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October 2, 2018

### **DECISION MEMORANDUM**

**TO:** Council members

**FROM:** Mark Fritsch, project implementation manager

**SUBJECT:** Decision on the Asset Management Strategic Plan.

**PROPOSED ACTION:** The Fish and Wildlife Committee recommends that the Council support the implementation of the Asset Management Strategic Plan (Plan). With this recommendation, the Fish and Wildlife Committee requests that the Asset Management Committee address the following.

- Provide annual updates to the Council on accomplishments
- Prior to 2021 confirm the implementation of the Plan.
- Work with the region to look into establishing an endowment fund to support the Plan

**SIGNIFICANCE:** Part of the 2014 Fish and Wildlife Program implementation, investment strategy (Part Six; Section II, and Appendix P). Within this strategy long-term maintenance of past investments was prioritized as the highest Program priority.

### **BUDGETARY/ECONOMIC IMPACTS**

As proposed funds for implementation will be secured from the Budget Oversight Group (BOG) placeholder starting in FY 2021 at \$250,000, and through securing cost savings from Program projects that have decreased expenditures (former Cost Savings Workgroup efforts) at \$250,000. This fund of \$500,000 will be defined as the Asset Management placeholder and will be incorporated into Bonneville's annual budgeting process.

## **BACKGROUND**

Since the adoption of the 2014 F&W Program in October 2014, the Council staff (State and Central) has been working with Bonneville staff, Asset Management Subcommittee, Independent Economic Analysis Board (IEAB), Fish Screening Oversight Committee (FSOC), Fish and Wildlife managers, Cost Savings Workgroup, and independent contractors to develop a strategic plan to ensure the longevity and integrity of the Programs past investments.

Hatchery site visits and assessments were completed in 2017 for the Programs 14 hatcheries by HDR, McMillen and Bonneville engineers.

Mission critical elements identified during the hatchery site visits and assessments for the Program hatcheries were successfully addressed in early 2017 and were addressed either through the cost savings and Accord funds

On August 15, 2017 the Fish and Wildlife Committee endorsed the recommendation of the O&M Sub-committee of \$486,965 in cost savings funds for Fiscal Year 2018 to address essential maintenance and improvement needs for hatcheries and priority non-recurring maintenance needs associated with the Program's fish screens.

On March 14, 2018 the Council supported the recommendations of the O&M Subcommittee and Fish and Wildlife Committee for non-routine maintenance for fish screens and hatcheries in FY2019 and FY2020 at \$589,386 and \$497,475, respectively, with cost savings funds.

The Asset Management Subcommittee met on August 13<sup>th</sup> and supported the outline of the Asset Management Strategic Plan (Plan) and the proposed funding approach to address non-recurring maintenance needs to ensure the longevity and integrity of the Programs past investments. On August 14<sup>th</sup> the funding approach (i.e., BOG and Cost Savings) was taken to the Fish and Wildlife Committee for support. Based on this direction the full plan was taken and presented to the Fish and Wildlife Committee on September 11<sup>th</sup>.

On September 11<sup>th</sup> the Plan (see Attachment) was presented to the Fish and Wildlife Committee. Based on the presentation and discussion the following suggestions were raised. The need to confirm the approach and see how implementation has proceeded over the next two years and confirm how the Plan has transitioned to implementation prior to 2021 actions. In addition, an annual update to the Council on accomplishments to date would be beneficial. Though the funding option was defined and supported the Committee would like to establish discussions with Bonneville to explore the development of an endowment fund that could be used to fund the Plan. Based on the presentation the Fish and Wildlife Committee supported the Plan being brought to the Council based on these additional items.

# Asset Management Strategic Plan

## Maintenance for Hatcheries, Screens and Wildlife Lands Columbia River Basin Fish and Wildlife Program

(Draft – September 5, 2018)

### Introduction

Since the adoption of the 2014 Columbia River Basin Fish and Wildlife Program (Program) the Council and the Bonneville Power Administration have been working with the Asset Management Subcommittee (Subcommittee) to (1) implement annual funding commitments for priority maintenance needs, which have now been identified and funded using cost savings (through Fiscal Year 2020) and, (2) develop a long-term Asset Management Strategic Plan (Plan) to address non-recurring<sup>1</sup> maintenance needs. Through this Plan, the goal is to ensure the longevity and integrity of the Program's past investments made for the benefit of fish and wildlife<sup>2</sup>.

This Plan is intended to define and provide a strategy to achieve a long-term maintenance, rehabilitation, and replacement system for Program investments associated with hatcheries, fish screens, and lands. This includes developing a prioritized assessment for non-recurring maintenance and securing a monetary mechanism for implementation. The three categories capture the core components of the Program's mitigation and are critical aspects to the success of much of what the Program has accomplished over the past 37 years.

The Plan is also complementary to the strategic asset management program currently being developed by Bonneville for its assets. The plan is being designed in a phased approach consistent with Bonneville's asset management strategy.

- Phase 1: Asset Inventory
  - Shared understanding of definitions (O&M, non-recurring maintenance, etc.)
  - Standardized data
  - Clarity on roles and responsibilities
- Phase 2: Condition Assessment
  - Safety – compliance – condition
- Phase 3: Prioritization
  - Program criticality and condition

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<sup>1</sup> Any maintenance that isn't performed at pre-determined intervals and is not addressed through annual operation budgets.

<sup>2</sup> As part of the 2014 Fish and Wildlife Program implementation, an investment strategy is outlined (Part Six; Section II, and Appendix P). Within this strategy long-term maintenance of past investments was the highest Program priority.

- Phase 4: Strategic Planning
  - Planning – funding – transition

In early 2015 the Council tasked the Independent Economic Analysis Board (IEAB) to explore approaches to improve planning for long-term infrastructure maintenance costs of the Program's investments. The IEAB advised the Council about how to ensure long term stability during the process of proposing, approving, funding, and reviewing fish and wildlife projects. In addition, the review described how to estimate likely future operations and maintenance (O&M) costs beyond the few years needed for operations, maintenance, repairs, and equipment replacement required to prevent loss of Program benefits ([IEAB document 2015-1](#)).

## **Background, Description of Categories, and Work to Date**

### Asset Management Subcommittee

In late 2014 and early 2015 the Council convened this work group to assist in the development of a long-term plan for protecting fish and wildlife investments. The Council and Bonneville have found the [Subcommittee](#) to be a beneficial workgroup through numerous meetings and updates to the Council's Fish and Wildlife Committee and full Council in the guidance and development of the long-term planning efforts to date.

It is anticipated that the subcommittee will continue to meet to provide oversight, accountability and to track implementation of the Plan. In addition, the subcommittee can ensure that Council and Bonneville staff incorporate new facilities, modifications to existing facilities and any anticipated decommissioning (i.e., hatchery structures and screens) costs that may arise through time, as well as keep the appropriate mapping tool websites updated.

### Guiding issues and principles

As the Subcommittee initiated activities in the development of the Plan, the following issues were identified and incorporated.

- The importance of regular maintenance
- Public and fish and wildlife manager review
- Link to the Principles of the Program
- New facilities will need to be incorporated into the long-term strategic plan
- The inherent overlap with the principles embedded in the cost saving and adaptive management sections of the Fish and Wildlife Program
- Incorporation of decommissioning costs as part of the long-term plan
- Need to identify the party or parties responsible for long term asset management

- Legal discussion/obligation for Bonneville to pay for the needs identified and the Importance to initiate shifting the responsibility if appropriate.

### Annual O&M budget

To capture all needs for the Program's past investments it is important to ensure that the projects associated with the three categories (hatcheries, screens and lands) continue to receive adequate annual budgets to cover annual O&M costs. These O&M budgets need to be protected and remain a Council Program priority. Annual maintenance is important to avoid emergency needs in the future.

### Categories

#### *Hatcheries*

Council and Bonneville staff inventoried (Phase I) a list of artificial production projects in the Program including all sites and facilities associated with specific Program hatcheries. The assessment (Phase II) focused on facility/programs that are brick and mortar facilities built with Program funding. Of the 42 projects listed, 14 existing facility/programs<sup>3</sup> (involving 24 projects) are currently considered "Program Hatcheries" for the Plan. There are seven existing facility/programs (involving seven projects) that do not warrant an assessment because there are no capital expenditures associated with these assets under the Program. In addition, there are eight proposals (involving 11 projects) for new facility/programs that are in step review and will need to be tracked and incorporated at the appropriate time into the Plan (Table 1).

Hatchery site visits associated with the assessments (Phase II) were initiated in June of 2016 by HDR Inc., McMillen Jacobs Associates and Bonneville engineers and completed in January 2017<sup>4</sup>. Finalized reports from the engineering firms are posted on the Council's [artificial production resource map web-site](#).

Phase III work to date relating to hatcheries is reflected in Table 2, with estimated costs for 2017 through 2020. This information will be updated annually in accordance with the timelines and processes outlined in this Plan.

#### *Fish Screens*

Council and Bonneville staff have been working with the sponsors and managers and the Fish Screening Oversight Committee (FSOC) over the past five years in the development of a screens inventory (Phase I) and assessment (Phase II). The Phase I inventory received in 2015, from FSOC, was cross checked and confirmed by Bonneville through the Program projects' inventory and includes a prioritization of the structures needing repairs and/or non-recurring maintenance.

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<sup>3</sup> Note that there are four existing facility/programs that are in step review for increased production.

<sup>4</sup> Two hatcheries (i.e., Lyle & Castile and Sekokini) assessments were completed in May of 2018 by HDR.

The current inventory of the Program's 1,041 screens (involving 18 projects with 13 sponsors) is posted on the Council's [fish screens resource map web-site](#).

To better understand non-recurring screen maintenance needs, roles and responsibilities, and possible future impacts associated with new screen criteria, staff developed a Fish Screen Asset Management and Strategic Planning template to solicit additional feedback and detail regarding the priorities of the fish screen managers. Currently, Bonneville is using these templates to create Memorandums of Agreement (MOAs) with the larger screen-operating entities to help plan for the asset management strategy for the Program's fish screens. These MOAs will specifically address needs as identified and confirmed through the Plan. Currently of the 1,041 screens in the Program, seven projects encompass 946 screens (implemented by IDFG, WDFW, ODFW and CCT<sup>5</sup>) and the remaining 95 screens (as part of 11 projects) will be part of the annual process as outlined in this Plan and will be guided by future project reviews.

Phase III work to date relating to screens is reflected in Table 3, with estimated costs for 2017 through 2020. This information will be updated annually in accordance with the timelines and processes outlined in this Plan.

#### *Wildlife Lands*

In contrast to the other asset categories, lands are not affected by "age" as typically applied to structural assets. Nevertheless, the Council and Bonneville need assurance that the protected lands, and necessary structures and equipment will continue to provide quality habitat for fish and wildlife to meet mitigation obligations. The annual operations and maintenance budgets are critical to ensure protection of the integrity of the lands.

Bonneville is currently assessing the lands and the existing structures and associated equipment. The assessment uses remote sensing analysis to monitor the current condition of the lands (and their conservation easements) in the inventory. Bonneville should complete the assessment by the end of calendar year 2018. Bonneville's work will confirm the base inventory (Phase I) and assessment (Phase II) for the Plan. Currently, annual budgets provide for restoration and maintenance activities after acquisition to enhance and maintain conservation values. Some properties are subject to long-term stewardship agreements and others are not.

Based on Bonneville's findings, additional detail will be provided to address possible non-recurring maintenance needs. Expectations are that the [Budget Oversight Group](#) (BOG) process will be the primary tool to be used to address non-recurring needs associated with the wildlife lands (e.g., natural events, emergencies and miscellaneous needs) that are not part of stewardship or settlement funds and/or annual maintenance budgets.

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<sup>5</sup> Colville Confederated Tribes

The current inventory of the Program's 240 wildlife lands (involving 16 sponsors) is posted on the Council's [lands resource map web-site](#).

## **Asset Management Strategic Plan, Non-recurring Maintenance Framework for the Fish and Wildlife Program**

### Hatcheries and Screens

#### *Annual Process and Timelines*

Hatchery and screen needs associated with non-recurring maintenance will be updated, tracked and confirmed on an annual basis through the managers, sponsors and the Subcommittee. This will allow the region to match needs to funding that is available for the fiscal year. In addition, this exercise will also identify elements or facilities that are of substantial cost to ensure there is adequate planning and budgeting (e.g., engineering design and procurement) for implementation. These efforts will be guided by the assessments for hatcheries, and priority needs and MOA's for screens. Bonneville and Council staff will reconfirm these priorities and determine the proposed actions, with managers/sponsors, for the next fiscal year work season.

The following annual process is intended to direct needs for the screen and hatchery categories to ensure funds can be directed to the project(s) to inform their upcoming start-of-year budget(s) (See Attachment 1).

- January - The Subcommittee will request priorities from sponsors, and managers based on assessments and priority needs for hatcheries and MOA's for screens.
- February to April - The Subcommittee, with assistance from the Bonneville and Council staff, will review priorities received and conduct the following: review relationship and capacity to annual project and/or portfolio budgets; confirm total costs, determine if permitting and environmental review is needed.
- April - Subcommittee discussion and confirmation of priorities to be recommended for implementation, based on available funds.
- May - Fish and Wildlife Committee discussion and recommendation to Council.
- June - Council decision and recommendation to Bonneville.

#### *Five-year Assessments (Hatcheries)*

At five-year intervals assessments will be conducted by an independent engineering firm to confirm and update major assets for the Program's hatcheries<sup>6</sup>. It is anticipated that the future assessments will use and amend the initial reviews in an effective manner (e.g., teleconference) and that site visits will occur only if needed (e.g., new facility). In this way it is hoped that costs, associated with the condition assessments, will be reduced and included as part of the funds associated with the implementation of the Plan.

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<sup>6</sup> The initial hatchery assessments were completed in 2017, it is anticipated that the next will be in 2022

### *5-year Assessments (Fish Screens)*

At five-year intervals Council and Bonneville staff, with the sponsors and managers, will re-assess and update their fish screen inventories to ensure the lists are up-to-date (e.g., add or remove screens, and re-prioritize needs). This assessment will be coordinated through FSOC and guided by the appropriate MOA and project reviews.

### Wildlife lands

Due to the unique aspects of lands and the lack of structural assets, lands will be evaluated on a five-year cycle to verify that they are being managed as required by the applicable agreements (i.e., MOA, contracts, easements, stewardship agreements, and management plans). Verification will be conducted by Bonneville by remote sensing and on-site inspections in coordination with the property manager to provide comprehensive and regular reporting on the condition of the lands. Under the Council's Program Bonneville is encouraged to develop stewardship agreements to provide certainty and sustainable levels of funding for future needs.

### **Funding**

It is critical that annual operation and maintenance budgets for the wildlife, screen, and hatchery projects in the Program receive an appropriate level of funding to ensure that annual budgeting exercises that may occur through portfolio budget adjustments preserve operations and recurring maintenance activities. This is important because non-recurring needs for the three categories could easily exceed available funds, as demonstrated in Attachment 2. For example, the Program hatchery category's non-recurring replacement cost is estimated up to \$1,256,864 annually over 10 years (See Attachment 2). These average costs reflect the item cost and do not include costs associated with installation. The costs are based on an estimated life expectancy – which serves as a guide for replacement costs and an approximate timeframe for planning purposes.

To get a jump start in addressing the high priority non-recurring needs, as the Plan was developed the Council provided support for initial actions<sup>7</sup> based on input received from the managers, for screens and hatcheries in FY2017 through 2020 (See Table 2 and Table 3 for past actions).

To address non-recurring maintenance for hatcheries and screens beyond 2020, approximately \$500,000 will be needed annually. Additionally, a mechanism is needed to provide the region the ability to address elements/facilities that exceed the annual amount reserved for the Plan. It is proposed that funds be secured from the Budget Oversight Group (BOG) starting in FY 2021 (\$250,000) and through securing cost savings from Program projects (\$250,000) that have decreased expenditures (former

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<sup>7</sup> Funds for the actions were derived from cost saving from existing projects that had decreasing expenditures or were closing out.

Cost Savings Workgroup efforts). This fund will be defined as the Asset Management placeholder and will be incorporated into Bonneville's budgeting process.

Even with annual and five-year assessments, there will be times when the maintenance needs will exceed the Asset Management placeholder. Based on this understanding, when the verified needs exceed the annual amount of the placeholder, the following options and tools could be used to address these elements/facilities.

- Capitalize the investments where possible - combine costs associated with non-recurring elements at a site so that they exceed the \$1M threshold and therefore could be capitalized. This might be especially useful at the larger more complex hatcheries in the Program. Capital can be credited, and therefore would not affect the annual expense budget placeholder. Application of this option is dependent on interpretation of Bonneville's capitalization policies.
- BOG – In addition to its current function, utilize the BOG and its budget placeholder to supplement the Asset Management needs toward the end of each fiscal year (e.g., Q3 and Q4). This option would use the emergency/urgent BOG pathway to address asset management needs that are shovel ready so that the transaction can occur in a timely manner.
- Develop Memorandums of Agreement (MOA) or Memorandums of Understanding (MOU) to specifically address needs of the category as identified and confirmed through the Plan. This option may provide additional flexibility to the manager/sponsor to address costly priority needs. This is currently the direction that the larger screen projects (i.e. IDFG, WDFW, ODFW and CCT) and certain Program hatcheries (e.g., Spokane Tribal Hatchery) are utilizing.
- Encourage project sponsors to work with Bonneville to identify funding options and terms, under unique and narrow circumstances, that would not be considered as part of standard O&M contracting, such as financial assistance or grants. Such options would only be considered within the context of O&M budget execution, maintenance history, sponsor performance, etc.

#### Budget Oversight Group (BOG)

BOG will continue to be used to address emergencies and miscellaneous needs for the Fish and Wildlife Program's projects, especially for wildlife lands that are core elements of the Program's past investments.

In addition, the BOG can be used if critical corrections are needed to the annual or five-year assessments for screens and hatcheries, respectively (please see funding discussion above), but more importantly to address elements or sites that incur emergency/urgent needs outside these assessments. An independent review may be needed if this type of request is presented to the BOG.

**Table 1: List of artificial production projects in the Program including all sites and facilities associated with specific Program hatcheries**

The following table was developed for the Asset Management Strategic Plan (Plan) to reflect the inventory of programs associated with artificial production in the Fish and Wildlife Program (Program). The assessment identified the facilities/program and associated projects that were constructed through the Program and other hatchery programs that were supported but are dependent on facilities that were not constructed with Program funds. The facilities/programs being addressed in the assessment associated with the Plan are bricks and mortar capital type investments, not the associated facilities/programs that were provided non-capital support for the artificial production (i.e., non-Program hatcheries).

Of the 42 projects listed, 14 existing facility/programs<sup>8</sup> (involving 24 projects) are currently considered “Program Hatcheries” for the Plan (shaded boxes in the following table). There are seven existing facility/programs (involving seven projects) that do not warrant an assessment due to the lack of capital investment by the Program. In addition, eight proposals (involving 11 projects) are for new facility/programs and are in step review that will need to be tracked and incorporated at the appropriate time into the Plan.

| Direct F&W Program (capital investment)                       |             |                       |   | Associated Facilities (non-Program) and Comments   |
|---|-------------|-----------------------|---|--|
| Facility/Program  | Project #   | Assessment            | Facilities  |  |
| Nez Perce Tribal Hatchery                                     | 1983-350-00 | X                     | 2 rearing sites (NPTH and Sweetwater Springs) and 5 acclimation sites (Cedar Flats, Luke’s Gulch, North Lapwai Valley, Newsome Creek, and Yoosa Creek)  |  |
| Colville Hatchery   | 1985-038-00 | X                     | Colville Tribal hatchery  | Project #2008-117-00 (Rufus Woods net pens) is being combined with #1985-038-00  |
|   | 2008-117-00 |                       |   |  |
| Hood River Production   | 1988-053-07 | X, and in Step review | 2 rearing sites (Parkdale Fish Hatchery and Moving Falls Fish Facility)   | MOU with Oak Springs Hatchery (ODFW), Pelton Ladder and Round Butte Hatchery (PGE/CTWSRO). Neal Creek Acclimation is equipment only. |
|   | 1988-053-08 |                       |   |  |
| Kootenai River Native Fish Conservation Aquaculture           | 1988-064-00 | X                     | 2 rearing sites (Tribal Sturgeon Hatchery and Twin Rivers Hatchery)   | Twin Rivers just came on line and upgrades made to sturgeon hatchery   |
| Umatilla Hatchery   | 1989-035-00 | X                     | Umatilla Hatchery, 5 acclimation sites (Bonifer, Minthorn, Imeques C-mem-ini-kem, Thornhollow Satellite Facility, and Pendleton) and 3 adult holding sites (Minthorn, Three Mile Dam and South Fork Walla Walla) and Westland Irrigation District Sampling Facility | Adult holding and eggs taken and transferred from Walla Walla  |
|   | 1983-435-00 |                       |   |  |
|   | 1983-436-00 |                       |   |  |
|   | 1988-022-00 | NA                    |   | Equipment only   |
| Sekokini Springs Westslope Cutthroat Trout Isolation Facility | 1991-019-03 | X                     |   | Continues to be constructed  |
| Lake Roosevelt Resident                                       | 1991-046-00 | X                     | Spokane and Sherman hatcheries. Spokane Hatchery audit is complete.   |  |
|   | 1991-047-00 |                       |   |  |

<sup>8</sup> Note that there are four existing facility/programs that are in step review for increase production.

| Direct F&W Program (capital investment)            |              |                       |  | Associated Facilities (non-Program) and Comments   |
|--|--------------|-----------------------|--|--|
| Facility/Program                                   | Project #    | Assessment            | Facilities   |  |
|  | 2001-029-00  | NA                    |  | <i>MOU Ford Hatchery (WDFW)</i>  |
|  | 1995-009-00  | NA                    |  | Equipment only – 8 Lake Roosevelt net pens   |
| Select Area Fisheries Enhancement                  | 1993-060-00  | NA                    |  | <i>MOU, Gnat, Greys and Kaskanine hatcheries.</i> Equipment only. 5 net pen sites (Deep River, Blind Slough, Tongue Point, Youngs Bay).  |
| Kalispel Tribal Fish Hatchery                      | 1995-001-00  | X, and In Step review |  | This program has been proposed to phase out of LMB to native trout recovery.   |
| Nez Perce Trout Ponds stocking                     | 1995-013-00  | NA                    |  | Equipment only. Stocking 3 ponds (Mud Creek, Talmaks and Tunnel)   |
| Duck Valley Reservation Fish Stocking              | 1995-015-00  | NA                    |  | Equipment only. Stocking 3 reservoirs (Mountain View, Sheep Creek and Lake Billy Shaw)   |
| Lake Roosevelt Sturgeon Recovery                   | 1995-027-00  | In Step review        |  |  |
| Mid-Columbia Coho Reintroduction Feasibility Study | 1996-040-00  | In Step review        |  |  |
| Johnson Creek Artificial Propagation               | 1996-043-00  | NA                    |  | <i>MOU, McCall Hatchery (LSRCP).</i> Equipment only.   |
| Cle Elum Supplementation and Research Facility     | 1997-013-25, | X, and In Step review | 3 acclimation sites (Clack Flat, Easton and Jack Creek) and Prosser hatchery and Marion Drain Fish Facility. | Project is comprehensive. Other species are being dealt with in this project and/or other projects (e.g., sturgeon, kelts). Coho in Step review (Holmes Ranch). Prosser Fish Facility and Marion Drain Fish Facility (kelts, sturgeon and fall Chinook). In addition, some activities are mixed with non-Program efforts. Nelson Springs mobile acclimation equipment only. <i>Roza Adult Trapping Facility (BOR owned--MOA between BOR, WDFW, BPA).</i> |
|  | 1988-115-25  |                       |  |  |
| Klickitat River Operations and Maintenance (O&M)   | 1988-115-35  | X, and in Step review | Castile Falls trap, Lyle Falls trap. Proposed – Wahkiacus acclimation.                                       | <i>MOU, Klickitat Hatchery (Mitchell Act).</i> In Step review.   |
| Grande Ronde Supplementation                       | 1998-007-02  | X                     | Lostine River – weir and acclimation   | <i>MOU, Lookingglass NFH (LSRCP), Bonneville Hatchery Captive Brood Facility (ODFW).</i>   |
|  | 1998-007-03  |                       | Catherine Creek and Upper GR Rivers - weir and acclimation   |  |
| Fall Chinook Acclimation Facilities                | 1998-010-05  | X                     | 3 sites (Captain John Rapids, Pittsburg Landing, Big Canyon)   | <i>MOU, Lyons Ferry NFH (LSRCP)</i>  |
| Walla Walla Spring Chinook                         | 2000-038-00  | In Step review        |  | Current relation with the Umatilla Hatchery program (see above)  |

| <b>Direct F&amp;W Program (capital investment)</b>   |  |                   |   | <b>Associated Facilities (non-Program) and Comments</b>   |
|--|--|-------------------|---|---|
| <b>Facility/Program</b>  | <b>Project #</b>                           | <b>Assessment</b> | <b>Facilities</b>   |   |
| Chief Joseph Hatchery  | 2003-023-00                                | X                 | 4 acclimation sites (Oroville-Tonasket Irrigation District irrigation ponds, one tribe-owned and two new ponds will be modified and/or constructed) | <i>MOU, Oroville-Tonasket Irrigation District irrigation ponds</i>  |
| Lower Granite Dam Adult Trap   | 2005-002-00                                | NA                |   | Used for RME & hatchery practices in Snake River. US Army Corps of Engineers  |
| Okanogan Basin Locally Adapted Steelhead Broodstock Step 1 and 2 (Cassimer Bar)  | 2007-212-00                                | NA                |   | No activity, in Step review   |
| Develop a Master Plan for a Rearing Facility to Enhance Selected Populations of White Sturgeon in the Columbia River Basin | 2007-155-00 (and 2008-455-00)              | In Step review    |   | Marion Drain Fish Facility and 1 other site (Ringold, MaNary and Bonneville). Addressed under CRITFC (Objectives 2 and 3) and YN (Objective 1). |
| Kelt Reconditioning and Reproductive Success Evaluation Research   | 2007-401-00                                | In Step review    |   | Merged from Project #2000-017-00 and 2003-062-00. In evaluation stage in the Columbia plateau and lower Snake.                                  |
| Snake River Sockeye Propagation  | 2007-402-00                                | X                 | 2 sites (Springfield and Eagle)   | <i>MOU, 2 sites (Manchester and Burley Creek)</i>   |
| Lamprey - implement an experimental safety-net lamprey artificial production facility for the conservation of the species  | 2008-524-00 (2008-470-00, and 1994-026-00) | In Step review    | proposed  | Addressed under CRITFC (Objective 6) and YN (Objective 8)   |
| Chum Salmon Restoration in the tributaries below Bonneville Dam  | 2008-710-00                                | In Step review    |   | Merged from Project #2001-053-00. Also associated with Project #1999-003-00.  |
| Crystal Springs Planning and Operations/Maintenance  | 2008-906-00,                               | In Step review    | Crystal Springs Hatchery and 2 sites (Yankee Fork and Panther Creek)  | <i>Activities link to LSRCP</i>   |
| Upper Columbia Spring Chinook & Steelhead Acclimation  | 2009-001-00                                | NA                |   | <i>MOU, acclimation sites in the Wenatchee and Methow PUD's. Equipment only.</i>  |

**Table 2: Actions taken by the Asset Management Subcommittee to address priority maintenance elements for the Program's hatcheries.**

The following list of elements (mission-critical and essential) \* were identified through the hatchery assessments and the managers/sponsors for Fiscal Year 2017, 2018, 2019 and 2020. Also listed are outstanding mission-critical (*italic*) elements from FY 2017. Recommended actions for FY 2019 and 2020 are dependent on review (i.e., engineering) and confirmation (e.g., environmental compliance) by Bonneville by the end of March 2018 and 2019, respectively. Shaded cells reflect elements that are dependent on further evaluations and discussion (e.g., outstanding mission-critical elements from FY 2017).

| Site - Manager                   | Element                            | Estimated Cost by Fiscal Year |          |         |          | Description  |
|----------------------------------|------------------------------------|-------------------------------|----------|---------|----------|--|
|                                  |                                    | 2017                          | 2018     | 2019    | 2020     |  |
| <b>Sekokini - MFWP</b>           | <i>Generator</i>                   | \$5,000                       |          |         |          |  |
|                                  | Spring #2 Infiltration Gallery     |                               | \$15,000 |         |          | Implemented - in contracting. Spring 2 infiltration gallery needs maintenance to capture flow that is currently diverted away from the cistern. Large snowpack and runoff this spring have led to even more of the flow being routed past the cistern, reducing flow to the hatchery building. |
|                                  | French Drain                       |                               |          | \$5,000 |          | French drain is needed in front of the isolation building to redirect seepage behind the retaining wall and prevent ice formation in front of the entry way.   |
|                                  | Roof                               |                               |          |         | \$12,000 | Metal roof replacement on the original hatchery building (not the expansion building).   |
|                                  | Settle Pond Drain                  |                               |          |         | \$7,000  | The concrete outflow structure that controls the elevation of the hatchery's effluent settling pond is crumbling and needs to be replaced.   |
| <b>Lake Roosevelt Resident**</b> |                                    |                               |          |         |          |  |
| Spokane - STOI                   | NA                                 |                               |          |         |          | Utilizing BIA O&M funds.   |
| Sherman - WDFW                   | <i>Sanitary Lift Station Pumps</i> | \$20,000                      |          |         |          |  |
|                                  | <i>Emergency Generator</i>         | \$40,000                      |          |         |          |  |
|                                  | <i>Lake Water Pumps</i>            | -                             | \$30,000 |         |          | Move pumps and extend to deeper water to maintain flow during reservoir drawdown. Total costs include pumps, piping, and ancillary equipment. Subject to engineering and permitting before purchase of equipment.  |
|                                  | <i>Net Pens</i>                    | -                             |          | TBD     | TBD      | <i>Additional evaluation needed, TBD. Reservoir drawdown causing early release of fish and the effect on program goals, current location does not function during reservoir drawdown.</i>  |
| <b>Umatilla**</b>                |                                    |                               |          |         |          |  |
| Umatilla - District              | <i>Leaking pipe, adult trap</i>    |                               |          |         |          | \$20,000 Covered by accord funds. Westland Irrigation District (District)  |
| ODFW                             | <i>Well System</i>                 | -                             | \$20,000 | TBD     | TBD      | <i>Efforts to initiate a comprehensive review of well systems (ranney well system (pumps #1 through #4) and wells #1 through #4 (pumps #5 through#8)) is ongoing. All essential needs (listed below) are linked to this review. Determination of path to address needs will be</i>             |

| Site - Manager                                  | Element  | Estimated Cost by Fiscal Year |          |          |      | Description   |
|---|--|-------------------------------|----------|----------|------|---|
|   |  | 2017                          | 2018     | 2019     | 2020 |   |
|   |  |                               |          |          |      | <i>defined by end of calendar year. If emergencies arise, action will be addressed through BOG. Bonneville working with ODFW and CTUIR on urgent electrical issues. <u>\$20,000 allocated</u> to assist in comprehensive review for specialized engineering services. Total cost unknown until a complete evaluation is completed - Well system provides a fraction of the flow the facility was designed for. <u>In the interim and to ensure the production at the hatchery is protected an urgent BOG request, in the first quarter of FY 2018, was approved by the Council and Bonneville to recondition the wells #1 - #4 and correctly size the pumps at \$150,000.</u></i> |
| ODFW  | Pumps #1 -#4   |                               |          |          |      | Initiate a comprehensive review of ranney well system is ongoing. <i>See Mission Critical item above.</i>   |
| ODFW  | Production Well #1, 15HP Submersible                   |                               |          |          |      | Completed. Wells 1-4 and Pumps #5-#8 were all refurbished and the pumps were rightsized in the fall of 2017. <i>See Mission Critical item above.</i>  |
| ODFW  | Production Well #2, 50 HP Submersible                  |                               |          |          |      | Completed. Wells 1-4 and Pumps #5-#8 were all refurbished and the pumps were rightsized in the fall of 2017. <i>See Mission Critical item above.</i>  |
| ODFW  | Production Well #3, 25 HP Submersible                  |                               |          |          |      | Estimate at \$25,000. Wells 1-4 and Pumps #5-#8 were all refurbished and the pumps were rightsized in the fall of 2017. <i>See Mission Critical item above.</i>   |
| ODFW  | Production Well #4, 60 HP Submersible                  |                               |          |          |      | Estimate at \$25,000. Wells 1-4 and Pumps #5-#8 were all refurbished and the pumps were rightsized in the fall of 2017. <i>See Mission Critical item above.</i>   |
| ODFW  | Chillers (4) 50 ton                                    |                               |          |          |      | Estimate at \$194,000. Efforts to initiate a comprehensive review of well system is ongoing. Chillers are 25 years old and walls are thin from sand scour. Chillers need to be replaced. <i>See Mission Critical item above.</i>  |
| ODFW  | Incubation/Aeration Tower Submersible Pumps (2), 15 HP |                               |          |          |      | Estimate at \$30,000. Efforts to initiate a comprehensive review of well system is ongoing. Rewire pump. <i>See Mission Critical item above.</i>  |
| CTUIR   | Eight Sites (acclimation, trapping and adult holding)  |                               |          |          |      | In the near future, the CTUIR annual budgets are sufficient to take care of required O&M as identified in the hatchery assessments.   |
| Kootenai - KTOI                                 | NA   |                               |          |          |      | At this time KTOI is utilizing BIA Hatchery Cyclical Maintenance Grant.   |
| <b>Snake River Sockeye Propagation - IDFG**</b> |  |                               |          |          |      |   |
| Springfield                                     | <u>Chiller system</u>                                  |                               | \$75,000 | \$75,000 | TBD  | <i>Engineering services contracted to develop design and specifications for chilled water delivery system upgrade at Springfield Hatchery (estimated at \$75,000 for 2018 and possibly 2019. In 2019 determination on use of accord funds being discussed). Estimate based on hatchery assessment report and then includes an estimate on installation.</i>   |

| Site - Manager                           | Element  | Estimated Cost by Fiscal Year |          |           |           | Description  |
|--|--|-------------------------------|----------|-----------|-----------|--|
|  |  | 2017                          | 2018     | 2019      | 2020      |  |
|  | Concrete Clarifier                               |                               |          | \$109,250 |           | <u>Additional needs are deferred until current assessment is completed.</u><br>Undersized waste removal system necessitates modifications (estimated at \$109,250) - upsize early rearing trough effluent piping to larger size & increase size of effluent clarifier system.  |
|  | Early rearing trough effluent piping             |                               |          |           | \$195,000 | <u>Additional needs are deferred until current assessment is completed.</u><br>Undersized waste removal system necessitates removal of only 1 cleaning standpipe at a time. Modification by increasing the diameter of tough effluent piping (estimated at \$195,000). This in conjunction with increasing the size of effluent clarifier system will allow 500 gpm influent rate. This will also allow inside vat cleaning to be more efficient and will enhance bio-security in the early rearing building and eliminate the multiple removal of sludge from the clarifier on an annual basis. Estimate reflects estimate of modify troughs with large diameter piping and not replacement of troughs. |
| Eagle                                    | 2 Fiberglass Transportation Tanks (250 gallon)   |                               | \$16,500 |           |           | Fiberglass transport tank for hauling sockeye adults from the RFLC trap to Eagle or in some years from Lower Granite Dam to Eagle are at the end of their life expectancy. These tanks have been rebuilt and re-fiberglassed a number of times and continue to leak water. Water is also damaging the internal wooden framework as water is trapped within fiberglassed shell. Price quotes to replace this tank have been requested from JetCo at an estimated cost of \$8,250 each.  |
|  | Well #3: VFD Unit                                |                               | \$11,500 |           |           | Due to the age of this critical unit, replacement is necessary.  |
|  | Well #1: 50 HP submersible pump                  |                               |          | \$9,000   |           | Pump is 5 years old, due to be replaced and refurbished for backup.  |
|  | Well #1 & #2 Degassing Tower Water Level Sensor. |                               |          | \$120,000 |           | Aeration column needs minor modification to improve flow through dispersion plate. This unit has failed in cold damp winter conditions and is bypassed for this reason. <i>(Discussions with an electrician to move this unit into the Well #2 building have been initiated, but no cost estimate at this time)</i>  |
|  | Chiller (100 TON)                                |                               |          |           | \$84,500  | Adult holding chiller needs to be replaced, old R-22 refrigerant filled chiller. Conversion needed to Freon or replace with new unit, whichever is deemed appropriate.   |
| <b>Colville - CCT</b>                    | <i>Generator</i>                                 |                               |          |           |           | \$75,000 Covered by accord funds   |
|  | Chiller (15 TON APPROX)                          |                               |          |           |           | Accord Funded @ \$42,000 in 2018. Leaks Freon, needs to be replaced  |
|  | Aluminum Troughs (14), 21' X 2.75'               |                               |          | \$74,200  |           | Inside rearing troughs are corroding and pinhole leaks observed, need to be replaced   |
|  | Aluminum Troughs (6), 16' X 1.3'                 |                               |          |           | \$15,000  | Inside rearing troughs are corroding and pinhole leaks observed, need to be replaced   |
| <b>Nez Perce Tribal Hatchery - NPT**</b> |  |                               |          |           |           |  |
| NPTH                                     | River water pumps (2)                            | \$50,000                      |          |           |           |  |

| Site - Manager                                      | Element   | Estimated Cost by Fiscal Year |         |          |          | Description  |
|---|---|-------------------------------|---------|----------|----------|--|
|   |   | 2017                          | 2018    | 2019     | 2020     |  |
|   | River water filtration system                       | -                             |         | TBD      | TBD      | Additional evaluation needed - Relationship of this high priority item, in association to the Snake River Basin Steelhead Kelt Reconditioning Facility Master Plan (Project #2007-401-00). Kelt decision anticipated in 2018.      |
|   | heat exchanger                                      | -                             |         | TBD      | TBD      | Additional evaluation needed, TBD - Relationship of this high priority item, in association to the Snake River Basin Steelhead Kelt Reconditioning Facility Master Plan (Project #2007-401-00). Kelt decision anticipated in 2018. |
|   | UV Disinfection System                              |                               |         | \$92,000 |          | Treatment effectiveness is affected by fine sediment. Estimated @ \$92,000. Link to mission critical element (surface water filtration element)  |
| Yoosa Creek   | Yoosa Creek Intake Bypass Flow                      | -                             |         | TBD      | TBD      | The dam structure that impounds water for the intake leaks significantly enough to reduce intake flow. NPT are evaluating the cost benefit of this need as part of hatchery evaluation, TBD.                                       |
| Lukes Gulch   | Paint 20' diameter Aluminum Circular Tanks (16)     |                               |         | \$20,000 |          | Paint is worn through on interior surfaces and faded.  |
| <b>Grande Ronde Supplementation</b>                 |   |                               |         |          |          |  |
| Lostine - NPT                                       | Alarm System, Flow Detection                        |                               | \$8,315 |          |          | Has been partially damaged by erosion. Needs to be repaired.   |
| Catherine Creek - CTUIR                             | NA  |                               |         |          |          | In the near term, the CTUIR annual budgets are sufficient to take care required O&M as identified in the hatchery assessments.   |
| Upper Grande Ronde - CTUIR                          | Mission Critical - Raceway liners. NA               |                               |         |          |          | \$15,000 Covered by accord funds. In the near term, the CTUIR annual budgets are sufficient to take care of required O&M as identified in the hatchery assessments.  |
| <b>Fall Chinook Acclimation Facilities - NPT***</b> |   |                               |         |          |          |  |
| Pittsburg   | Water Supply and Drain Hoses                        |                               |         | \$27,750 |          | Hoses are getting brittle. Estimate @ \$27,750   |
|   | Feed Storage Building                               |                               |         |          | \$5,625  | Estimated at \$5,625   |
|   | Resident 1, Camp Trailer                            |                               |         |          | \$25,500 | 21 years old, due for replacement. Estimated @ \$25,500  |
| Big Canyon  | Flexible Hoses for Water Supply/Drains              |                               |         | \$27,250 |          | Hoses are getting brittle. Estimated @ \$27,250  |
|   | Residence 1, Park Model Trailer                     |                               |         |          | \$25,500 | 19 years old, due for replacement. Estimated @ \$25,500  |
| Captain John Rapids                                 | Alarm System, Low Water Level and No Flow Detection |                               |         | \$20,000 |          | Estimated @ \$20,000   |
|   | Electrical System Improvements                      |                               |         |          | \$5,000  | Generator currently feeds through main breaker, no power to pumps if breaker fails. Estimated @ \$5,000  |
|   | Supplemental Oxygen System                          |                               |         |          | \$10,000 | Estimated @ \$10,000   |

| Site - Manager   | Element                                | Estimated Cost by Fiscal Year |                  |                  |                  | Description  |
|--|--|-------------------------------|------------------|------------------|------------------|--|
|  |  | 2017                          | 2018             | 2019             | 2020             |  |
| Kalispel** - KT  | <u>Mission Critical - Alarm system</u> | -                             |                  |                  |                  | <i>Additional evaluation needed, TBD - Estimated cost @ \$50,000. Original System is non-functional and no longer supported. Activities at the hatchery are dependent on a future review. This item may be funded as part of the ongoing cold-water conversion program upgrades. This program has phased out of LMB and raising triploid trout for put-and-take.</i> |
| Total  |  | <b>\$115,00</b>               | \$176,315        | \$228,200        | \$118,500        |  |
| <b>Variation Expected (+35%) with cost confirmation and installation costs.</b>  |  | NA                            | <b>\$238,025</b> | <b>\$308,070</b> | <b>\$159,975</b> |  |
| Outstanding mission critical and essential elements that are dependent on further evaluations and discussions.   |  |                               |                  | \$351,250        | \$241,125        | Totals do not include costs associated with Umatilla, NPTH (heat exchanger, filter and Yoosa Creek Intake Bypass) and Sherman (net pens). In addition, does not include Variance.  |
| *Mission Critical Elements -- These are items that have either already failed, or failure is considered to be imminent and the failure has a direct negative effect on the ability of the facility to perform its mission.   |  |                               |                  |                  |                  |  |
| *Essential Maintenance/Improvements --These items are considered essential for the facility to continue to perform the mission that was originally identified as the purpose for the facility relative to the relevant BPA Program, but the need is less immediate than mission critical elements. |  |                               |                  |                  |                  |  |
| ** Hatchery facilities that have unresolved Mission Critical Elements that need to be addressed  |  |                               |                  |                  |                  |  |
| *** BPA and Lower Snake River Compensation Plan staff are currently working on determining project overlap, items listed under these facilities will be addressed once that exercise is complete.  |  |                               |                  |                  |                  |  |

**Table 3: Actions taken by the Asset Management Subcommittee to address priority non-recurring maintenance for the Program's screens.**

The following list of needs as identified for five of the Programs 14 screen projects (in 2017) for Fiscal Year 2018, 2019 and 2020. Recommended actions for FY 2019 and 2020 are dependent on review (i.e., engineering) and confirmation (e.g., environmental compliance) by Bonneville by the end of March 2018 and 2019, respectively.

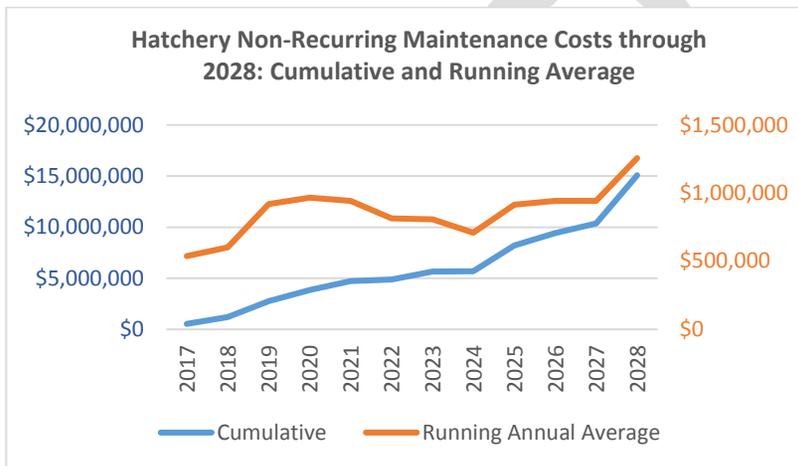
| Manager/Sponsor<br>(number of screens)   | Site   | Estimated Cost by Fiscal Year |                  |                  | Description  |
|--|--|-------------------------------|------------------|------------------|--|
|  |  | 2018                          | 2019             | 2020             |  |
| <b>Idaho (#255)</b>                      | L-03AO   | \$93,175                      |                  |                  | Scheduled for fall 2018. Must wait for the end of irrigation season. Older 45-degree screen, relocate new screen and bypass. River has moved, and screen is not functional.  |
|  | L-06   |                               |                  | \$7,500          | new bypass. Add debris rack and bypass replacement. <i>Shift from 2019 to 2020.</i>  |
|  | L-08   |                               |                  | \$60,000         | new screen. Older 45° screen.  |
| <b>WDFW (#42)</b>                        | Snipes and Allen   | \$97,778                      |                  |                  | Completed March 2018. WDFW replaced the screen material with new fish-friendly perforated plate. Structural fabrication completed.   |
|  | Naches-Cowiche   |                               |                  | \$100,000        | WDFW proposes to replace the screen material with new fish-friendly perforated plate. In addition, complete refurbish of gate, gantry and lighting is needed. <i>Shift from 2019 to 2020.</i>                                |
| <b>ODFW (#572)</b>                       | Beech Cr. NO. 7  | \$40,000                      |                  |                  | Completed May 2018. Update Walkways (2); Needs Guards for paddlewheel/Driveline; Gantry replacement; modify bypass trash rack; Sand Blast and paint components or replacement; bearing replacements; seals                   |
|  | John Day River NO. 06  |                               |                  | \$20,000         | Update Walkways (2); Needs Guards for paddlewheel/Driveline; Gantry replacement; modify bypass trash rack; update paddlewheel; Sand Blast and paint components; bearing replacements; seals. <i>Shift from 2019 to 2020.</i> |
|  | Westside Diversion   |                               |                  | \$10,000         | Sand and paint gantries, replace walkways and handrails to meet OSHA standards. Brace Concrete wall and backfill with gravel to prevent freezing weather from moving concrete strait wall. Replace trash Racks.              |
| <b>MFWP (#5)</b>                         | Grave Creek  |                               |                  |                  | Funded through other mechanisms at \$60,000. Replace screen, bypass and headgate severely damaged by tree fall in 2016. Currently the screen is non-functional.  |
|  | Libby  |                               |                  | \$25,000         | armoring/protecting headgate. <i>Shift from 2019 to 2020.</i>  |
|  | Deep Phase 2   |                               |                  | \$15,000         | Infrastructure repair  |
| <b>Westland Irrigation District (#6)</b> | West Extension Irrigation District (WEID) diversion located at Threemile Dam |                               | \$281,316        |                  | Outstanding Priority from 2018 - Refurbish 4 (9' diameter x 12' length) screens to meet NMFS criteria. Current screen material was grandfathered in.   |
| <b>Total</b>                             |  | <b>\$230,953</b>              | <b>\$281,316</b> | <b>\$237,500</b> |  |

Attachment 1: Annual Process and timelines

| Asset Management Strategic Plan - Annual Process and timelines |   |      |      |      |      |     |      |      |        |       |     |      |      |
|--|---|------|------|------|------|-----|------|------|--------|-------|-----|------|------|
| Category/Update  | Process   | Jan. | Feb. | Mar. | Apr. | May | June | July | August | Sept. | Oct | Nov. | Dec. |
| <b>Hatcheries</b>  | Confirming Monitoring and updating non-recurring elements |      |      |      |      |     |      |      |        |       |     |      |      |
|  | Request priorities (needs) from managers/sponsors         |      |      |      |      |     |      |      |        |       |     |      |      |
|  | Confirmation of priority essential elements for 2019/2020 |      |      |      |      |     |      |      |        |       |     |      |      |
|  | • Confirmation (costs, permitting, environmental)         |      |      |      |      |     |      |      |        |       |     |      |      |
|  | • Subcommittee Decision                                   |      |      |      |      |     |      |      |        |       |     |      |      |
|  | • F&W Committee and Council                               |      |      |      |      |     |      |      |        |       |     |      |      |
| <b>Screens</b>   | Monitoring and updating prioritized non-recurring needs   |      |      |      |      |     |      |      |        |       |     |      |      |
|  | Request priorities (needs) from managers/sponsors         |      |      |      |      |     |      |      |        |       |     |      |      |
|  | Confirm priority non-recurring needs for 2019/2020        |      |      |      |      |     |      |      |        |       |     |      |      |
|  | • Confirmation (costs, permitting, environmental)         |      |      |      |      |     |      |      |        |       |     |      |      |
|  | • Subcommittee Decision                                   |      |      |      |      |     |      |      |        |       |     |      |      |
|  | • F&W Committee and Council                               |      |      |      |      |     |      |      |        |       |     |      |      |
| <b>Wildlife Lands</b>  | Lands Monitoring Assessment – remote BPA                  |      |      |      |      |     |      |      |        |       |     |      |      |
| <b>Annual Update to Council</b>                                |   |      |      |      |      |     |      |      |        |       |     |      |      |

## Attachment 2: Summary of hatchery non-recurring maintenance costs through 2028, cumulative and running average. \*

| Hatchery               | Assessment Total     | Zero Years left     |                    | 1                 | 2                 | 3                   | 4                   | 5                 | 6                 | 7                 | 8                | 9                   | 10                  | 11                | 12                  |
|------------------------|----------------------|---------------------|--------------------|-------------------|-------------------|---------------------|---------------------|-------------------|-------------------|-------------------|------------------|---------------------|---------------------|-------------------|---------------------|
|                        |                      | <-1 or more years * | Zero Years left ** | 2017              | 2018              | 2019                | 2020                | 2021              | 2022              | 2023              | 2024             | 2025                | 2026                | 2027              | 2028                |
| Nez Perce Tribal       | \$ 989,300           | \$ 68,000           | \$ 269,300         | \$ 9,400          | \$ -              | \$ 85,300           | \$ 220,300          | \$ 70,000         | \$ 40,000         | \$ -              | \$ -             | \$ 210,000          | \$ 5,000            | \$ -              | \$ 12,000           |
| Colville               | \$ 3,766,160         | \$ 62,800           | \$ -               | \$ 70,000         | \$ 243,800        | \$ -                | \$ 22,000           | \$ 44,000         | \$ 33,500         | \$ -              | \$ -             | \$ 23,260           | \$ 22,000           | \$ -              | \$ 3,244,800        |
| Hood River             | \$ 829,060           | \$ 0                | \$ 82,300          | \$ -              | \$ -              | \$ -                | \$ -                | \$ -              | \$ -              | \$ -              | \$ 12,000        | \$ -                | \$ 717,460          | \$ 3,800          | \$ 13,500           |
| Kootenai               | \$ 611,900           | \$ -                | \$ 4,500           | \$ -              | \$ -              | \$ -                | \$ -                | \$ 386,600        | \$ -              | \$ 105,000        | \$ -             | \$ -                | \$ 115,800          | \$ -              | \$ -                |
| Umatilla Hatchery      | \$ 5,100,438         | \$ 1,378,186        | \$ 4,600           | \$ 79,400         | \$ 151,300        | \$ 1,220,852        | \$ 334,000          | \$ -              | \$ -              | \$ 457,600        | \$ -             | \$ 810,500          | \$ 21,000           | \$ 154,000        | \$ 489,000          |
| Lake Roosevelt         | \$ 1,090,000         | \$ 30,000           | \$ 320,000         | \$ -              | \$ -              | \$ 10,000           | \$ 250,000          | \$ 335,000        | \$ -              | \$ -              | \$ -             | \$ -                | \$ 70,000           | \$ -              | \$ 75,000           |
| Kalispel               | \$ 70,000            | \$ -                | \$ 50,000          | \$ -              | \$ -              | \$ -                | \$ 15,000           | \$ -              | \$ -              | \$ -              | \$ -             | \$ -                | \$ 5,000            | \$ -              | \$ -                |
| Yakima                 | \$ 2,946,900         | \$ 371,000          | \$ 30,000          | \$ -              | \$ 235,000        | \$ -                | \$ 100,000          | \$ -              | \$ -              | \$ -              | \$ -             | \$ 1,500,800        | \$ -                | \$ -              | \$ 710,100          |
| Grande Ronde           | \$ 942,200           | \$ 35,000           | \$ 25,500          | \$ 265,500        | \$ 30,000         | \$ -                | \$ -                | \$ -              | \$ 5,000          | \$ -              | \$ 15,000        | \$ -                | \$ 25,500           | \$ 404,500        | \$ 136,200          |
| Fall Chinook           | \$ 888,750           | \$ 106,000          | \$ 167,250         | \$ 113,500        | \$ 875            | \$ 51,000           | \$ 10,000           | \$ 10,000         | \$ -              | \$ -              | \$ 1,250         | \$ 5,625            | \$ 226,250          | \$ 171,500        | \$ 25,500           |
| Chief Joseph           | \$ 189,000           | \$ -                | \$ -               | \$ -              | \$ -              | \$ 189,000          | \$ -                | \$ -              | \$ -              | \$ -              | \$ -             | \$ -                | \$ -                | \$ -              | \$ -                |
| Sockeye                | \$ 623,100           | \$ -                | \$ -               | \$ -              | \$ 3,000          | \$ -                | \$ 125,000          | \$ 10,000         | \$ 86,700         | \$ 199,900        | \$ -             | \$ -                | \$ -                | \$ 187,000        | \$ 11,500           |
| Sekokini Springs       | \$ 10,000            | \$ -                | \$ -               | \$ -              | \$ -              | \$ -                | \$ -                | \$ -              | \$ -              | \$ -              | \$ -             | \$ -                | \$ -                | \$ 10,000         | \$ -                |
| Klickitat              | \$ 60,000            | \$ 0                | \$ 30,000          | \$ -              | \$ -              | \$ -                | \$ 30,000           | \$ -              | \$ -              | \$ -              | \$ -             | \$ -                | \$ -                | \$ -              | \$ -                |
| <b>TOTAL</b>           | <b>\$ 18,116,808</b> | <b>\$ 2,050,986</b> | <b>\$ 983,450</b>  | <b>\$ 537,800</b> | <b>\$ 663,975</b> | <b>\$ 1,556,152</b> | <b>\$ 1,106,300</b> | <b>\$ 855,600</b> | <b>\$ 165,200</b> | <b>\$ 762,500</b> | <b>\$ 28,250</b> | <b>\$ 2,550,185</b> | <b>\$ 1,208,010</b> | <b>\$ 930,800</b> | <b>\$ 4,717,600</b> |
| Cumulative             |                      |                     |                    | \$537,800         | \$1,201,775       | \$2,757,927         | \$3,864,227         | \$4,719,827       | \$4,885,027       | \$5,647,527       | \$5,675,777      | \$8,225,962         | \$9,433,972         | \$10,364,772      | \$15,082,372        |
| Running Annual Average |                      |                     |                    | \$537,800         | \$600,888         | \$919,309           | \$966,057           | \$943,965         | \$814,171         | \$806,790         | \$709,472        | \$913,996           | \$943,397           | \$942,252         | \$1,256,864         |



\* The information in this table and figures reflect the potential replacement cost based on the hatchery assessment reports prepared for BPA and the Council.

\*\*The first three years on the table represent potential accumulated obligations (through 2017), and do not reflect any funds provided to meet 'mission critical' needs.