



Record of Decision

Proposed Issuance of Incidental Take Permit for the
Bull Run Water Supply Habitat Conservation Plan

NMFS

April 2009

1 Contents

2	Section	Page
3	1 Introduction	1-1
4		
5	2 Project Description	2-1
6	2.1 Purpose and Need.....	2-1
7	2.2 Specific Project Description	2-1
8	2.3 Covered Facilities.....	2-2
9	2.4 Covered Species	2-2
10	2.5 Covered Activities.....	2-3
11	2.5.1 Operation, Maintenance, and Repair of the Water System.....	2-3
12	2.5.2 Habitat Conservation, Research, and Monitoring Measures.....	2-3
13	2.5.3 Incidental Land Management Activities.....	2-4
14	2.5.4 Activities Not Covered by the Bull Run HCP.....	2-4
15	2.6 Protection Measures and Conservation Strategies.....	2-4
16	2.6.1 Lower Bull Run River Habitat Conservation Measures	2-4
17	2.6.2 Bull Run Reservoir Habitat Conservation Measures	2-7
18	2.6.3 Water System Operations and Maintenance	
19	Conservation Measures.....	2-7
20	2.6.4 Sandy River Basin Habitat Conservation Measures	2-8
21	2.6.5 Terrestrial Wildlife Habitat Conservation Measures	2-8
22	2.6.6 Habitat Fund.....	2-8
23	2.6.7 Monitoring, Research, and Adaptive Management Programs.....	2-8
24	2.6.8 Changed Circumstances.....	2-9
25		
26	3 Alternatives	3-1
27	3.1 Alternative 1: No Action Alternative	3-1
28	3.1.1 Flow.....	3-1
29	3.1.2 Temperature.....	3-2
30	3.2 Alternative 2: Issuance of Incidental Take Permit and Implementation	
31	of an HCP (Proposed Action).....	3-2
32	3.3 Alternative 3: Fish passage Alternative	3-2
33	3.4 Alternatives not considered in detail	3-3
34	3.4.1 Bull Run Groundwater.....	3-3
35	3.4.2 Dam Removal	3-3
36	3.4.3 Fish Ladders.....	3-3
37		
38	4 Public Involvement	4-1
39		
40	5 Decision, Rationale, and Conditions.....	5-1
41	5.1 Decision and Rationale.....	5-1
42	5.2 Environmentally Preferred Alternative	5-1
43		

1 **Acronyms and Abbreviations**

2	BLM	Bureau of Land Management
3	CEQ	Council of Environmental Quality
4	CFR	Code of Federal Regulations
5	City	City of Portland
6	DEIS	Draft Environmental Impact Statement
7	EIS	Environmental Impact Statement
8	ESA	Endangered Species Act
9	FEIS	Final Environmental Impact Statement
10	HCP	Habitat Conservation Plan
11	IA	Implementation Agreement
12	ITP	Incidental Take Permit
13	NEPA	National Environmental Policy Act
14	NMFS	National Marine Fisheries Service
15	NOA	Notice of Availability
16	NOAA	National Oceanic and Atmospheric Administration
17	NOI	Notice of Intent
18	O&M	operation and maintenance
19	ODEQ	Oregon Department of Environmental Quality
20	ODFW	Oregon Department of Fish and Wildlife
21	PGE	Portland General Electric
22	ROD	Record of Decision
23	TMDL	total maximum daily load
24	USGS	U.S. Geological Survey

1 SECTION 1

2 **Introduction**

3 This Record of Decision (ROD) documents the decision by the National Marine Fisheries
4 Service (NMFS) to issue an Incidental Take Permit (ITP), pursuant to the Endangered
5 Species Act (ESA) Section 10(a)(1)(B), to the City of Portland (City). NMFS issued this ROD
6 in compliance with the agency decision-making requirements of the National
7 Environmental Policy Act (NEPA), the Council of Environmental Quality (CEQ) NEPA
8 regulations at 40 Code of Federal Regulations (CFR) Parts 1500-1508, and NMFS' NEPA
9 implementing procedures found at National Oceanic and Atmospheric Administration
10 (NOAA) Administrative Order 216-6. This decision was based upon the analysis included
11 within the Bull Run Water Supply Habitat Conservation Plan Final Environmental Impact
12 Statement (FEIS), issued January 23, 2009, public comments on the Draft Environmental
13 Impact Statement (DEIS) and FEIS, the ESA Section 7(a)(2) Biological Opinion issued by
14 NMFS on January 5, 2009, and NMFS' Statements of Section 10(a)(2)(B) Findings, all
15 included in this document by reference.

16 Within the FEIS, NMFS analyzed the possible environmental and socioeconomic impacts
17 from the operation and maintenance of the City's Bull Run water supply, over a 50-year
18 period, under a range of protection measures for anadromous salmonid species. The
19 Proposed Action is to issue an ITP for the covered activities, according to the protection
20 measures provided in the Bull Run Water Supply Habitat Conservation Plan (HCP).

21 This ROD is designed to 1) state NMFS' decision and present the rationale for that decision;
22 2) identify the alternatives considered in the FEIS in reaching the decision; and 3) state
23 whether all means to avoid or minimize environmental harm from implementation of the
24 selected alternative have been adopted (40 CFR 1505.2).

2 **Project Description**

3 **2.1 Purpose and Need**

4 The purpose of the Proposed Action is to enable the City to continue to operate the Bull Run
5 water supply system on a long-term basis while complying with the ESA. The need for the
6 Proposed Action is to provide broader protection and conservation for listed, proposed, and
7 unlisted species than is available under Section 9 of the ESA while managing the Bull Run
8 water supply system on a long-term basis. The City's needs and goals are to 1) provide cost-
9 effective minimization and mitigation measures for incidental take; 2) ensure an adequate
10 long-term water supply at reasonable cost to ratepayers; 3) comply with state water quality
11 standards and total maximum daily load (TMDL) designations for the Bull Run River and
12 Sandy River Basin; and 4) to protect identified unlisted species the City believes could
13 become listed during the 50-year period of the Bull Run HCP.

14 **2.2 Specific Project Description**

15 The City has used the Bull Run Watershed for water supply since 1895. The City's water
16 system provides water to residents and businesses within the city limits of Portland,
17 Oregon, (retail supply) as well as to a number surrounding communities (wholesale
18 supply). Approximately 800,000 Oregonians receive all or part of their water supply from
19 the Bull Run Watershed. The Bull Run water supply system is the largest municipal water
20 supply system in the state.

21 The Bull Run River is a major tributary of the Sandy River; the Sandy River flows into the
22 Columbia River. This watershed plays a role in supporting the larger aquatic ecosystem of
23 the Sandy River Basin. Three key factors helped shaped the context for the City's decision to
24 develop an HCP: ESA species listings, Clean Water Act compliance, and water supply
25 reliability and affordability. Foremost were the listings of the anadromous fish and the
26 associated ESA regulatory requirements.

27 The City submitted an application to NMFS for an ITP in accordance with Section 10(a)(1)(B)
28 of the Federal ESA, as amended. The City is seeking this authorization so that activities
29 associated with implementing the Bull Run Water Supply HCP comply with the ESA, while
30 providing protection for species listed under the ESA.

31 Issuance of the ITP would be conditioned on implementation of the Bull Run Water Supply
32 HCP, which is designed to provide conservation benefits to the species for which incidental
33 take would be authorized. The City developed its Bull Run Water Supply HCP with
34 technical assistance from NMFS. The duration of the proposed ITP is 50 years.

35 Following is an expanded description of the facilities, species, and activities covered by the
36 proposed ITP and Bull Run Water Supply HCP and the associated protection measures to be
37 implemented by the City.

TABLE 1
Covered Species

Common Name	Scientific Name	Status*
Lower Columbia River Chinook Salmon (Spring and Fall)	<i>Oncorhynchus tshawytscha</i>	T
Lower Columbia River Steelhead	<i>Oncorhynchus mykiss</i>	T
Lower Columbia River Coho Salmon	<i>Oncorhynchus kisutch</i>	T
Columbia River Chum Salmon	<i>Oncorhynchus keta</i>	T
Pacific Eulachon	<i>Thaleichthys pacificus</i>	PT

*Status Codes: T = Threatened PT = Proposed Threatened

2.5 Covered Activities

2.5.1 Operation, Maintenance, and Repair of the Water System

Incidental take coverage would include all activities associated with the continued operation and maintenance of the water supply system as follows:

- Storage of water in reservoirs and regulation of reservoir surface elevations
- Diversion of water for water supply
- Alteration of flows downstream from the water supply dams and diversion
- Release of water from reservoirs into the Bull Run River
- Adjustment of water intake depth to regulate temperature, turbidity, and color
- Seasonal closure of gates at the Dam 1 spillway to store additional water
- Removal of debris (including logs) from the reservoirs
- Operation of boats and barges on reservoirs
- Delivery and storage of fuel and lubricants for water supply system vehicles and equipment
- Delivery and storage and use of chlorine gas for water supply disinfection
- Draining of water supply conduits
- General landscape maintenance
- Operation, maintenance, and repair of all covered facilities

2.5.2 Habitat Conservation, Research, and Monitoring Measures

Incidental take coverage would include all activities associated with the implementation of the habitat conservation measures, and the research and monitoring measures. Any additional habitat conservation measures and monitoring measures implemented as a part of adaptive management would also be covered.

1 Instream Flow Measures

2 The City developed a normal water year regime (Measure F-1) and a critical water year
3 regime (Measure F-2) to regulate the amount and timing of flow releases from Bull Run
4 Dam 2. Measure F-1 would be expected to occur 90 percent of the time, and Measure F-2
5 would be expected to occur 10 percent of the time, based on a 60-year record of flows in the
6 Bull Run River. Measure F-1 (Table 2) includes guaranteed minimum flow amounts and
7 other criteria to maintain flow levels for spawning, rearing, and migrating salmonids and
8 other aquatic species. Measure F-2 (Table 3) includes guaranteed minimum flows for critical
9 water year regimes. These flows are the same as normal water years except during periods
10 declared as "critical" based on spring conditions (affecting June flow requirements) and/or
11 fall conditions (affecting October through November flow requirements).

12 In addition to the flow releases, the City developed measures to protect against large
13 decreases in the river level that could trap small salmonids (Measure F-3) and maintain
14 natural instream flows in the Little Sandy River (Measure F-4). Because the Little Sandy is a
15 tributary to the Bull Run River, Little Sandy flows would contribute to increasing lower Bull
16 Run River flows. Measures F-1 through F-4 would be implemented in HCP years 1
17 through 50.

TABLE 2

Flow commitments under the Proposed Action for the Lower Bull Run River during normal water years, measured at USGS Gauge 14140000, RM 4.7

Time Period	Guaranteed Minimum Flow (cfs)*	Required Percent of Inflow (%)	Maximum Required Flow (cfs)
January 1 – May 31	120	Not applicable	Not applicable
June 1 – June 15	120	Not applicable	Not applicable
June 16 – June 30	Gradually decrease flows over 15 days from minimum of 120 cfs to a minimum of 35 cfs.		
July 1-September 30	Optimize use of cold water in the reservoirs. Vary flow from 20 cfs to 40 cfs to manage downstream water temperature based on weather conditions. Average summer flow expected to be 35 cfs.		
October 1 – October 15	70	50	400
October 16 – October 31	70	50	400
November 1 – November 15	150	40	400
November 16 – November 30	150	40	400
December 1 – December 31	120	Not applicable	Not applicable

*cubic feet per second

1 **Instream and Riparian Habitat Measures**

2 The City developed conservation measures for gravel augmentation, fish passage, and
3 riparian forest protection in or along the lower Bull Run River.

- 4 • The Bull Run reservoirs trap bedload and sediment, thereby reducing gravel input to the
5 lower river. Implementation of Measure H-1 of the HCP would replenish spawning
6 gravel to mimic natural supply and accumulation. Measure H-1 would be implemented
7 in HCP years 1 through 50.
- 8 • Walker Creek is the only tributary to the lower Bull Run River where a City culvert has
9 blocked fish passage. Implementation of Measure P-1 would provide volitional fish
10 passage into Walker Creek within the first 5 years of the HCP. Measure P-1 would be
11 implemented in HCP years 1 through 5.
- 12 • City-owned lands along the lower Bull Run River remain capable of providing riparian
13 habitat at a level comparable to unmanaged later-seral forest. In accordance with
14 Measure H-2, the City would continue managing these lands to maintain and improve
15 their condition for the duration of the Bull Run HCP. Measure H-2 would be
16 implemented in HCP years 1 through 50.

17 **2.6.2 Bull Run Reservoir Habitat Conservation Measures**

18 Three habitat conservation measures would improve habitat conditions in Bull Run
19 Reservoir 2. Measure R-1 includes specific operating criteria to avoid or minimize mortality
20 of cutthroat and rainbow trout. Measure R-2 includes removing cutthroat trout from the
21 Dam 2 spillway approach canal to prevent mortality caused by temperature. Measure R-3
22 includes removing reed canarygrass from three areas along the north bank of the upper end
23 of Bull Run Reservoir 1 to improve habitat for amphibians. This area occurs on Mt. Hood
24 National Forest Lands. Measures R-1 through R-3 would be implemented in HCP years
25 1 to 50.

26 **2.6.3 Water System Operations and Maintenance Conservation Measures**

27 Implementation of two conservation measures would address potential impacts associated
28 with operation and maintenance (O&M) of the water supply system: Bull Run Infrastructure
29 Operations and Maintenance (O&M-1) and Bull Run Spill Prevention (O&M-2). Under
30 conservation measure O&M-1, paint and debris would be prevented from falling in the river
31 during bridge and conduit maintenance at all active stream crossings (other than the
32 mainstem Sandy River); erosion would be avoided or minimized during repair and
33 maintenance of all water supply infrastructure; and water drained from conduits would be
34 dechlorinated before it is discharged to a waterway. In addition, under Measure O&M-1, the
35 City would remove trees in riparian areas if they threaten City facilities or pose a significant
36 health risk to human safety (the City would plant replacement trees if trees of greater than
37 12 inches diameter at breast height are removed). Under conservation measure O&M-2, the
38 City would implement a series of measures to avoid or minimize spill effects at the
39 Headworks facility below Bull Run Dam 2 and at the Sandy River Station, a 5.5-acre
40 maintenance facility located next to the mainstem Sandy River. The City would implement
41 Measures O&M-1 and O&M-2 in HCP years 1 to 50.

1 **2.6.8 Changed Circumstances**

2 Chapter 10 of the Bull Run Water Supply HCP contains provisions for changed
3 circumstances – conditions that substantially change during the permit term that might
4 warrant changes in the conservation strategy. It is expected that, with implementation of the
5 response measures, incidental take coverage would continue to be provided for the covered
6 activities.

7 NMFS might list additional species as threatened or endangered under the ESA, delist
8 species that are currently listed, or declare a listed species extinct. If one of these changed
9 circumstances occurs, the City would take various response actions leading to the addition
10 of species and conservation measures to the HCP, or deletion of species and conservation
11 measures from the HCP. The City and NMFS would enter into good faith discussions to
12 develop the appropriate response actions.

1 SECTION 3

2 **Alternatives**

3 NMFS analyzed three alternatives in the EIS, including one no action alternative and two
4 action alternatives. The alternatives included the following: 1) Alternative 1 (No Action
5 Alternative); 2) Alternative 2 (Proposed Action – Issuance of Incidental Take Permit and
6 Implementation of the Bull Run Water Supply HCP); and 3) Alternative 3 (Fish Passage).
7 Following is a brief description of the three alternatives that were analyzed in detail.

8 **3.1 Alternative 1: No Action Alternative**

9 Under the No Action Alternative, NMFS would not issue authorization for the incidental
10 take of ESA-listed species to the City for the Bull Run Water Supply HCP. However, the
11 City would comply with the TMDL. The City would operate the Bull Run water supply
12 system as described in the following subsections.

13 **3.1.1 Flow**

14 Flow management under the No Action Alternative is intended to facilitate implementation
15 of the temperature standards. The flow requirements are summarized in Table 4.

TABLE 4

Flow commitments under the No Action Alternative for the Lower Bull Run River during all water year types
(measured at USGS Gauge 14140000, RM 4.7)

Time Period	Guaranteed Minimum Flow (cfs)*	Required Percent of Inflow (%)	Maximum Required Flow (cfs)
January 1 – May 31	None	Not applicable	Not applicable
June 1 – June 15	None	Not applicable	Not applicable
June 16 – June 30	Optimize use of cold water in the reservoirs. Vary flow from 20 cfs to 40 cfs to manage downstream water temperature based on weather conditions. Average summer flow expected to be 35 cfs.		
July 1-September 30	Optimize use of cold water in the reservoirs. Vary flow from 20 cfs to 40 cfs to manage downstream water temperature based on weather conditions. Average summer flow expected to be 35 cfs.		
October 1 – October 15	Varies 30 to 70 cfs, depending if it is a normal or critical flow year		
October 16 – October 31	Varies 30 to 70 cfs, depending if it is a normal or critical flow year		
November 1 – November 15	None	Not applicable	Not applicable
November 16 – November 30	None	Not applicable	Not applicable
December 1 – December 31	None	Not applicable	Not applicable

*cubic feet per second

1 back into the river downstream of Bull Run Dam 2. The City also would install a
2 downstream fish passage facility at Dam 2. This facility would be similar to the Dam 1
3 facility described above.

4 **3.4 Alternatives Not Considered in Detail**

5 The process of developing a reasonable range of alternatives generated a broad range of
6 ideas for meeting the purpose and need for this project. During the scoping process for the
7 EIS, three other alternatives were considered but eliminated from further analysis as
8 independent alternatives because they did not meet the purpose and need identified for the
9 project. These alternatives are briefly described in the following subsections, including the
10 reasons they were eliminated from further consideration.

11 **3.4.1 Bull Run Groundwater**

12 This concept included developing a groundwater supply below the Headworks facility at
13 Dam 2, and discharging the pumped groundwater into the Bull Run River in the summer
14 months to lower water temperatures. The Portland Utility Review Board proposed this
15 concept in their July 11, 2006 scoping comments. The Portland Utility Review Board's
16 concept was studied in detail in the Bull Run Groundwater-based Alternative Technical
17 Memorandum. Based on the evaluation, the groundwater concept was not carried forward
18 in the EIS. Groundwater temperatures are not sufficiently cold to achieve the required river
19 temperatures. Groundwater at approximately 55.4 to 57.2°F (13 to 14°C) would create river
20 temperatures above the required conditions at the measurement point (Larson's Bridge)
21 under most conditions (approximately 75 percent of the time). Therefore, this alternative
22 was not carried forward because it did not meet the purpose and need of the project.
23 Specifically, this alternative would not comply with state water quality standards and
24 TMDL designations for the Bull Run River and Sandy River Basin.

25 **3.4.2 Dam Removal**

26 Access to habitat above the dams could be provided by removal of Bull Run Dams 1 and 2.
27 This alternative would require demolition of the two dams, as well as programs to manage
28 sediment and construction debris. Extensive habitat restoration to recreate the prior riparian
29 and instream habitat values in the reservoir areas would also be included. This concept was
30 not carried forward for detailed evaluation because of the limited benefit for fish and the
31 requirement to develop alternative water sources to provide public water supply. This
32 would be contrary to the purpose and need of ensuring an adequate long-term water
33 supply.

34 **3.4.3 Fish Ladders**

35 Access to habitat above the two Bull Run dams could potentially be achieved through the
36 installation of fish ladders, which would provide volitional passage for upstream migrating
37 adult fish. However, it is anticipated that fish ladders would be much less effective than the
38 trap-and-haul concept proposed in Alternative 3, Fish Passage Alternative. This assessment
39 is attributed to the height of the existing dams, the large fluctuations in the reservoir forebay
40 water surface elevations, and water quality concerns.

1 SECTION 4

2 **Public Involvement**

3 NMFS published a Notice of Intent (NOI) in the *Federal Register* on March 27, 2006 (Vol. 71,
4 No. 58) to solicit participation of responsible and coordinating federal, state, and local
5 agencies and of the public in determining the scope of this EIS. Publication of the NOI
6 initiated the process of public scoping for this EIS. NMFS held two public scoping meetings
7 in June 2006, in the City of Portland, to solicit input on the potential topics to be addressed
8 in this EIS, the range of project alternatives, and possible mitigation measures. Prior to these
9 two scoping meetings, the City distributed a news release to local news agencies describing
10 when and where each scoping meeting would be held. Notice was also posted on the City
11 web site and the NMFS website. In addition, NMFS mailed an interested-parties letter to
12 individuals or agencies that were identified as possible stakeholders, including local tribal
13 leaders and environmental groups. The scoping process revealed several key items of
14 concern to the interested parties who provided comments. The scoping process is
15 documented in the NMFS Scoping Report for this project, which is included as part of the
16 administrative record.

17 NMFS published the Notice of Availability (NOA) for the Draft Environmental Impact
18 Statement (DEIS) in the *Federal Register* on March 21, 2008, (Vol. 73, No. 56) and again on
19 April 11, 2008, (Vol. 73, No. 71). The City issued a news release on April 21, 2008. Public
20 meetings were held on April 28 and 29, 2008, to allow for public comments on the DEIS. The
21 DEIS public comment period closed May 26, 2008. During the comment period, 14 comment
22 letters were received from federal and local agencies, environmental organizations, and the
23 general public. Primary issues raised in the comments related to the Bull Run Water Supply
24 HCP. NMFS responded to comments on the DEIS and the Bull Run HCP in Appendix E of
25 the FEIS.

26 The FEIS and Final Bull Run Water Supply HCP were subsequently produced, and they
27 were made available for a 30-day public review period announced in the *Federal Register* on
28 January 23, 2009 (Vol. 74, No. 14). During the review period, one comment letter was
29 received and is included as Appendix A of this ROD. A review of the comment letter
30 revealed that the issues had already been described in the DEIS or had been raised in public
31 comments on the DEIS and Draft Bull Run Water Supply HCP. As such, they were
32 addressed in the preparation of the FEIS and Final HCP.

2 **Decision, Rationale, and Conditions**

3 **5.1 Decision and Rationale**

4 NMFS' decision is to issue an ITP to the City and to sign an Implementation Agreement based
5 on implementation of the City's Bull Run Water Supply HCP (Alternative 2). Issuance of the
6 ITP to the City authorizes the incidental take of the covered species listed in Subsection 2.4,
7 Covered Species. One species (Pacific eulachon) not currently listed under the ESA will be
8 included in the ITP and permit coverage will become effective in the event that the species
9 becomes listed as threatened or endangered under the ESA during the 50-year permit,
10 pursuant to NMFS' No Surprises Rule (50 CFR Parts 17 and 22).

11 NMFS is authorized to issue permits authorizing incidental take of federally-listed species
12 under Section 10 of the ESA. The applicant for such a permit must submit a conservation
13 plan in accordance with Section 10(a)(2)(A) of the ESA. NMFS issues the permit if it finds
14 the permit application and conservation plan satisfy requirements of Section 10(a)(2)(B) of
15 the ESA. NMFS has concluded in its Section 10(a)(2)(B) Statement of Findings and its Section
16 7(a)(2) Biological Opinion, all of which are incorporated here by reference, that the City's
17 Bull Run Water Supply HCP meets the criteria for permit issuance in accordance with
18 Section 10(a)(2)(B) of the ESA. In making this decision, NMFS has also considered its trust
19 responsibilities to Native American Tribes and has concluded that issuance of the permit is
20 consistent with its trust responsibilities.

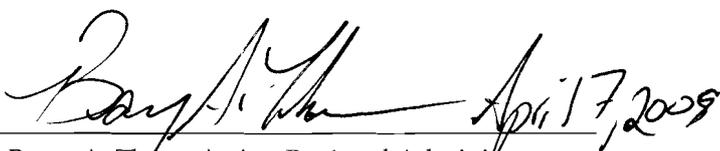
21 **5.2 Environmentally Preferred Alternative**

22 The environmentally preferred alternative (40 CFR 1505.2[b]) is that which promotes the
23 national environmental policy as expressed in Section 101 of NEPA. This is often
24 characterized as the alternative that causes the least damage to the physical and biological
25 environment and is the alternative that best protects, preserves, and enhances historic,
26 cultural, and natural resources. The proposed HCP and other alternatives have been
27 described and evaluated in the FEIS. Based upon the review of the alternatives and their
28 environmental consequences described in the FEIS as required under NEPA, and
29 satisfaction of requirements under the ESA, NMFS has decided to issue an ITP for the City's
30 Bull Run water supply and to adopt Alternative 2, Proposed Action, as the environmentally
31 preferred alternative. In this case, the Proposed Action is considered the environmentally
32 preferred alternative because implementation of the Bull Run HCP will provide greater
33 environmental protection and the greatest degree of improvement in habitat conditions in
34 relation to what is expected to occur over time under the No-action Alternative or the Fish
35 Passage Alternative (Alternative 3).

1 SECTION 6

2 **Signatures**

3

4 
Barry A. Thom, Acting Regional Administrator
Northwest Region
National Marine Fisheries Service

5

Appendix A
Public Comment Pertaining to the HCP and EIS

\$40 million is a lot to pay for CSSW drinking water that is radioactive and toxically contaminated with industrial pollutants. We have viable alternatives. The Bull Run environmentally sustainable artesian wells can supply cool, pure, water to meet our drinking water and fish needs.

Factors that negatively influence fish recovery in Bull Run River:

- Observed intense water discharge spikes in the Bull Run River water flow during fall / winter, scouring out river bed gravel as demonstrated by HCP need for yearly addition of river bed gravel.(6)(7). (See Figures 1 and 2).
- Oregon Department Environmental Quality temperature goal of Bull Run River at 16C v. Portland Water Bureau goal of ~21C (1)(2)
- Figure 4 right side graph depicts best-case scenario for Bull Run reservoir temperature influence because of the unusually deep snow pack. This supplied Bull Run River the coolest water temperature influence throughout summer. Snow pack was still visible in the Bull Run watershed in mid September with full reservoirs. Consistent coldest Bull Run reservoir water at lowest water intake still could not supply Bull Run River water that would not exceed ODEQ temperature standards. Artesian well water would add cooling effect.
- Embryonic and developmental sensitivities exist. Disturbing and jostling at fish egg incubation and alevin stages can be lethal: both stages are confined to gravel for several months. (8)(9)(10)(11) Against intense Bull Run water discharge forces there is little expectation they would be able to forage for food, and find a suitable nursery/rearing habitat. Additionally there would be little expectation their aquatic food would also be available/ able to withstand such river water current challenges of up to 13 billion gallons/day.(12)
- Bull Run River water chemistry has dramatically changed with the decommissioning of Marmot Dam. The unique chemistry of Sandy River water that was discharged through Roslyn Lake into Bull Run River has been removed, adding confusion to the imprinted fish. The fish will now stay in the Sandy River system following the “smell” of their imprinted spawning habitat.

Sincerely,
Scott Fernandez M.Sc. Biology
Portland



USGS 14140000 BULL RUN RIVER NEAR BULL RUN (RIVER ONLY), OR

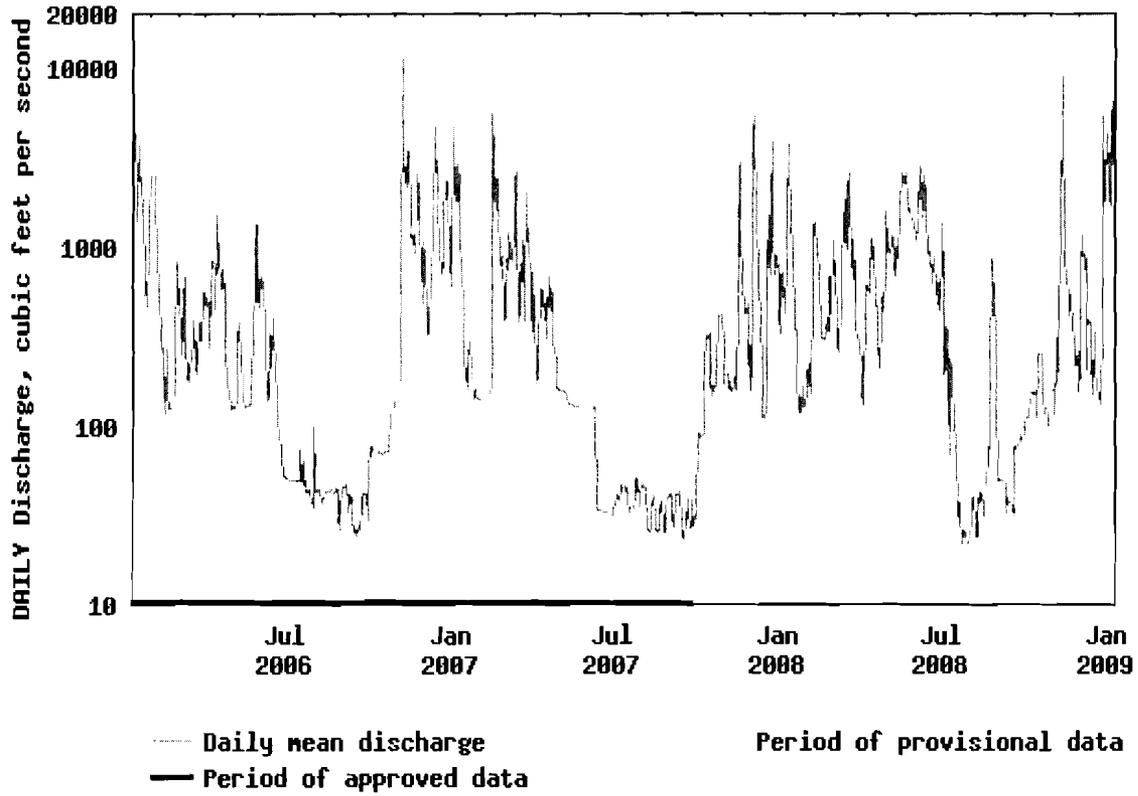


Figure 2 - Historical spikes in water discharge in November 2006 -2008, scouring gravel that endangers salmon egg incubation and alevin development.



USGS 14140020 BULL RUN R AT LARSON'S BRIDGE, NEAR BULL RUN, OR

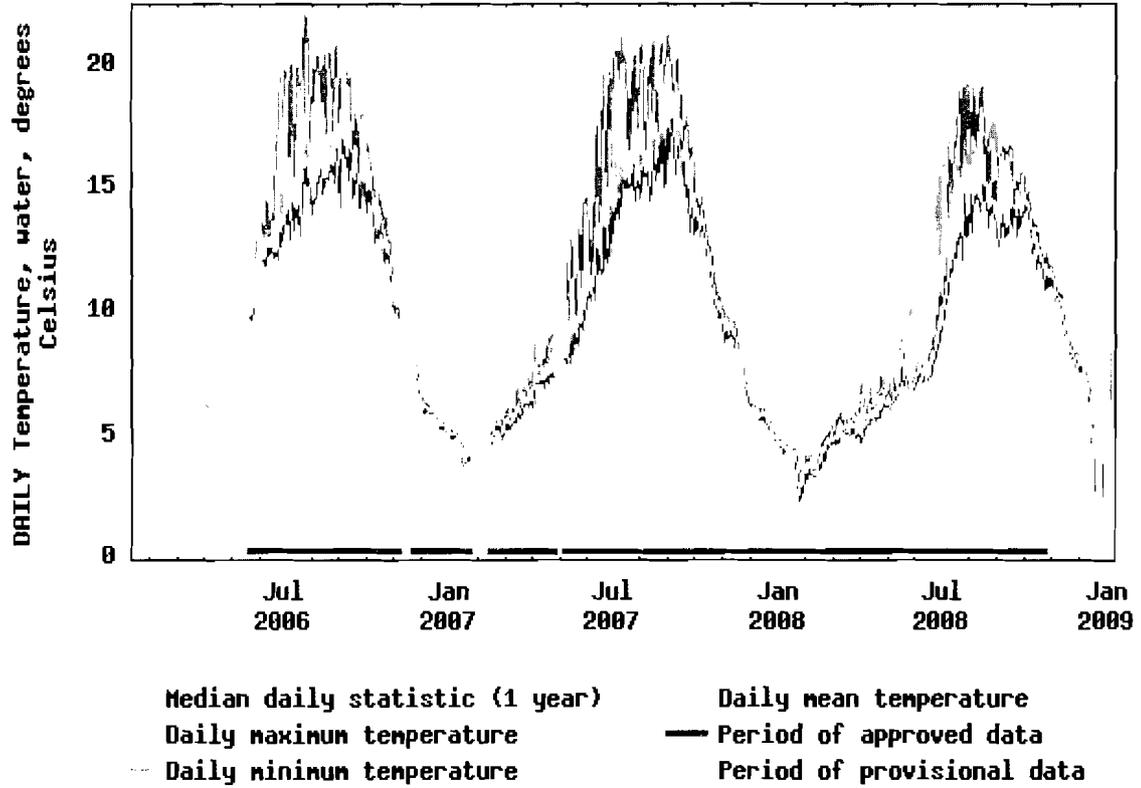


Figure 4 - 2006-2009 water temperatures, artesian well's 13C temperature provides cooling effect.