# BAKER RIVER PROJECT RELICENSE

## Aquatic Resources Working Group

August 8, 2002

8:30 a.m. – 3:00 p.m.

US Forest Service Office
21905 64th Avenue West
Mountlake Terrace, WA 98043

## AGENDA

1. Review Agenda and Minutes
2. Settlement Process
3. Report from Fish Passage Technical Working Group
4. Report from Instream Flows Technical Working Group
5. Review Study Plans /Requests: A37 (new!), A19, A26a, A24
6. Action Items
7. Update from Solution Team Meeting
8. Set agenda and confirm location (Mountlake Terrace) for September 12, 2002- October 10,11 for a two day meeting. (Day 1=Studies; Day 2= Draft PMEs)
9. Evaluate Meeting

# BAKER RIVER PROJECT RELICENSE

## Aquatic Resources Working Group

August 8, 2002
8:30 a.m. – 3:00 p.m.
U.S. Forest Service
Conference Room A/B (425-775-9702)
21905 64th Avenue West, 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, arnie.aspelund@pse.com

**PRESENT:** Arnie Aspelund (PSE), Nick Verretto (PSE), Doug Bruland (PSE), Stan Walsh (Skagit System Cooperative), Arn Thoreen ( Skagit Fisheries Enhancement Group), Sue Madsen (R2), Ruth Mathews (phone) (Nature Conservancy), Chuck Ebel (Corps of Army Engineers), Bill Reinard (Wildcat Steelhead Club), Rod Sakrison (Dept. of Ecology), Brady Green (U.S. Forest Service), Gary Sprague (phone) (WDFW), Lyn Wiltse and Mary Jean Bullock (PDSA Consulting, Inc.), Dee Endelman of Agreement Dynamics.

**FUTURE DATES AND LOCATIONS:**
Sept. 12, USFS Office in Mountlake Terrace,
**Oct. 16 and 17 two-day retreat at the Baker River Lodge (Day 1: Studies, Day 2: PMEs)**
Nov. 14 from 8:30-3:00 at USFS Office in Mountlake Terrace

**AGENDA**
**August 8, 2002**
**8:30 p.m. – 3:00 p.m.**
**U.S. Forest Service**
**Conference Room A/B**
**Mountlake Terrace, WA**

1. Review Agenda and Minutes
2. Review Re-license Schedule

3. Settlement Process-PM&Es Scoping
4. Report from Instream Flows Technical Working Group (A9)
5. Review Study Plans/Requests: A15,A19/A26a, A25, A29, A37 (new)
6. Action Items
7. Update from Solution Team Meeting
8. Additional Issues
9. Set Agenda for September 12, 2002
10. Evaluate Meeting

**NEW ACTION ITEMS**

All: Review updated PME matrix sent out by 8-23 teamlet and send additions to Arnie so he can send them out to all so we can be ready to begin evaluating at our September meeting.
ALL: Let Arnie know if you want a copy of the IPP.
ALL: Review proposed transect locations and let Sue know by August 14 if you are uncomfortable with any that R2 is proposing.
ALL: Get Nick feedback on A25, and A29 draft study plans by the September meeting.
ALL: provide R2 information to confirm the identification of key spawning, off channel, secondary and rearing areas to aid in selection of off-channel survey sites.
Arnie: Email out A9 Progress Report to participants.
Stan and Phil: Work on resolving A9b.
Sue: Prepare update on A16 for September meeting.
Ruth: Draft Interest statements and accompanying issues for the Nature Conservancy.

**REVIEW RE-LICENSE SCHEDULE**

Arnie distributed updated copies of the relicensing schedule an the schedule for specific aquatics studies that are underway. We will review these timelines at the start of each Working Group meeting.

**SETTLEMENT PROCESS - PMEs SCOPING**

Dee distributed a matrix and reviewed with us the work completed by the Aquatics Settlement teamlet August 5. They boiled the issues down to three broad questions with many subcategories under each.

The questions are:
1. What can we do to address Project influences on natural processes and functions?
2. What can we do to address Project influences on aquatics and terrestrial community composition and productivity (presence, abundance and structure)?
3. What can we do to address Project effects on aquatic and riparian habitat?

The teamlet brainstormed a preliminary list of potential PMEs for each. We reviewed the list and added some additional ideas:

Under *Productivity* we added:
- Add recreational fishing (along with /NA harvest) #79.
- Re: hatcheries, include all native species

- Restore spawning beaches 1-3 to natural condition
- #67: change "combination" to "contribution"

Under *Flows* we added:
- Establish appropriate minimum flows (to meet specific species needs).
- Look for opportunities to create new off channel habitat
- # 5: change "endangers" to "endangered" – aquatic species (mostly fish)
- Provide mitigation water for downstream water supply.

Under *Upstream Passage* we added:
- Consider not allowing chinook passage to Upper Baker (up stream passage)

Under *Ramping* we added:
- #24: Reference (WDFW) (Hunter et al")

Under *Reservoir Operations* we added:
- #24: Manage reservoir to meet flow and ramping requirements
- Large woody debris
- #39 change "wood" to "log jams"
- #44: Consider impact of large woody debris being an obstacle to bridges downstream
- #42 (navigation hazard on reservoir, maybe Skagit River.

*Water Quality*:
- Meet State Water Quality Standards
- Preserve beneficial uses
- Adhere to anti degradation policy
- Influence modification of State rules for sufficient nutrients

We reviewed the draft of criteria that the Solution Team suggested for narrowing options for PMEs. We will ask the Solution Team to re-title the list "*Defining a Range of Options*". We also suggest adding a 3rd mandatory criteria which would be "*technically feasible."*

We seem to be well on our way toward meeting the Solution Team's request to have a very preliminary draft of PMEs including areas where we need more information before we can even guess at potential PMEs.

The Solution Team has moved their October meeting to the 30th to give all Working Groups as much time as possible to come up with their lists.
Next Steps – The Technical Working Group will finish brainstorming on August 23 and send updated matrix out to Working Group members to review and send additions to Arnie. We will begin to narrow the list in September.

**IPP UPDATE**
Sue reported that PSE is implementing the IPP. This is affecting flows. We will get a detailed update at our September meeting.

**REPORT FROM INSTREAM FLOWS TECHNICAL WORKING GROUP**

Sue reviewed the components of the Instream Flow Model (A-9). Her PowerPoint presentation will be available on the web. She also distributed a written progress report on A9. (See matrix below).

**STUDY REQUEST SUBMITTALS/STUDY PLAN DEVELOPMENT**

| Study # Title | Notes/Next Steps |
|---|---|
| A01.A Reservoir Tributary Habitat Surveys | Linked to A26b. ACTIVE |
| A01.B Reservoir Tributary Biological Surveys | ACTIVE |
| A01.C Reservoir Tributary Delta Surveys | The results of the spring 2002 field efforts will be incorporated with A-01a, A-01b and A-26b into a single report. ACTIVE |
| A02 LB River Habitat Mapping | ACTIVE |
| A03 Reservoir Fish Population Characteristics | Links to A19 and A26a. |
| A04 LB/Skagit River Flow, Gaging | Links to A9. ACTIVE |
| A05 Water Quality Sampling | ACTIVE |
| A06 UB Passage Design Baffle Modification | Complete. |
| A07 Lower Baker Forebay Bathymetric Survey | Complete. |
| A08 UB Passage System Evaluation | Complete. |
| A09A Skagit River Flow and Habitat Assessment (HIGH PRIORITY) | The teamlet has come to agreement on a general modeling approach. They are now focusing on transect selection. They started by breaking the mainstream channel into sections by channel pattern. They have identified preliminary locations for 24 transects. There will be a field trip to review these proposed locations August 16.<br>It was noted that it is important that we take into consideration previous studies on flows (depth of river at various locations) (e.g., 1911 study done by the Corp), so we have data to help us predict likely flow patterns over the period of the license. Sue assured us that these were being taken into consideration in assessing this very complex system.<br>The plan is to model up to 50Kcfs. We will be collecting field data at levels: 7Kcfs, 14Kcfs, and 20Kcfs. Sue reported they are starting to re-think their original idea of trying to do in stream flow modeling in side channels since only 2 of the 28 were wet at less than 14Kcfs. |

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| | It will be pretty much impossible to isolate Project effects on ground water in sloughs. They will be better able to understand Project effects in side channels. They will revisit all side channel inlets at 7Kcfs and predict connectivity at 7 side channels using steady flow model and mainstream transect data. They will map the wetted area of 6 sloughs at all 3 flow elevations. ACTIVE<br>Next steps for 2003 survey:<br>• August 16 = Instream Flow Technical Subcommittee field trip to finalize transects<br>• August 27-30 collect mainstem depth and velocity data at 14, 0000 cfs (tentative)<br>• If flows attain 21, 000 cfs in next two weeks, conduct initial slough surveys<br>• Purchase and install 3 submersible pressure transducer stage recorders to support development of unsteady flow model. |
| A09B Salmonid Redd Selection and Maintenance in the Middle Skagit in Response to River Fluctuation from Hydropower Peaking | There has been no movement on this since Stan submitted it. Stan and Gary will follow up with Phil re: suggested methodology. ACTIVE? |
| A09C Distribution, Timing and Depth of Salmonid Redds | Adam Weybright (R2) had prepared a PowerPoint slide show that summarized the results of the 2002 steelhead surveys. Phil walked us through the results of that survey. Visibility was a challenge during the spring. We will look at integrating tributary spawning data (WDFW) on timing and distribution into the final report.<br>For the fall 2002, Phil suggests 3 levels of survey effort: aerial, jet boat, and a combination platter ("full meal deal" which includes all of the above plus a cat-a-raft). He distributed a proposal that included the timing and estimated costs associated with each level. If differences in spawning from Hamilton to Concrete and Hamilton to Sedro-Woolley are noted, we would expand the survey effort accordingly. Phil agreed to add a "full meal deal" in December. If a lot of redds are observed (defined as 20-30), the survey effort will be expanded to measure characteristics of those redds. Question for fall survey: Do we |

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| | measure redds between Baker and the Sauk? ACTIVE |
| A09D Distribution, Timing of Salmonid Fry | We just got the NMFS collection permit (August 2002). ACTIVE |
| A10 Baker River Delta Habitat Assessment-Char | Complete. Note: USFW is concerned with impacts to char and indirectly to bald eagles through chum and also to cutthroat. |
| A11 Nutrient Addition | Tie to A26. |
| A12 Instream Flows for Bio-diversity | Split between R-A21 & R-A09. |
| A13A Water Quality Impacts of Human Uses of the Reservoir and Adjacent Shorelines | Removed from list of studies we will address. Brady reported USFS will not pursue this. |
| A13B Water Quality Impacts on Aquatic Habitat | Removed from list of studies we will address. Brady reported USFS will not pursue this. |
| A14A Reservoir Shoreline Erosion | We will get an update on this at our September meeting. ACTIVE |
| A15 UB Delta Scour | Sue walked us through a Power Point presentation of this study. This will be available on the web. Five times between 9/18 and 10/30 of 2001 they mapped Redds on the delta. They collected GPS data on Redd locations and recorded species and depth for each. They also installed 19 scour monitors and did repeat cross-section surveys for each monitor/set of monitors.<br>We feel like we have a pretty comprehensive set of data for 2001 Redd distribution. There were a total of 726, with half in Channel Creek, just over 20% on Delta Right an nearly as many on Delta Left. 10% were in the Baker River and tribs. These data map well with historic data. ACTIVE<br>Note: Lake tribs may be under-represented as visibility was a problem.<br>Proposed 2002 mapping:<br>• Survey residualized sockeye in Lake<br>• Survey for other species? Chinook, Bull trout, and Coho?<br>• There may be overlap with A1B<br>Proposed 2002 scour monitor efforts:<br>• Install scour monitors only near full pool elevation prior to drawdown<br>• Install stable headpins and survey transects at approximately 5 -ft elevation intervals across delta right and delta left channels (720-700 ft MSL) |

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| | • Repeat surveys at approximately 2 week intervals from Sept. thru Nov., and thereafter as accessible through March |
| A16 Lower Baker River Alluvial Fan Assessment | Follows on heels of A24. Sue will give us an update on this at our September meeting. ACTIVE |
| A17 Tributaries Surveys Upstream of Barriers | Study request pending from USFS. This is related to A36. Brady is in the process of re-working it. |
| A18 Baker River Survey Upstream of 1 km. | Merged into A01a and A01b. ACTIVE. |
| A19 Review Limnological Information | This study has been combined with A26. |
| A20 Large Woody Debris Management | ACTIVE |
| A21 Skagit Wild & Scenic River Values | Removed from list of studies we will address. Brady reported USFS will not pursue this as it is being addressed by A9 and A24. |
| A22 Baker Lake Trout Impacts Evaluation | No longer necessary due to change in management direction in favor of cancellation of non-native trout stocking in the reservoirs. Removed from list of studies we will consider. |
| A23 Baker River Wild & Scenic River Values | Removed from list of studies we will address. Brady reported USFS will not pursue this as it is being addressed through other studies, i.e. A15. |
| A24 Hydrologic and Geomorphic Analysis | ACTIVE |
| A25 Unnatural Predation | Nick distributed a July 5 draft of the study plan put together by Carl Hadley. All were asked to review the plan for discussion at our September meeting. ACTIVE |
| A26A Reservoir Limnology-Production Potential | This study is specific to the reservoir. Nick, Phil, Stan, Gary met to outline the goals of this study:<br>1. Sockeye and coho production potential – 2 numbers (range)<br>2. Limiting factor for sockeye and coho, quantify<br>3. Anything jump out as limiting to other species<br>4. Potential benefits of reservoir fertilization<br>5. Identify Project effects which affect production<br>6. Data gaps, proposal to fill them<br>By early September, Nick will share list of possible consultants with this teamlet to review. Still in the process of consolidating |

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| | the scale data and a variety of other limnology/water quality-related data and maps. Also looking at temperature data, juvenile outmigration data, ICD, any other related data that will help the consultant gain a quick understanding of where we are. We hope to have the consultant on board by mid-September.<br>Brady suggested that where possible, we look at also addressing other native species (includes non-salmonids). The main priority is to get a study plan together that addresses sockeye and coho. ACTIVE |
| A26B Tributary Production Potential | Brady suggested that where possible, we look at also addressing other native species (includes non-salmonids). The main priority is to get a study plan together that addresses sockeye and coho. Linked with A01b and A01b. ACTIVE |
| A27 Middle Skagit Incubation Flows | Addressed in A9. |
| A28 Fish Passage-Reservoir Management | This is being developed in the Fish Passage Technical Working Group. ACTIVE |
| A29 Estimate Sockeye Production from Different Incubation Sources | Nick distributed a slightly fleshed out version of the bulleted list we came up with this Study. Results so far: Sampling found fish (many coho, no sockeye) in channel creek and Beaches 3&4. All were asked to review this draft study plan and be ready to discuss at our September meeting. Gary suggested we may want to sample also in Sulphur Creek. Nick expressed serious reservations about the amount/validity of the data we would get from this survey and how we would use it. ACTIVE |
| R-A30 Near-Field Smolt Behavior | Coordinated through Fish Passage Tech. Group. 2002 Field effort completed, data analysis underway-preliminary results expected in August. |
| R-A31 Fish Passage-Far Field Smolt Migration | Coordinated through Fish Passage Tech. Group. 2002 Field effort completed, data analysis underway-preliminary results expected in August. |
| R-A32 Fish Passage-Kelt Radio telemetry | Coordinated through Fish Passage Tech. Group. 2002 Field effort completed, data analysis underway-preliminary results expected in August. |

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| R-A33 Fish Passage-PIT Tag Migration | Coordinated through Fish Passage Tech. Group. 2002 Field effort completed, data analysis underway-preliminary results expected in August. |
| R-A34 Fish Passage-Downstream Run-Timing Correlation | Coordinated through Fish Passage Tech. Group. |
| R-A35 Fish Passage-Upstream Run-Timing | Coordinated through Fish Passage Tech. Group. |
| R-A36 Native & Wild Inland Fish Population Assessments | This is related to A17. Brady is working with WDFW to rework this. |
| R-A37 Without Project Alternative (evaluation of Aquatic & Riparian Habitat) | Brady has incorporated the comments he received into the current version of the Study Request. Though efforts will be made to integrate this study with the Terrestrial Working Group study, it appears that they are too far along on this for us to work with them. We need to address without Project as a NEPA requirement. There are questions around the scope of the study and how the data from the study would be used.<br>NOTE: We should make an assumption re: the manner in which the Project might be removed as this would influence what resources would be there over the term of the next license. It was also suggested that a historical look wouldn't necessarily be a predictor of what would be there in the future (in terms of aquatic resources). We would be able to guess at gradient and width of streams.<br>The purpose of this study is to predict potential of what could be there without Project.<br>We need to have a lot of off-line chats on this before we discuss again at our September meeting. |
| | |

**REPORT ON OLD ACTION ITEMS**

- ALL: Reviewed Brady's Study Request "A37: Evaluation of Aquatic and Riparian (low gradient) Habitat Occurring under the "Without Project Alternative."
- Brady: Contacted National Park Service re: The possibility of the Park Service assisting Emily in investigating the stream above Tributary 13 to Picket Creek
- Thom: Gave Nick contact for compiling water quality data.
- Nick: Got with Phil, Brady, Gary, Stan re: A26a
- Arnie: Checked and found that the Baker Lodge wasn't available Oct. 10 and 11. We will meet Oct. 16 and 17 when the Lodge is available

- Brady: Sent D. Drake subject and contact information to members.
- Sue: Talked to Stan re: scour monitoring.

**MEETING HANDOUTS**
- Agenda, July 11, 2002 meeting notes, updated mail list, travel expense reimbursement form, schedule, revised study request index
- Draft of A25 and A29 Study Plans
- August 6 Progress Report on A9- Middle Skagit River Instream Flow Study
- Preliminary matrix of Draft PMS Measures Scoping done by Settlement Teamlet on August 5 & Draft Criteria to be used in Narrowing Options for PMEs

**PARKING LOT**
- 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 (Charles Howard)
- Participate in Lower Skagit Work Group for native char
- Create Overall "Study Plan" for Studies that will drive the Relicensing Process
- Address Traps & Haul – other species

**EVALUATION OF MEETING**
**Well-Dones**
- Good food
- Vacuuming for satisfiers!
- Settlement process is going well
- Sue's presentations
- Happy to see Chuck and Bill again
- Nice to have Gary and Ruth participate by phone

**Opportunities to Improve**
- Got done late
- Need USFWS, NOAA fisheries representatives

**What's Hot?**
- Without Project Study Request (A37)
- Char (hot to Corps)

**Tentative Agenda for Next Meeting**
**September 12, 2002 at USFS Building in Mountlake Terrace, WA**
**8:30a.m. – 3:00 p.m.**

1. Review Agenda and Minutes
2. Settlement Process
3. Report from Instream Flows Technical Working Group
4. Review Study Plans /Requests: A9b&c, A14a, A16, A26a, A24, A25, A29, A37

5. Action Items
6. Update from Solution Team Meeting
7. Set agenda for October 16 and 17 retreat (Day 1=Studies; Day 2= Draft PMEs)
8. Evaluate Meeting

# Baker River Project Relicensing Hydrology and Aquatic Resources Working Group

## A15 - Upper Baker Delta Proposed 2002 activities

# 2001 Redd Mapping

- Mapped Redds on delta between 9/18/01 and 10/30/01
- Collected GPS Data on Redd Location
- Recorded Species and Depth of Each Redd Mapped

# 2001 Redd Distribution

## 2001 SOCKEYE SPAWNING DISTRIBUTION IN BAKER LAKE AND BAKER RIVER

| Survey Area | Number of Redds | % of Total Redds |
|---|---|---|
| Delta Right | 156 | 21.5 |
| Delta Middle | 1 | 0.1 |
| Delta Left | 127 | 17.5 |
| Channel Creek | 362 | 49.9 |
| Lakeshore (+ trib deltas) | 4 | 0.5 |
| Baker River and tributaries | 76 | 10.5 |
| Baker Lake Tributaries | ND | ND |
| Total | 726 | 100 |

# Historic distribution

**2001 SOCKEYE SPAWNING DISTRIBUTION IN BAKER LAKE AND BAKER RIVER**

| | 2001 | | 1997 | | 1994 | |
|---|---|---|---|---|---|---|
| **Spawning Area** | **# of Redds** | **% of Total Redds** | **# of Redds** | **% of Total Redds** | **# of Redds** | **% of Total Redds** |
| **Drawdown Zone** | 288 | 40.5% | 375 | 26.7% | 652 | 26.1% |
| **Channel Creek** | 362 | 49.2% | 537 | 38.0% | 1002 | 40.1% |
| **Baker River and tributaries** | 76 | 10.3% | 500 | 35.4% | 843 | 33.8% |
| **Total** | 726 | 100.0% | 1,412 | 100.0% | 2,497 | 100.0% |

Data from Walsh 1999 Data from Walsh et al. 1996

Drawdown zone includes Baker delta, lower channel creek and tributary deltas

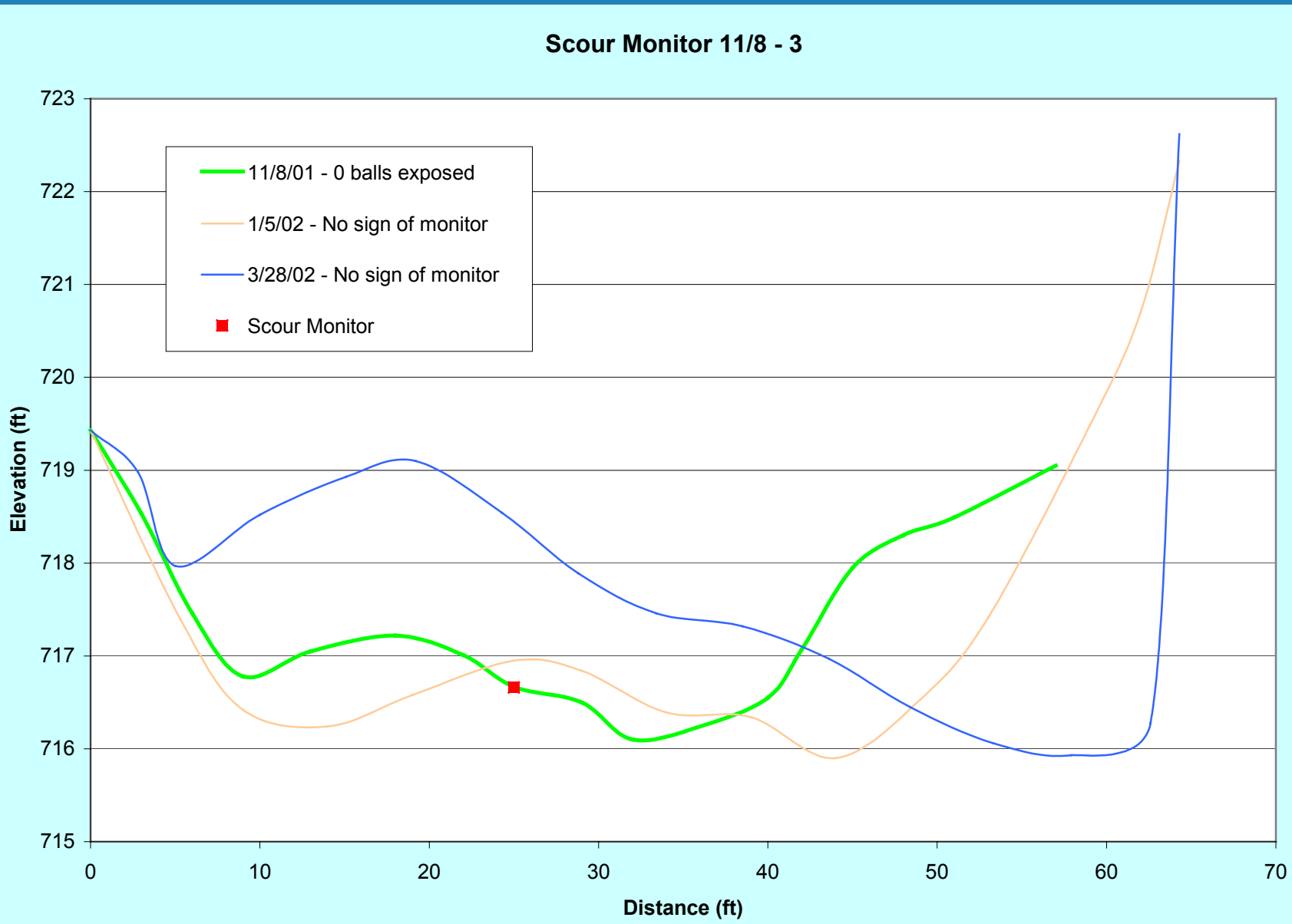
# Proposed 2002 Redd Mapping

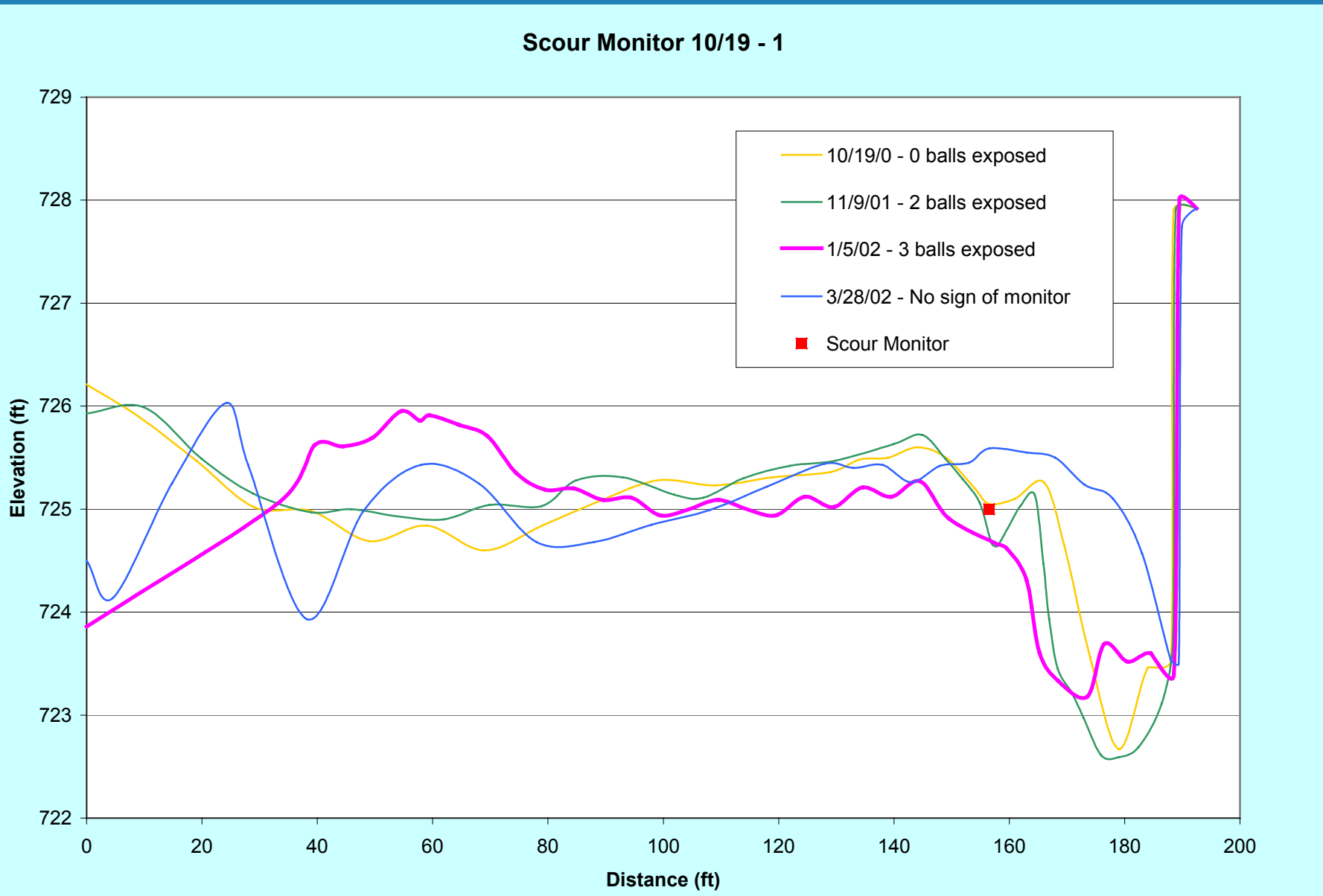
- Limited # of sockeye available for release in lake.
  - Do not release sockeye and survey for residualized sockeye (kokanee)?
  - Other species?
    - Chinook
    - Bull trout
    - Coho

# 2001 Scour study

- Deployed a total of 19 scour monitors in 2001
  - 15 scour monitors in Delta Right
  - 4 scour monitors in Delta Middle
- Three scour monitors installed by Skagit System Co-op in Delta Left in 1999-2000
- Repeat cross-section surveys for each monitor or set of monitors.

| | Survey Date | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 10/11/01 | 10/19/01 | | 11/8/01 | | 12/31/01 | | 03/28/02 | |
| Monitor # | Monitor Change (inches) | Survey Change (inches) | Monitor Change (inches) | Survey Change (inches) | Monitor Change (inches) | Survey Change (inches) | Monitor Change (inches) | Survey Change (inches) | Monitor Change (inches) |
| 10/05-1 | -1.4 | 3.5 | buried | -2.6 | - | pins gone | - | pins gone | - |
| 10/05-2 | -1.4 | 2.0 | - | 2.5 | - | pins gone | - | pins gone | - |
| 10/05-3 | | | ND | 0.6 | - | ND | ND | 4.4 | - |
| 10/05-4 | | | ND | -0.1 | - | ND | ND | 3.8 | - |
| 10/19-1 | | | | -1.9 | -2.8 | -1.3 | -1.4 | 13.7 | - |
| 10/19-2 | | | | 0.2 | - | -5.3 | -8.4 | -0.7 | 0.0 |
| 10/19-3 | | | | 5.0 | - | 12.7 | - | pins gone | - |
| 10/19-4 | | | | 0.4 | - | 4.9 | - | pins gone | - |
| 11/02-1 | | | | 2.4 | - | pins gone | deposition | pins gone | - |
| 11/02-2 | | | | -0.8 | -1.4 | pins gone | deposition | pins gone | - |
| 11/02-3 | | | | -3.6 | - | 28.6 | - | pins gone | - |
| 11/02-4 | | | | 0.4 | - | 10.6 | deposition | pins gone | - |
| 11/02-5 | | | | 0.7 | - | 17.8 | - | pins gone | - |
| 11/02-6 | | | | | - | pins gone | - | pins gone | - |
| 11/08-1 | | | | | | pins gone | - | pins gone | - |
| 11/08-2 | | | | | | pins gone | deposition | pins gone | - |
| 11/08-3 | | | | | | 7.2 | - | 22.7 | - |
| 11/08-4 | | | | | | pins gone | ND | pins gone | - |
| 11/08-5 | | | | | | pins gone | ND | pins gone | deposition |





# Proposed 2002 scour monitoring efforts

- Install scour monitors only near full pool elevation prior to drawdown
- Install stable headpins and survey transects at approximately 5 -ft elevation intervals across delta right and delta left channels (720-700 ft MSL)
- Repeat surveys at approximately 2 week intervals from Sept. thru Nov., and thereafter as accessible through March