Technical Memorandum

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Subject	**Addendum to the Flow Study 2019 Update Report**
Project Name	Walla Walla River Bi-State Flow Study 2020 – 2021 Biennium
Project Number	W3X94501
Attention	Judith Johnson, Walla Walla Watershed Management Partnership
From	Jacobs and Aspect Consulting (Aspect)
Date	July 29, 2021
Copies to	Troy Baker, Walla Walla Basin Watershed Council

1. Scope of the 2021 Flow Study Update

This memo documents the current status of the Walla Walla River Bi-State Flow Study (Flow Study) completed in June 2021 as an addendum to the 2019 Flow Study Update (December 2019) report. This 2020-2021 biennium phase of the Flow Study builds upon over a decade of work by multiple basin stakeholders documented in the *Walla Walla Basin Integrated Flow Enhancement Study (November 2017)*, and the *Flow Study Update* (December 2019). The previous reports identified the Flow Study geographical context, objectives, stakeholders, and documented the process where over 100 water supply projects were evaluated and focused to four specific water supply alternatives to improve flows in the mainstem Walla Walla River. The current phase of the project seeks to further refine the four previously selected alternatives plus one new alternative that emerged during this phase with the goal of focusing on a preferred water supply alternative.

2. Flow Study Objectives

The primary objective of the Flow Study (unchanged from 2019) is to improve streamflows in the Walla Walla River mainstem to support harvestable populations of native fish species, while maintaining the long-term viability of agricultural, municipal, commercial, and residential uses of water. This study area focuses on the Walla Walla River mainstem extending from the controlled diversion into the Little Walla Walla River near Cemetery Bridge in Milton-Freewater, Oregon, to the confluence with the Columbia River upstream of McNary Dam near Wallula, Washington. In 2017, the Flow Study Steering Committee agreed by consensus to the instream flow targets summarized in Table 1. These targets represent a significant improvement relative to current low flows of 0 to 20 cubic feet per second (cfs), but are less than minimum instream flows adopted in Washington in 2007 (WAC 173-532). The minimum instream flow values govern new water rights and changes to existing rights only, whereas the Flow Study Target Streamflow values are intended to be achieved while also satisfying existing water right demands.

Table 1. Walla Walla River Streamflow Targets

Time Period	Flow Study Target Streamflow
April 1—June 15	150 cfs
June 16—June 30	100 cfs
July 1—November 30	65 cfs

3. Evaluation of Alternatives

By reviewing preliminary technical information, cost estimates, potential environmental impacts, and performance of projects relative to the mainstem Walla Walla River flow improvement goals, the Steering Committee focused over 100 proposed streamflow restoration projects to the four primary alternatives summarized in Table 2 in 2019. Each of these four alternatives were designed to meet the Flow Study Target Streamflow values in Table 1. In some water years, or in some reaches, some of the alternatives do not completely meet the goals, but the Steering Committee believes they should continue to be advanced because:

1. They offer substantial improvements to existing flows.
2. The deviations from the goals are likely within the margin of error on what can be estimated at this time due to the limits of current knowledge.
3. The deviations from the goals could be further reduced through additional smaller projects over time.

Table 2. Flow Study Alternatives Summary

Alt #	Alternative Description	Cost[1]			Aggregate Score (DRAFT)[2]
		Construction	O&M	NPV	
1	Columbia River Pump Exchange (160 cfs)	$254.2M	$2.52M/yr	$357.1M	76.7[5]
2	Upper Pine Creek Reservoir (34k AF)[3]	$384.7M	$0.19M/yr	$399.2M	49.8
3	Upper Pine Creek Reservoir (34k AF)[3] plus City of Walla Walla ASR[4]	$384.7M	$0.46M/yr	$408.3M	59.4
4	Columbia River Pump Exchange (120 cfs)	$227.3M	$2.55M/yr	$328.8M	76.7[5]

Notes:

1. Life Cycle Net Present Value (NPV) cost represents construction cost and O&M costs over 100-year evaluation period with periodic repair and replacement costs assuming 2.875% discount rate for future costs.
2. Aggregate Score reflects the Evaluation Tool Scoring described in the 2019 Flow Study Section 4.5 and Appendix 4-E. The scores presented are draft based solely on the consultant's score assignment. The scores will be evaluated and further refined by the Steering Committee during a future phase of the Flow Study.
3. Following the technical evaluation of the 34,000 AF Upper Pine Creek Reservoir project, the landowner of the site informed the Walla Walla Basin Watershed Council that they do not presently support selling a portion of their land for this reservoir use. Another site further downstream on Pine Creek has been identified and will be evaluated as part of the 2020-2021 biennium phase of the Flow Study.
4. The construction cost associated with the City of Walla Walla ASR project is assumed to be paid for by funding sources outside of the Flow Study.

5. The Draft Aggregate Scores for Alternative 1 and Alternative 4 were identical based solely on the consultant's score assignment, but will be evaluated and refined further in a future phase of the Flow Study.

In the 2020-2021 investigation, the effort was focused on further refinement of alternatives and evaluation of a new alternative. The most notable updates include:

1. Replacement of the Upper Pine Creek Reservoir site with a Lower Pine Creek Reservoir site based on landowner access input.

2. Consideration of a new storage site (Warm Springs Reservoir) advanced by a local landowner and vetted through the storage technical workgroup and Steering Committee review processes.

The original concept for the Warm Springs Reservoir (WSR) brought before the Steering Committee included a reservoir in excess of 100,000 acre-feet in storage, which would be large enough to meet Walla Walla River flow targets and provide additional in-basin benefits and/or generate hydropower via releases back to the Columbia River. However, for the sake of comparison to the other anchor projects, Jacobs determined that a smaller-sized WSR should also be evaluated. This smaller-sized WSR would target a reservoir volume to meet flow targets and provide bucket-for-bucket replacement of current irrigation diversions from the Walla Walla River.

Refer to the following two technical memoranda prepared during this phase of the Flow Study to characterize and evaluate the Lower Pine Creek Reservoir and Warm Springs Reservoir alternatives.

1. Lower Pine Creek Reservoir Concept Evaluation as a Potential Anchor Project Alternative, June 2021.

2. Warm Springs Reservoir and Conveyance System – Potential Anchor Project Alternative for the Walla Walla River Bi-State Flow Study, June 2021.

Table 3 below summarizes key attributes of these alternatives.

Table 3. Lower Pine Creek Reservoir and Warm Springs Reservoir Alternatives

Alt #	Alternative Description	Active Storage (ac-ft)	Cost[1]		
			Construction	O&M	NPV
5	Lower Pine Creek Reservoir	26,000	$196.7M	$0.4M/yr	$219.0M
6	Large Warm Springs Reservoir	96,000	$1,200.0M	$7.7M/yr	$1,510.0M
7	Small Warm Springs Reservoir	57,000	$799.9M	$4.3M/yr	$980.0M

Notes:
1. Life Cycle Net Present Value (NPV) cost represents construction cost and O&M costs over 100-year evaluation period with periodic repair and replacement costs assuming 2.875% discount rate for future costs.

4. Resolution of Data Gaps

In addition to evaluation of alternatives and further coalition-building and stakeholder coordination, the Steering Committee worked to advance several data gaps to resolution. These included the following:

1. Developing communication and outreach materials to explain the Flow Study goals and projects to a broad audience (see Walla Walla River Bi-State Flow Study Brochure, December 2020 and Frequently Asked Questions about the Walla Walla River Bi-State Flow Study, December 2020).

2. Development an Operation and Maintenance Funding Action Plan, which describes multiple pathways used in other analogous projects to fund operation and maintenance of reservoir and pump exchange projects (see Operations and Maintenance Funding Investigation, April 2021).

3. Development of a Columbia River Impact Study, which evaluated how a pump exchange project will return water to the Columbia River on a near water-budget-neutral basis (see Columbia River Impact and Water Availability Study, April 2021).

4. Development of a Columbia River Water Availability Study, which evaluated how a pump exchange project could opportunistically divert water in addition to a near water-budget-neutral basis to meet objective under the Walla Walla 2050 Strategic Plan (previously described as "secondary objectives" under the Flow Study), (see Columbia River Impact and Water Availability Study, April 2021).

5. Coordination with Walla Walla 2050 Strategic Planning to integrate the Flow Study as a key early action alternative given the longer lead time and investigations that have taken place to date (see Walla Walla Basin Strategic Plan and Environmental Review, May 2021).

5. Recommendations and Next Steps

The Steering Committee agreed that for the 2021-2023 biennium, the Flow Study effort should be integrated even further with the Walla Walla 2050 Strategic Planning effort. Within that framework, funding will be prioritized to resolve remaining data gaps and narrowing the list of alternatives for review in an upcoming Walla Walla 2050 Programmatic Environmental Impact Statement. With a goal of selection of a Preferred Alternative through that process, focus will then turn to project-level SEPA and NEPA environmental review, hopefully in the 2023-2025 biennium.

6. References

Walla Walla Watershed Flow Study Steering Committee, WWWMP, WWBWC, Aspect Consulting. 2017. *Walla Walla Basin Integrated Flow Enhancement Study.* November.

Walla Walla Watershed Flow Study Steering Committee, WWWMP, WWBWC, Jacobs, Aspect Consulting, GeoSystems Analysis, and Water Rights Solutions. 2019. *Walla Walla River Bi-State Flow Study*. December.

Jacobs. 2021. *Lower Pine Creek Reservoir Concept Evaluation as a Potential Anchor Project Alternative*. June.

Jacobs. 2021. *Warm Springs Reservoir and Conveyance System – Potential Anchor Project Alternative for the Walla Walla River Bi-State Flow Study.* June.

Aspect Consulting. 2020. *Walla Walla River Bi-State Flow Study Brochure*, December.

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Jacobs, Aspect Consulting. 2021. *Operations and Maintenance Funding Investigation.* April.

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