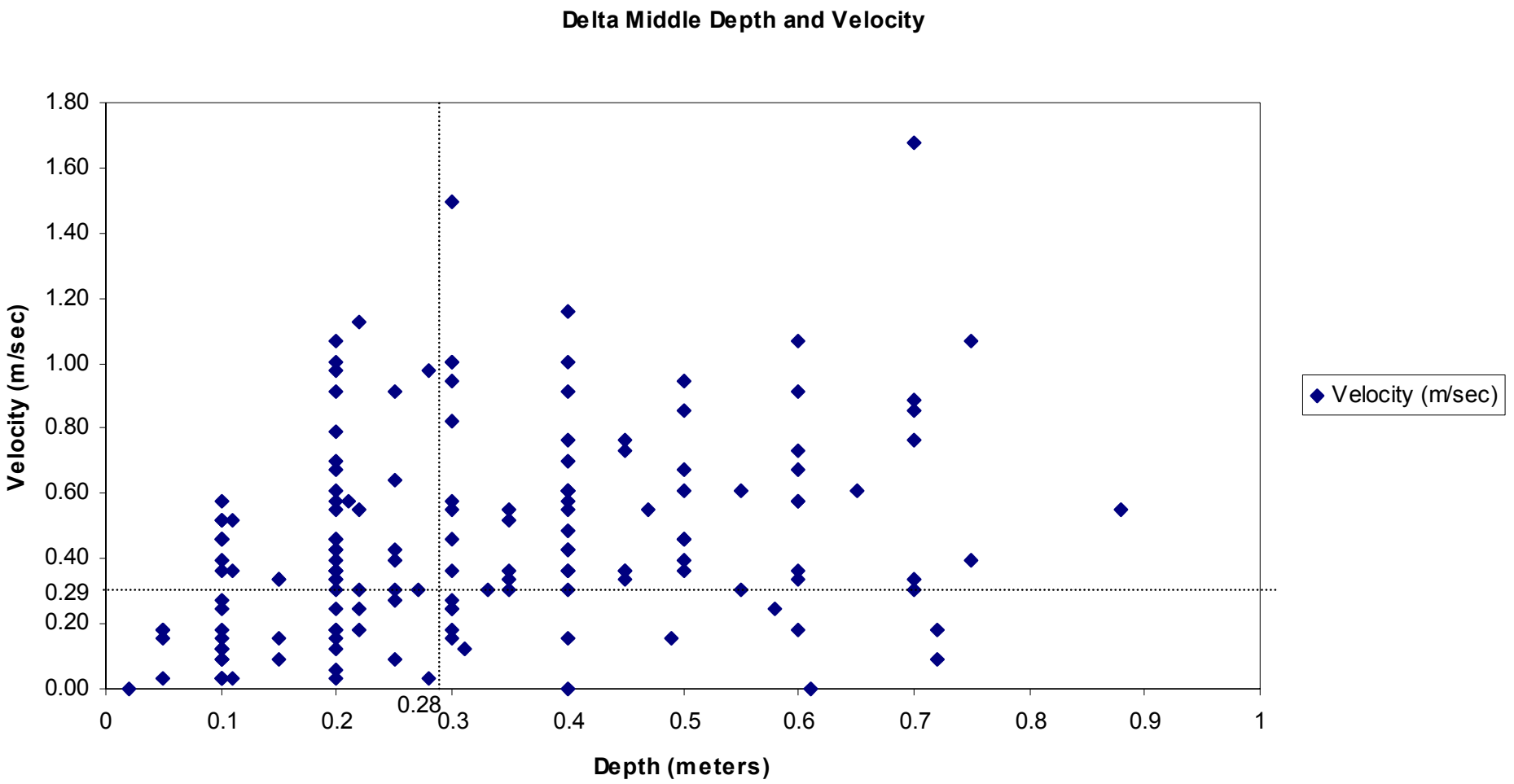


Figure 3. Depth and velocity data points with dotted lines showing bull trout spawning criteria minimums.

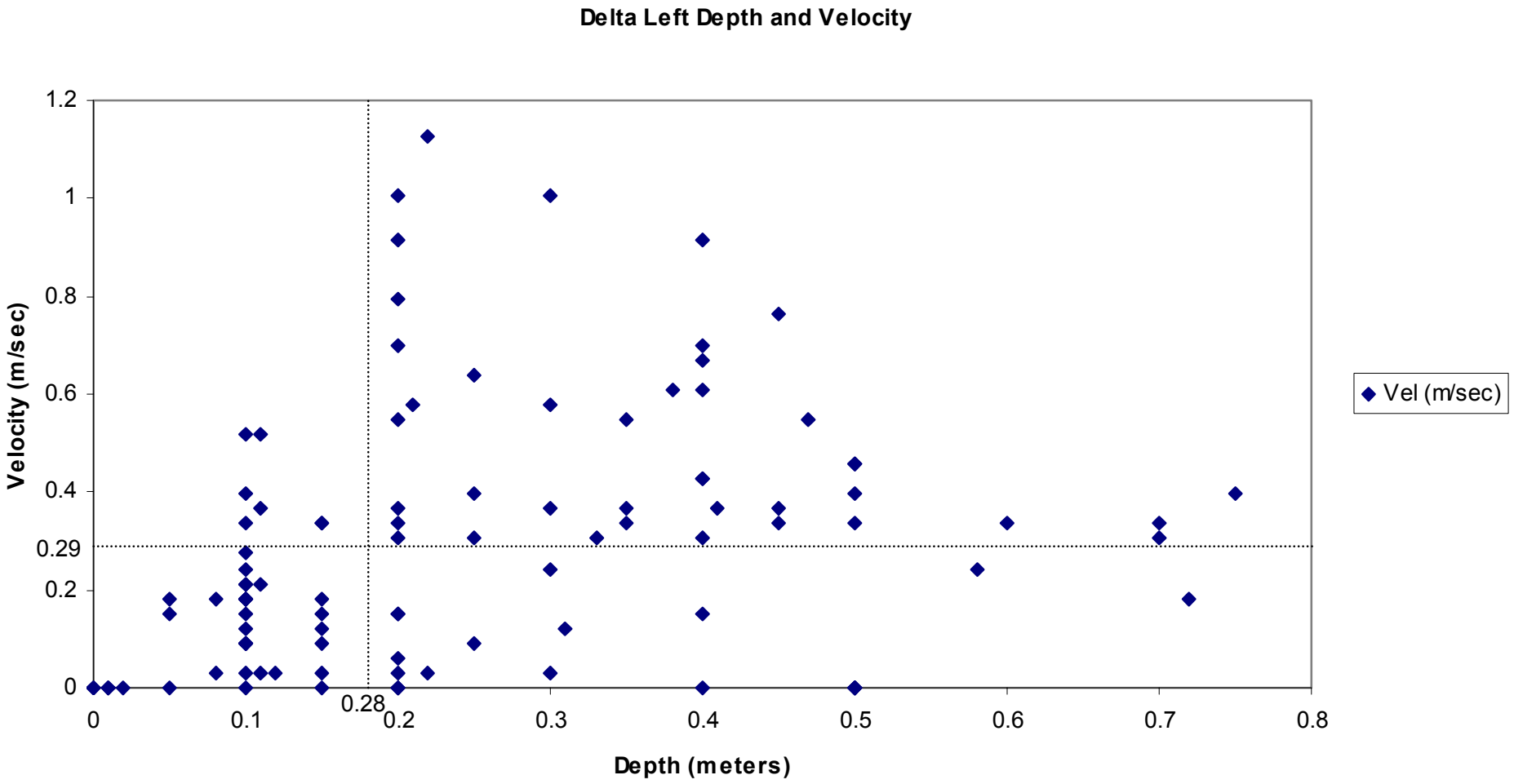
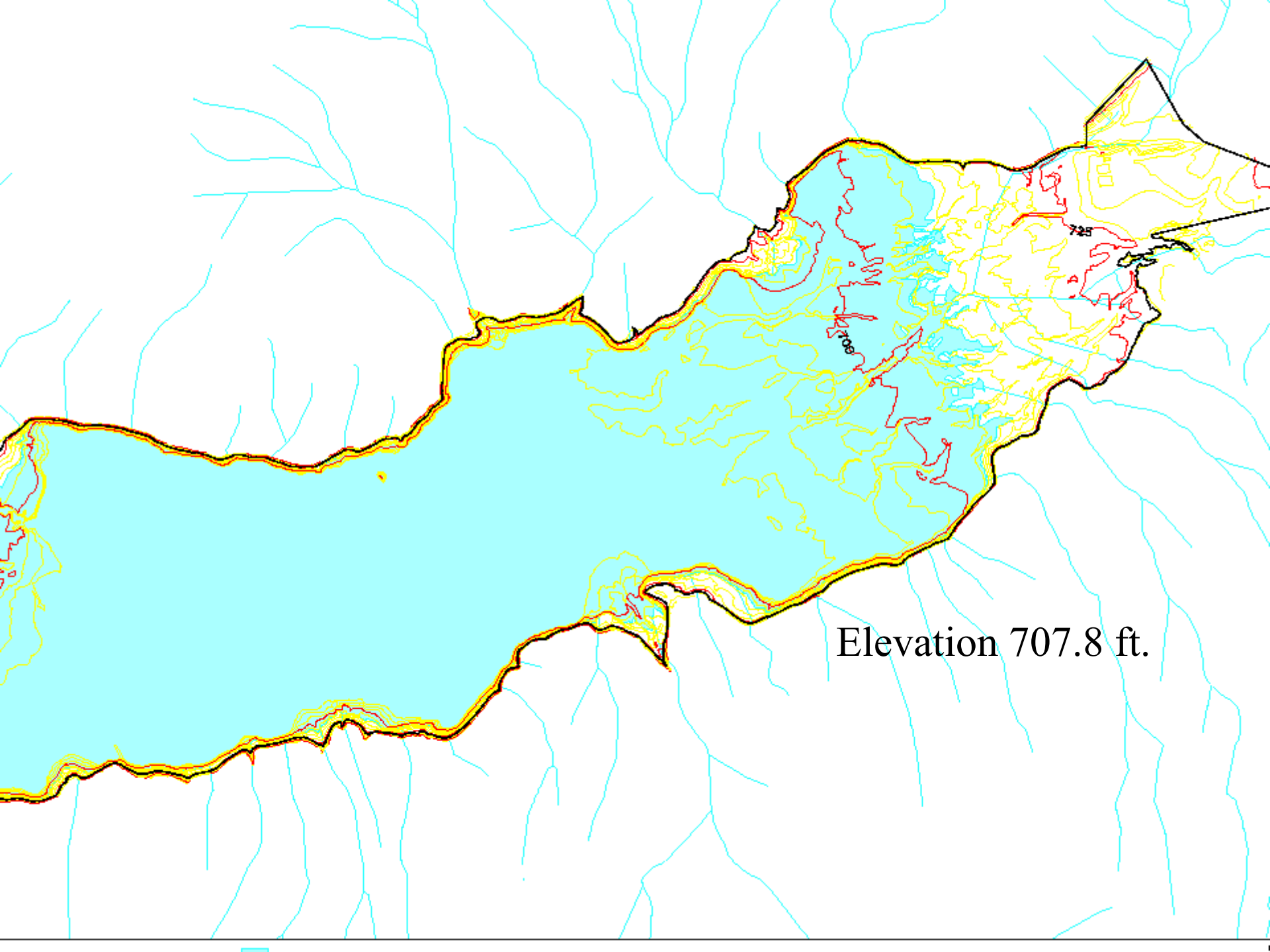


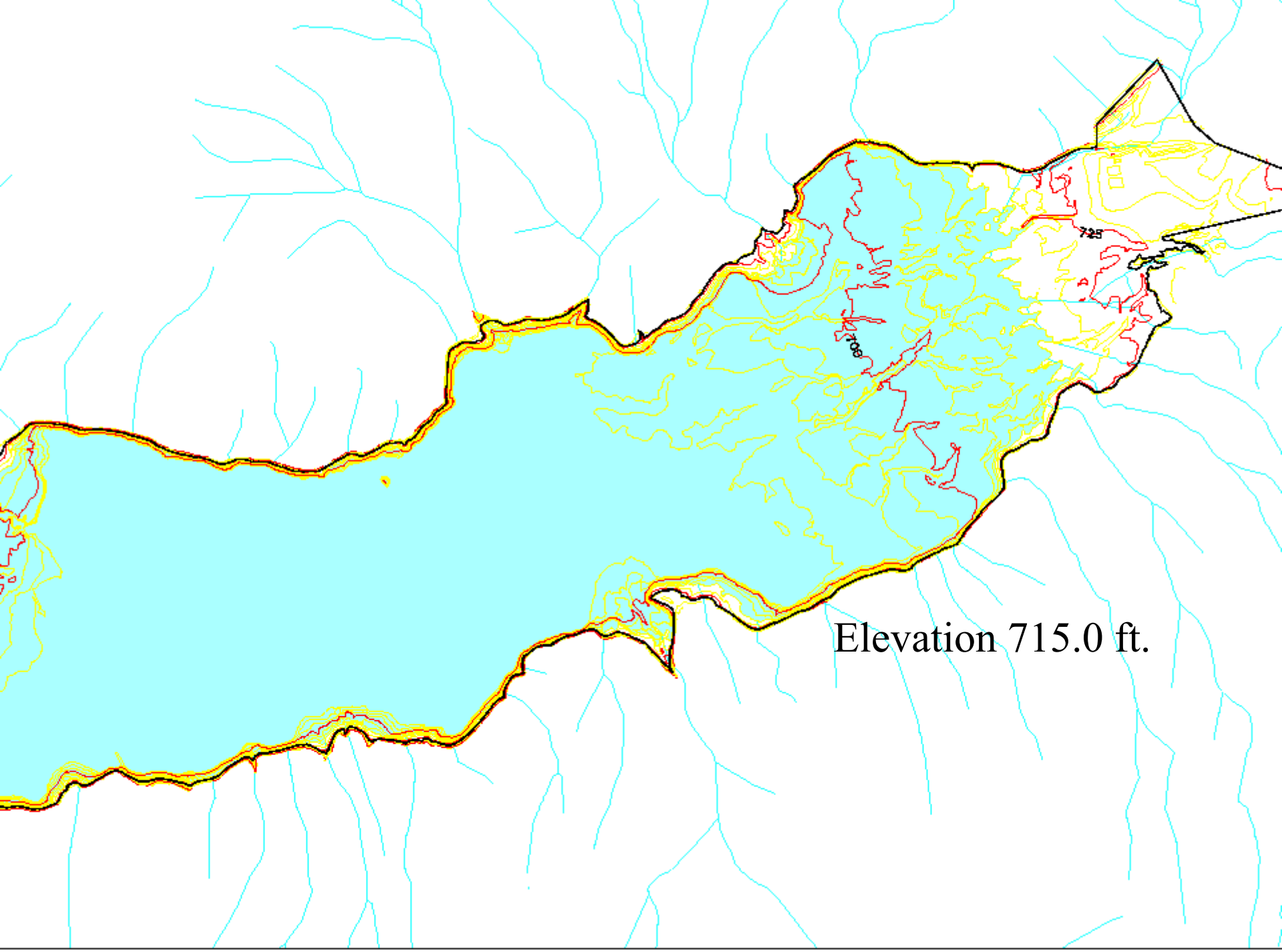
Figure 4. Depth and velocity data points with dotted lines showing bull trout spawning criteria minimums

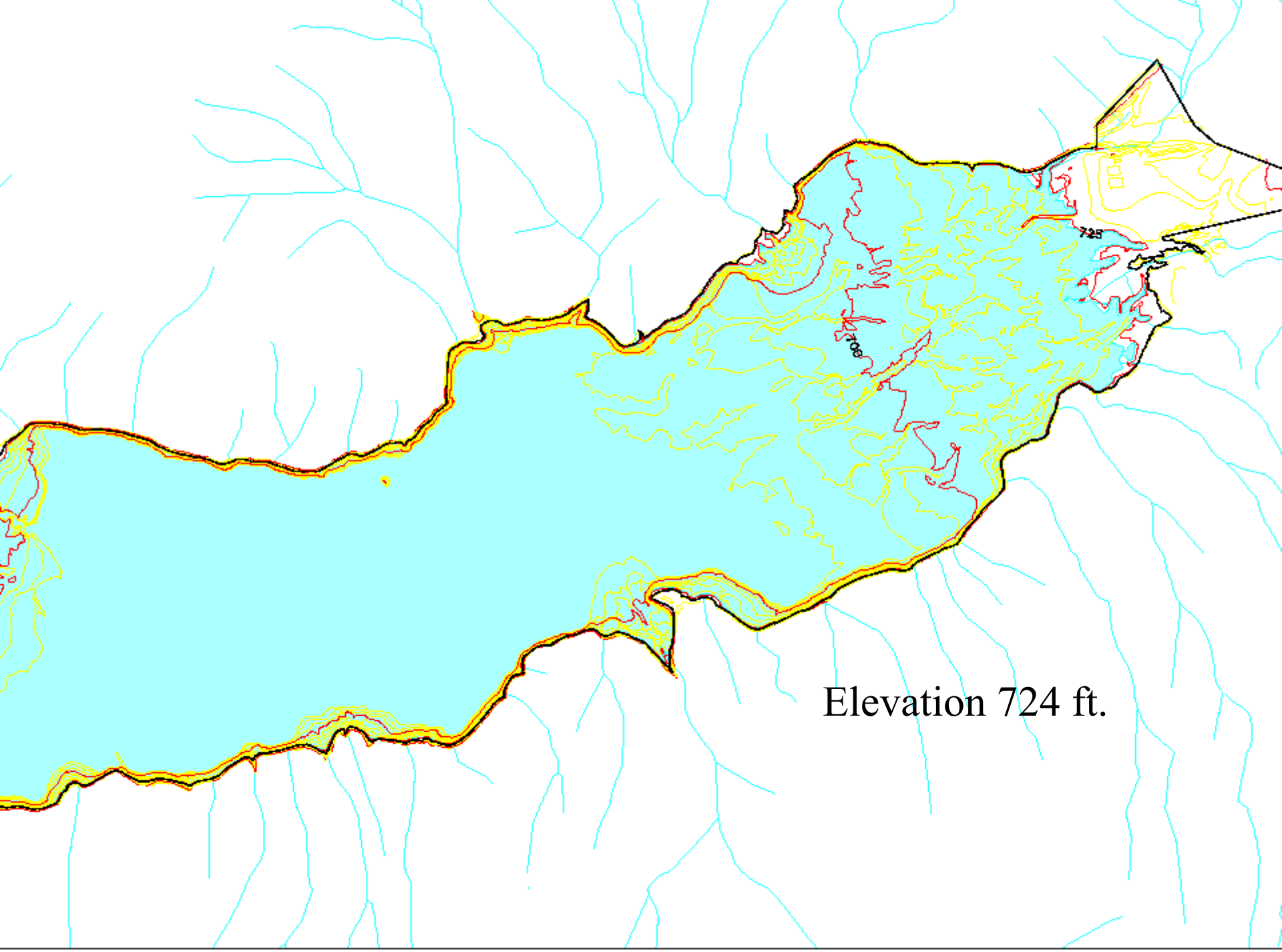
	Ranges		
	Delta Right Channels	Delta Middle Channels	Delta Left Channels
Depth (meters) [a]	0.1 to 0.69	0.1 to 0.65	0.1 to 0.75
Veloctiy (m/sec) [a]	0.03 to 1.22	0.03 to 1.49	0.0 to 1.13
	Means		
	Delta Right Channels	Delta Middle Channels	Delta Left Channels
Depth (meters)	0.31	0.32	0.26
Veloctiy (m/sec)	0.46	0.46	0.29

[*a] Velocity and depth measurements taken at pool elevation 700 ft. in November 2000 were utilized for all lake elevations. It was determined that the velocity and depth measurments taken at the full pool and intermediate elevations during the spring and summer of 2001 did not represent typical fall flows as measured at elevation in November 2000.

Figure 5. Water Depth, Velocity, Ranges and Averages.


Elevation 707.8 ft.


725
Elevation 715.0 ft.

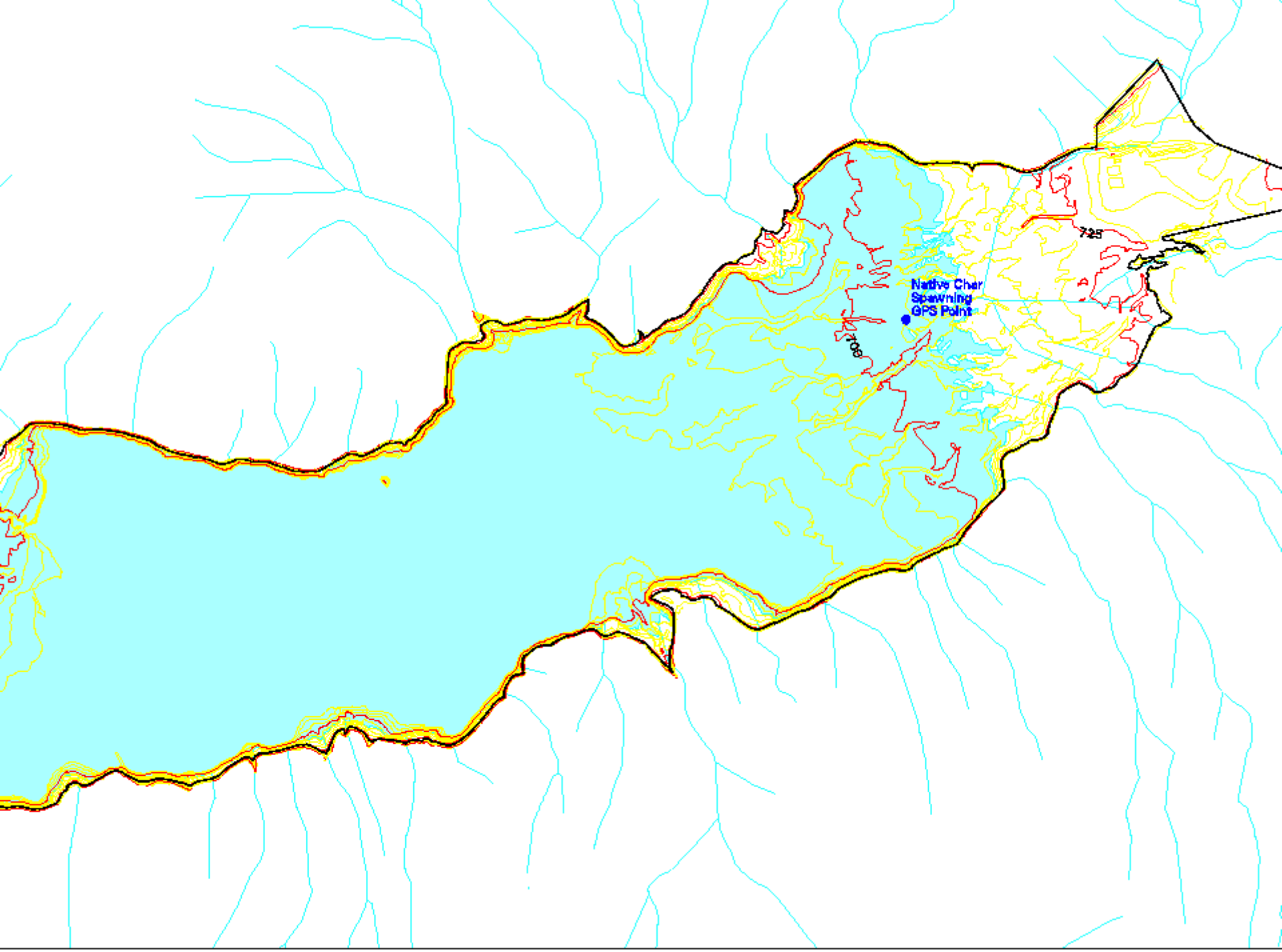

725
Elevation 724 ft.

Summary Task 3

- November 2000, Corps funded a reconnaissance level spawning survey of the Baker River immediately upstream of Baker Lake.
- Conducted by USFWS WWO
- Snorkeling and walking the bank
- Surveys conducted on 11/01/00, 11/15/00, and 11/30/00.
- Redds were designated as definite, probable, or possible based on appearance of depression, and GPS was used to mark location

Summary Task 3 Continued

- 8 bull trout and 2 bull trout redds (one definite and one probable.
- Report stated that all bull trout and redd observations located in the mainstem river below the trailhead but just above the delta area.
- The one definite reed observed on 11/15/00 was plotted on the contour map provided by R2 using both NAD 83 and it is actually located below the 707.8 ft elevation.


Native Char
Spawning
GPS Point
725
800

Driving Directions to US Forest Service Office:

1) Driving North from Seattle (or South from Everett) on I-5, take the 220th St. SW exit (exit 179).
2) Turn west (right if from southbound I-5, left if from northbound I-5) onto 220th St. SW.
3) Drive west about a block and turn right onto 64th Ave W.
4) The office building is about ¼ block down the street on the right side of the road.

BAKER RIVER PROJECT RELICENSE

Aquatic Resources Working Group

September 13, 2001
9:00 a.m. – 2:30 p.m.
USFS Office, Mountlake Terrace, WA

MEETING NOTES

Aquatics Working Group Mission: *"To identify issues and develop solutions and recommendations addressing fish and aquatic resource interests related to the Baker River Project and its operations, leading to a settlement agreement."*

Fish Team Leader: Arnie Aspelund, 425-462-3442, aaspel@puget.com

PRESENT: Arnie Aspelund (PSE), Cary Feldmann (PSE), Phil Hilgert (R2 Resource Consultants), Chuck Ebel (U.S. Army Corps of Engineers), Stan Walsh (Skagit System Cooperative), Brady Green (U.S. Forest Service), Arn Thoreen (Skagit Fisheries Enhancement Group), Bill Reinard (Wildcat Steelhead Club), Bob Wright (WA Dept. of Ecology), Rod Sakrison (WA Dept. of Ecology), Don Schluter (Trout Unlimited, by phone), Lyn Wiltse (facilitator – PDSA Consulting)

Note: If unable to attend meetings, please notify Team Leader.

FUTURE DATES AND LOCATIONS:
Thursday, October 23 at the new FS Office in Sedro-Woolley (most eastern intersection of Hwys 20 and 9), November 8 at FS Office in Mountlake Terrace, December 13 at FS Office in Mountlake Terrace.

AGENDA
September 13, 2001
9:00 a.m. – 2:30 p.m.
US Forest Service Office
Sedro-Woolley, WA

1. Review notes /agenda
2. Action Items
3. Report From Fish Passage Tech Working Group
4. Presentations
   - Wild and Scenic Rivers – Jim Chu
   - Char Delta Survey Results – Chuck Ebel
5. Continue review of study plans and requests
6. Additional Issues
   - Update on ramping rates
   - Others?
7. Set Agenda for October 23 meeting (new USFS Office in Sedro-Woolley) and determine location for our November 8 meeting.
8. Evaluate Meeting

NEW ACTION ITEMS

- **All:** Review recently submitted Study Requests for A-25, 26, 28.
- **Arnie:** Contact Bill Ryan/EPA Hydro at 206-553-8561 to invite him to these meetings.
- **Fred:** Talk with Terrestrial Group re: wetlands that are hydrologically but not directly connected to the river**.**
- **Stan:** Invite Bob Hayman to present in November (update of Lower Skagit fall Chinook, etc.
- **Fred:** Conduct ESA presentation at upcoming (October?) Aquatics Working Group Meeting.
- **Nick:** Coordinate with DOE and Forest Service re: A-13
- **Nick:** Give update on new boat and new hip and chest waders for Doug.
- **Phil:** Contact Ed Connor re: radio tags for native char.
- **Don:** Provide references on information on cutthroat and char passage through Cascades to Arnie.
- **Arnie:** Check with Fred re: ESA presentation at October 23 meeting.
- **Arnie:** Get summary data of average daily flows over the last 10 years (inflow to Baker Lake) and for watershed if available.
- **Arnie:** Ask Doug to present a summary of A1: Habitat Survey.
- **Phil:** See if pictures from habitat survey can be emailed to Don Schluter prior to October 23 meeting.
- **Arnie:** Get information on adult trap species handling protocol.
- **Phil:** Compile list of existing data regarding fish population characteristics.
- **Phil:** Send Stan raw data on stage: discharge
- **Bob W:** Meet with Bob Barnes re: existing water quality data.
- **Arnie:** Bring handouts from Fish Passage Technical Working Group re: baffle modification.

- **Phil & Don:** Discuss boats.
- **Brady:** Send Arnie standards and guidelines relating to the affected section of Upper Baker River
- **Nick/Bob:** Provide update on PSE plans for gaging of Baker River.
- **Chuck:** Send Phil a copy of Scope of Work for Little Baker Feasibility Study.

REPORT ON OLD ACTION ITEMS

- Phil got the green light from Fred Seavey – USFWS and the NPS to proceed with the 2001 surveys. Special thanks to Fred for his timely responsiveness. The Forest Service has approved a special use permit last spring for studies to be conducted on USFS lands in support of relicensing for the Baker River Hydroelectric Project. This includes a variety of studies: wildlife, vegetation, wetland, recreation, fisheries, etc.

REPORT FROM FISH PASSAGE TECHNICAL WORKING GROUP

They are looking at prioritizing the downstream passage options (at October 17 meeting), and focusing on those that are most feasible. They will be also brainstorming upstream passage options at a November 1 meeting. They are looking at process and considering studies that will be helpful in narrowing options. Montgomery Watson is developing a conceptual overview of some options such as fish ladders at both dams. Phil Hilgert was going to contact Ed Conner from SCL about the possible availability of the radio tags for use in the Baker River system, re: radio tags for native char.

PRESENTATION OF CHAR DELTA SURVEY RESULTS: CHUCK EBEL

Chuck reviewed the results of this survey with a very informative PowerPoint presentation. His presentation will be available on the PSE Baker Relicensing Website.

WILD AND SCENIC RIVERS PRESENTATION: JIM CHU

Jim Chu of the USFS walked us through Section 7 of the Wild and Scenic Rivers Act, emphasizing areas of concern to this working group. The Skagit River was designated under the Wild & Scenic River Act in 1978 and the Upper Baker River was proposed for designation in 1989. Under the Wild & Scenic River Act, the U.S. Forest Service is mandated to protect resource values identified at the time of designation. Under the Northwest Forest Plan, the USFS considers enhancement and restoration; however, defining an appropriate level of restoration will be challenging.

STUDY REQUEST SUBMITTALS/STUDY PLAN DEVELOPMENT

Study # Title	Notes/Next Steps
A01.A Reservoir Tributary Habitat Surveys	Crews just finished the Habitat Survey at the Upper Baker Basin last night (9/12/01) They saw a large number of native char (20-25 adults at approximately 20 in. long. They saw several chinook, but no sockeye. There were some issues around barriers. These will be further addressed when we look at production potential (from small streams).

A01.B Reservoir Tributary Biological Surveys	No electro-fishing is planned for this year. Looking at teaming with the Nat. Park Service this fall to do spawning surveys (walking and snorkeling). They will also note native char observed. R2 will start right away and go through late October/early Nov.
A01.C Reservoir Tributary Delta Surveys	We'll get started next week.
A02 LB River Habitat Mapping	Phil & Sue are planning on doing this September 23, 24 (when plant is off-line).
A03 Reservoir Fish Population Characteristics	Still getting data in from various sources. Will share a list of all available sources for the Working Group to review at next meeting and see where the gaps are.
A04 LB/Skagit River Flow, Gaging	On August 24 at 21K cfs, Doug monitored staff gages. Things are fine.
A05 Water Quality Sampling	Bob Wright (DOE) will meet with Bob Barnes…
A06 UB Passage Design Baffle Modification	Complete.
A07 Lower Baker Forebay Bathymetric Survey	Complete.
A08 UB Passage System Evaluation	2001 Study portion complete.
A09 Skagit River Flow and Habitat Assessment (HIGH PRIORITY)	Undergoing internal review at PSE. Will get update at our October 23 meeting. Planning to go out ASAP (4 trips) & conduct spawning surveys targeting chinook.
A10 Baker River Delta Habitat Assessment-Char	Complete!
A11 Nutrient Addition	Parking Lot.
A12 Instream Flows for Bio-diversity	Split between R-A21 & R-A09.
A13 Water Quality Assessment	Distinct from R-A05.
A14 Reservoir Shoreline Erosion	Not for 2001; needs further development.
A15 UB Delta Scour	Data collection underway.
A16 LB Delta/Channelization	Request pending; not for 2001. Chuck will send Phil a copy of Scope of Work for Little Baker Feasibility Study. Stan will do a Study Request by end of year.
A17 Tributaries Surveys Upstream of Barriers	Request pending; not for 2001.
A18 Baker River Survey Upstream of 1 km.	Merged into A-01.habitat surveys conducted Aug & Sept 2001.
A19 Review Limnological Information	PSE is looking into bringing a University of Washington scientist to review existing data.
A20 Large Woody Debris Management	R2 will draft a Study Request for Brady to

	review.
A21 Skagit Wild & Scenic River Values	Study Request is under review.
A22 Baker Lake Trout Impacts Evaluation	Discussion will be deferred to the Baker River Committee.
A23 Baker River Wild & Scenic River Values	Study Request needs clarification.
A24 Hydrologic and Geomorphic Analysis	Hope to have modeling done sometime in November.
A25 Reservoir Predation	Discuss at October 23 meeting.
A26 Reservoir Production Potential	Discuss at October 23 Meeting.
A27 Middle Skagit Incubation Flows	Study Request pending. Covered somewhat in A9?
A28 Fish Passage-Reservoir Management	Discuss at Fish Passage Technical Working Group.

LIST OF MEETING HANDOUTS

- Chuck's Presentation on Char Delta Survey
- Wild and Scenic Rivers Act: Section 7
- Appendix D: Evaluation Procedure Under "Invade the Area or Unreasonably Diminish"
- Updated index of Aquatics Study Requests
- TMDL Responsiveness Summary, prepared by Ron McBride, WA State Dept. of Ecology, Water Quality Program
- Study Requests:
  - Areas of Unnatural Predation Opportunity (Stan Walsh)
  - Reservoir Limnology Study – for Sockeye and Coho Production Potential (Stan Walsh)
  - Effects of Various Reservoir Management Schedules on Downstream Fish Passage (Stan Walsh)

ADDITIONAL ISSUES

Baker River Watershed Analysis

There should be a draft out the end of September for those who provided input on the document. It should be available for broader distribution by early November.

Little Baker Project

Little Baker River used to be a distributary channel of the main Baker River. The Skagit Fisheries Enhancement Group has been promoting a proposal to re-water the Little Baker distributary channel. The Town of Concrete is a sponsor of this project. The Army Corps of Engineers will do a $260K feasibility study. This should be done in a year.

Ramping Rates

PSE is in consultation with NMFS & USFW Service, re: ramping guidelines. The capabilities of the new unit for gradual down ramping are not as good as the old unit, but better than originally thought. It appears to be working within the guidelines of 2000cfs/hour for PSE's gradual unit shutdown program.

Cultural Oligotrophication
Bill distributed an article, Cultural Oligotrophication: Causes and Consequences for Fisheries Resources. He also distributed copies of WA State Dept. of Ecology's response to his question to them regarding the Clean Water Act for salmon. He was pleased that their response included an intent to look at determining which upper watershed streams could be enhanced for biological production including salmon by planting fish carcasses, processed fish carcasses and nutrient pellets.

PARKING LOT
- Presentation on ESA (direct relationship to 4(d))-Fred Seavey
- State agency presentations re: mandates (agency direction)
- Create a master list of possible studies across all working groups and share with all
- Access to the Baker River Project hourly operational model

EVALUATION OF MEETING
Well-Dones
- Arn's presence!
- Chuck's presentation
- Jim's presentation
- Food, glorious food!
- Nice to see Rod and Bob W. (DOE)

Opportunities to Improve
- Ran over
- Missed a bunch of people.

Tentative Agenda for Next Meeting
October 23, 2001
9:00 a.m. - 2:30 p.m.
US Forest Service Office
Sedro-Woolley, WA

NOTE: This meeting will be a "picture meeting" so our friend Don Schluter can see what we all look like, so dress appropriately!

1. Review Agenda and Minutes
2. Review Action Items
3. Reports from Fish Passage Technical Working Group and Baker River Committee
4. Update on Ramping Rates
5. Presentations:
   A1: Habitat Survey Results (Doug)
   ESA (Fred)?
6. Start Review of Study Requests/Plans

7. Additional Issues?
8. Set agenda for December 13 meeting
9. Evaluate Meeting