



**US Army Corps  
of Engineers**  
Portland District

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## **Willamette Basin Review Feasibility Study**

### **APPENDIX L**

### **Public Comment Summary**

**June 2018**

#	Themes	Response	Change in Document
<b>Federal Interest/Authority</b>			
<b>State Interest/Authority</b>			
<b>Proposed Action</b>			
1	TSP is a balanced solution.	Thank you for the comment.	None.
2	The Draft Report proposes a reallocation of water stored for Agricultural Irrigation ("AI") use to dedicated volumes for other uses.	This is incorrect. The proposed reallocation is from joint-use storage in the federal reservoirs (i.e., all the purposes) to specific use. The state storage certificate lists the use of the stored water as irrigation. After the reallocation, the storage certificate would be changed to recognize other uses.	None.
3	Water allocations were from a system perspective, not individual subbasins.	This is because many users can be served by multiple reservoirs and it maintains future flexibility. This is also in-line with system pricing for irrigation and M&I storage.	None.
4	The TSP does not allow for future adjustment of allocations.	Future adjustments of allocations would be through reallocation.	None.
<b>Alternatives Analysis</b>			
<b>Allocation Alternatives</b>			
5	Need adequate, reliable water supply for a 50 year planning horizon. The allocations should be for the calculated 2070 M&I and more than the 2070 demand for AI.	There is insufficient storage to reallocate for all users peak demands. Reallocation one sector at greater than the peak 2070 demand is not an equitable distribution of the conservation storage and not justifiable.	None.
6	The allocation of stored water for fish and wildlife should be enough to meet flow targets for threatened salmon and steelhead more often.	No reallocation alternative would result in meeting flow objectives for fish and wildlife more often than objectives are met now.	None.
7	Reduction from 2070 demands, all three uses were not treated equally.	The reduction from 2070 demands show for Reallocation Alternative D treats all use categories equally. Under this reallocation alternative, F&W would be allocated 962,800 acre-feet of WVP conservation storage – a reduction of 39.5 percent from the F&W peak volume of 1,590,000 acre-feet. The reduction to the F&W allocation under Reallocation Alternative D mirrors the reduction imposed on the combined M&I and AI peak demand volumes (excluding Reclamation contracts of 81,400 acre-feet expected to be in place at year 2020) for this alternative. The sum of M&I and AI peak demands in Year 2070, excluding Year 2020 Reclamation contracts, is 406,000 acre-feet, and is comprised of 159,750 acre-feet for M&I and 246,250 (addition of 81,400 acre-feet of Year 2020 Reclamation contracts brings the AI total to 327,650 acre-feet) acre-feet for AI. The sum of reduced M&I and AI peak demand volumes for Reallocation Alternative D is 245,850 acre-feet, and is comprised of 73,300 acre-feet for M&I and 172,550 (excluding 81,400 acre-feet in Reclamation contracts in Year 2020) acre-feet for AI. The total reduction for the combined M&I and AI demands from the combined peak demands equals 160,150 acre-feet (406,000 acre-feet – 245,850 acre-feet), a 39.5 percent reduction.	None.
8	First priority should be to keep water instream (or in reservoirs). Second priority is appropriating water to its highest and best public use. Municipal water use should be favored over industrial water use. That being said, municipal water agencies should not be allowed to seize rights to unallocated water without a clear demonstration of near-term need.	Contracts/agreements would not be issued without a demonstrated need. Rights would not be issued without showing demonstrated use. The Corps is proposing a reallocation of storage space. OWRD is responsible for reviewing and issuing water rights. Part of the water right application process includes a public review process and may result in conditions on water rights issued.	None.
9	When the joint use is made available for fish and wildlife the likelihood of meeting the 2008 flow objectives increases, which suggests the Corps could remove the option for joint use as a flexible pool and be better able to carry out its commitments to ESA-listed fish by allocating this water to fish and wildlife directly.	Joint-use water is only available when the pools fill above about 1.2 MAF. When the pools fill, natural streamflow is often enough to meet the targets. Even under current conditions, targets are fully not met. Defer final response until final decision on allocation volumes is determined.	Recommended Plan is Alternative C which does not include Joint-Use storage.
10	Using 2008 NMFS BiOp flows as the measure of fish and wildlife allocation is flawed as long-term operational approach. Recommendation 1: Clarify in the report text that the allocation is for fish & wildlife use and that the BiOP demand was only used as an analysis tool; the allocation is not defined by the BiOp. Paragraph 5.4.2 indicate that BiOp demand will be the priority for the F&W allocation, but that the F&W allocation can be in excess of those required by the BiOp.	The F&W allocation is required for compliance with RPA measure 2.9, as stated in the FR/EA. In addition, there is no specific allocation volume required by the BiOp. The 2008 BiOp specified minimum instream flows for the mainstem Willamette River and specific tributaries as part of the Reasonable and Prudent Alternative (RPA) for minimizing adverse effects on listed Upper Willamette River Chinook salmon and steelhead. The BiOp instream flows were based upon best available information. The RPA also specified that additional evaluation would be completed to confirm or refine the instream flows specified in 2008. To evaluate relationships between flow and habitat availability for spring Chinook salmon and winter steelhead in Willamette tributaries primarily effected by the WVP, two directed studies were completed (R2 Resources 2014 and RDG 2015). Evaluation in the North Santiam found that BiOp instream flows provide 90-100% of the maximum habitat predicted for Chinook salmon and steelhead spawning and incubation, and 63-97% of the maximum habitat for fry and juveniles (R2 Resources 2014). Flows estimated to provide peak habitat for fry and juveniles are much lower than the instream flows specified in the 2008 BiOp. In the McKenzie and Middle Fork, the BiOp instream flow targets specified were estimated to provide 85% or more of the maximum habitat available for spawning and incubation of spring Chinook and winter steelhead (RDG 2015). Instream maximum available habitat of 80 percent has been used to develop minimum flow needs for the conservation of anadromous salmonids (Sale et al. 1981 in Clipperton et al. 2002, NMFS 2002, Alberta Environment and Department of Fisheries and Oceans Canada 2007, Hetrick et al. 2009, NMFS and USFWS 2013). R2 (2014) also found that when compared to unregulated (without dams) conditions, habitat area (acres) is higher nearly all of the time under regulated (with dams; i.e. baseline) flow conditions for all life stages of spring Chinook and steelhead in the South Santiam, and for both spawning and adult life stages of spring Chinook and steelhead in the North Santiam. Results for the juvenile and fry life stages of both species in the North Santiam were somewhat mixed since higher habitat availability was predicted at flows lower than those specified in the 2008 BiOp. Overall, having significantly higher flows during the late-summer and early-fall spawning period and lower more stable flows during spring runoff periods than would otherwise occur under Unregulated conditions results in significant more estimated habitat available for these species when 2008 BiOp specified flows are provided as compared to unregulated conditions in these tributaries. In 2016 and 2017 a multi-disciplinary scientific team reviewed instream flows for a number of identified fundamental objectives which included diverse taxonomic groups: Chinook salmon, steelhead, native fish community, native mussels, lamprey, native riparian vegetation, and native herpetofauna (Deweber and Peterson 2017). Significant gaps in the understanding of how flows affect basic aspects of the river ecosystem and many fundamental objectives were identified. Based on available information for Chinook salmon and steelhead habitat needs in the mainstem Willamette River, there was not clear evidence that changing flow targets from the 2008 BiOp would result in measurable biological benefits, in part due to an inability to regulate higher flows in Spring and high summer water temperatures. For native riparian vegetation, and native herpetofauna, a slower flow recession rate and lower volume in summer as compared to the 2008 BiOp objectives were identified as potentially beneficial. These studies provide the best scientific information available, and further support conclusions reached in the 2007 BA and 2008 BiOp regarding flow needs for UWR Chinook salmon and UWR steelhead that migrate and rear in the Willamette River, and tributaries effected by WVP dams. Since these flow targets were established to provide adequate habitat conditions as related to flow management, environmental baseline characteristics (including sediment transport, bank protection/channelization, and floodplain maintenance/side channel connectivity, hydrology, fish habitat, critical habitat primary constituent elements (PCEs), and species distribution) are not described here, but can be found in the 2007 BA and 2008 BiOp. This section summarizes the extent the 2008 BiOp targets have been achieved since 2008.	None.

<b>Non-Allocation Alternatives</b>			
11	The report should include a discussion of non-WVP sources of water that may be available for water source redundancy, such as a declaration of an emergency and access to the Willamette River to accommodate needs for less than 5 years, which would not trigger the need for a Oregon water right.	The FR/EA includes a discussion of non-WVP sources of water that may be available for water source redundancy. See FR/EA Section 4. ASR is used as a redundancy source. The comment suggests that a declaration of emergency could be used as a means to achieve water source redundancy, though such a declaration would not provide water source redundancy. An emergency declaration by the Governor, under drought, does not waive the requirement of a state water right. A drought declaration can open up some expedited water right options, but you must have an existing water right in place (one that due to regulation, water supply constraints), you don't have access to, and the options are only good for a year. The state would still require a permit to use stored water, even surplus stored water.	Remove reference to surplus agreements to satisfy redundancy issue since redundancy is included in the reallocation volumes.
12	Surplus water contracts do not provide the reliable water supplies water providers require, and therefore cannot provide a sound basis for investment in water supply infrastructure.	Permanent water contracts are also not 100% reliable since reservoirs cannot refill every year.	Remove reference to surplus agreements to satisfy redundancy issue since redundancy is included in the reallocation volumes.
13	Conservation should be fully explored in detail. Future demands should include increased conservation methods for both M&I and AI. The Corps could strengthen this part of its analysis by analyzing the extent to which municipal conservation measures are, in fact, being implemented, and the extent to which additional measures may temper future municipal and industrial needs.	Conservation is a viable measure for dealing with short-term emergency peak season water supply shortages and temporary drought conditions. Water Management and Conservation Plans (WMCPs) are required of most Oregon M&I systems, per OAR 690-086. A water conservation element is among the major components of an M&I system's WMCP, and provides detailed information on: progress on implementation of previously proposed conservation measures; water use measurement and reporting; annual water audits; full metering of system; meter testing and maintenance; rate structures based on quantity of water metered; leak detection program; public education program; and currently implemented conservation measures. Future conditions assume that M&I systems will continue to make non-quantifiable gains in water conservation and use efficiency, and refine drought management practices to the maximum extent practicable. However, it is not feasible to articulate and incorporate into the analysis an overall conservation water savings goal for M&I systems because the success of further gains in efficiency cannot be adequately projected. While all M&I systems must report on their progress in promoting water conservation in their WMCPs, the progress reported typically is not in quantitative terms of water saved. Rather, the progress reports quantify numbers of meters replaced, technical assistance programs implemented, dollars spent on rebate programs as an incentive for customers to install more efficient plumbing fixtures and appliances, and other progress made toward encouraging conservation. Therefore conservation is imbedded into the M&I calculations. The allocation for AI is based on the duty rate, though the expected rate considers the use rate. There are no requirements from OWRD to increase conservation practices for AI.	Text added to concluding paragraph in Section 4.2.1.1.
14	The Review addressed current and future demand, but did not address any future or additional storage options.	Additional storage was considered for AI, on a small scale perspective for local users. Aquifer storage and recovery (ASR) was examined for municipal uses and not carried forward due to costs. Increases at existing Corps dams would not be feasible due to dam safety issues. Reallocation within the existing water control diagrams is a constraint because there is only a limited amount of storage above maximum conservation pool, at some projects, to capture spring and summer storms (i.e., pool raise isn't an option). Also, a waiver would not be approved to raise pools or dam heights due to Willamette Dam Safety Action Classifications (DSAC).	Additional text added to the main report under plan formulation.
15	M&I users have unused water rights and they can increase water conservation practices to reduce future demands.	Refer to comment 13. Access to unused water rights (for municipal use) are reviewed through an extension process at OWRD. Accessing this water is often conditioned to protect sensitive, threatened, and endangered fish species, and municipalities will need to develop a Water Management and Conservation Plan.	None.
16	Report does not take into account discontinued industrial uses that can offset new industrial uses, nor does the report evaluate potential new groundwater sources for municipal and industrial supply.	It is recognized that OWRD has no mechanism in place that would "remove" an unused SSI water right and transfer the water right to another entity. Groundwater was analyzed as a potential source for M&I supply. See Section 4.2.1.4 of the FR/EA.	None.
<b>No Action Alternative</b>			
17	The No-Action Alternative should limit AI contracts to 95,000 af as required in the 2008 BiOp.	The 2008 BiOp limits contracts without reconsultation. Reconsultation is expected to occur in 2023, when effects of AI contracts above 95kaf could be considered.	None.
<b>Demand Analysis</b>			
<b>General</b>			
18	Demands must be informed by water rights affected by conversion of MPSFs.	They were; AI demands for stored water include an estimated volume that would be impacted by conversion of MPSFs. See Sections 3.3.4 and 5.2.3 of the FR/EA	None.
19	Demands must be informed by reasonable considerations of new or additional uses and preserve the opportunity for new or enhanced infrastructure.	See Appendix A. New/additional demands are projected for the 2020-2070 period of analysis.	None.
20	Users allocations should not be reduced to retain storage in joint-use.	There is insufficient storage to reallocate for all users peak demands.	Recommended Plan is Alternative C which does not include Joint-Use storage.
<b>M&amp;I Demands</b>			
21	The report should estimate minimum needs for M&I (including no new growth inducing supply), as was done for FW demands which were estimated using minimum flow targets from the BiOp.	The M&I allocation is not based on an expectation of induced growth (see population projections - Appendix A), as the M&I allocation is made to accommodate future growth that out-strips existing and future supply in the absence of access to WVP conservation storage. See Appendix A for a thorough discussion of supply deficits. Further, minimum needs for M&I are estimated and discussed in Appendix A under several demand scenarios (e.g., average peak season use, segmentation of residential and non-residential sector demands, etc.), but are not used in the reallocation. Equating minimum tributary flow objectives with minimum M&I needs is not logically consistent, as the minimum tributary flow objectives are a threshold by which compliance with the BiOp is measured.	Refer to comment 10 response.
22	Redundant water sources are of fundamental importance in water supply planning.	The Corps recognizes the importance of need for redundant water supply.	Recommended Plan is Alternative C which includes redundant supply.
23	M&I reallocation should be based on the 2070 peak demand estimates.	Recommended Plan changed to Alternative C which is 2070 demands.	Recommended Plan is Alternative C

24	Consumptive demands should be broken out into essential and non-essential categories, e.g. critical use for human health and safety for M&I.	Essential and non-essential uses of water come into play for each M&I system as a part of water curtailment planning, which include proactive measures that M&I systems take to respond to short-term water supply shortages. Short-term water supply shortages can, for example, be classified as Routine Summer Advisory, Moderate, Severe, and Critical. During deficit water year types, it is likely that the curtailment plan will be enacted to some degree for an unspecified period of time. When enacted, M&I systems ask their customers to limit water use, promote already-existing conservation measures, and as supply shortages move toward the "Critical" phase of a supply shortage, begin to restrict water use by rationing (extreme), and prohibit water use for a variety of non-essential activities. While the segmentation of consumptive demands into essential and non-essential activities is important for drought planning, the reallocation of WVP storage is not geared toward "emergency supply". Rather, an objective of the reallocation is to meet forecasted M&I peak season needs (see Appendix A for a discussion of deficits) through the year 2070.	None.
25	Evidence that daily average and peak per capita water demands are falling in Oregon, it would be expected that water demand would increase at a rate slower than the rate of population growth.	It is certainly true that per capita water demands have fallen in Oregon over the past decades, and have continued to fall over the past five years. USGS statistics on public supply GPCD show a decrease of 13.4 percent from 1985 to 2015 (0.45 percent per year), and a decrease of 2.7 percent from 2010 to 2015 (0.53 percent per year). As expected with any long-term trend (e.g., 1985 to 2015), there are outlier years that do not adhere to the long-term trend. For example, per capita use dropped precipitously from 1985 to 1990 (127 GPCD to 111 GPCD), but increased from 1990 to 1995 (111 GPCD to 136 GPCD), then dropped from 1995 to 2005 (136 GPCD to 124 GPCD). Many of the advancements in water conservation technology development and adoption were brought about by the Energy Policy Act of 1992 and ensuing relations, which specified maximum flow rates for new residential toilets, showerheads, faucets, and clothes washers. In addition, Oregon Administrative Rules have been in place since 1994 that direct M&I systems to prepare water conservation plans and monitor progress. Since conversation efforts have been underway for over 20 years, it is likely that the availability of water efficient household appliances and plumbing fixtures have contributed greatly to the decline in GPCD use. As residential owners continue to replace worn out appliances and fixtures with more efficient models, it is agreed that overall GPCD use would continue to decline - though a specific estimate of an annual decrease in GPCD water use would contain considerable uncertainty. M&I suppliers do not universally include projections of conservation achievement in their projections of future water demands. As such, the demands projected in the FR/EA do not include future reductions in GPCD, though ALL of the demands projected in the FR/EA incorporate conservation savings achieved by M&I systems through the use of the most recently available GPCD metrics.	None.
26	The report erroneously assumes that municipal water use in the future will continue at the same per capita rate as today.	See response to comment 25. A future conservation achievement goal is not used in water supply planning, and cannot be applied universally to the study area M&I systems.	None.
27	Municipal and industrial water demand projections should be to identify the most probable future water demand and not, as in the reallocation report, the highest conceivable future water demand.	Corps policy is to evaluate and reallocate based on peak demands. The report also describes expected use, which is the most probable demand. Municipalities plan for future supply needs based on peak demands.	None
<b>AI Demands</b>			
28	Reallocation for AI should be based on ODA analysis. There is a discrepancy between the ODA and Corps analysis.	When the study was initiated, it was agreed (via the Project Management Plan) that ODA was to supply AI estimates. ODA did not produce preliminary or final demands in time to be used for the study. Data derived from the OWRD Statewide Water Demand Forecast was used as a temporary surrogate. Results of the extensive analyses undertaken by the Corps were presented to industry representatives in December of 2016. It should also be noted that the ODA analysis referred to in the comment (which differs from the analyses used in the reallocation study) includes increases in AI demands that are based on climate induced changes. Climate induced changes are precluded from being used in reallocation schemes. The final report will be updated to acknowledge, per the state's request, that the crop coefficients were preliminary. Please note that the supporting documentation provided with the crop coefficients states that these values had undergone peer review (namely by R. Troy Peters, P.E., Ph.D., Chip Bubl, Ph.D., Brent Stevenson, John Selker, Ph.D., and Chad Higgins). The AgriMet Weather Station Data is the best readily available information for computing ET estimates that worked within the timeline and needed deliverables for this study. As noted earlier, the ET-based demand estimates were not carried forward to the reallocation alternatives analysis. The evapotranspiration –based estimates will not be updated with different crop coefficients since they were not carried forward in the alternatives analysis nor will they be updated with additional weather station data.	Note the crop coefficients were preliminary.
29	The four mile buffer is an artificial boundary and should not be used. The reallocation must open the entire basin to new irrigation contracts to enable all users who need stored water to access stored water.	The four mile buffer does not limit the basin to new irrigation or limit users outside the four mile buffer. The reallocation does not prevent any agricultural user located anywhere in the Willamette basin from accessing stored water.	None.
30	Irrigation allocation should be for more than the 2070 demand.	The demands were developed based on best available information and reviewed by agency technical reviewer with experience in irrigation and agricultural practices. Using a value higher than the 2070 demand cannot be justified in this study. Additional demand due to climate change was not included in the proposed allocation for any sector.	None.
31	The projected increase does not include any water use by districts or their patrons. When looking at meeting future agricultural water demands, irrigation districts are the most likely entity to be able to develop and convey contracted water in the future. Irrigation districts can distribute the high cost of infrastructure construction and operation across multiple water users making it more feasible than if an individual farmer were to do it.	A total of 602 records of AI permits were granted from 1991 through 2015, and were used to develop annual factors by which AI diversion demand grows over the period of analysis. This 25-year examination period was selected because expansion of AI within the basin began in the 1940s and leveled off in the 1990s. Irrigation districts were NOT specifically excluded from the 602 records.	None.
32	The report should estimate minimum needs for irrigation, as was done for FW demands which were estimated using minimum flow targets from the BiOp.	The comment reflects a preference that is not consistent with the FR/EA study goals, which include a fair reallocation of WVP conservation storage. The AI allocation is not based on an expectation of induced growth (see Appendix B), as the AI allocation is made to accommodate future growth in permitted acreage expected to be irrigated. Minimum needs for AI are estimated and discussed in Appendix B, but are not used in the reallocation. Equating minimum tributary flow objectives with minimum AI needs is not logically consistent, as the minimum tributary flow objectives are a threshold by which compliance with the BiOp is measured.	None.
33	Consumptive demands should be broken out into essential and non-essential categories, e.g. critical use for human food production for AI.	The comment suggests that production of agricultural crops related to human food production are considered "critical" or "essential", and all other agricultural crops are deemed "non-essential". From this, it can be further inferred that production of the Willamette Valley's most predominant cash crop (sod/grass seed) would be deemed "non-essential" using the logic of the comment, and completely disregards the crop's economic value to individual farms, and the region. The only preference the state can provide is water for human consumption and livestock, during times of drought, and it must be approved by the Water Resources Commission.	None.
34	The report should avoid unreasonable assumptions such as full development of all potentially irrigable acres and should not assume maximum water use on every acre.	The AI estimate is reasonably founded on the historical growth in permitted acreage - derived from OWRD WRIS data. The analysis does not assume maximum water use on every acre, though the duty rate of 2.5 acre-feet per acre is used in the estimate of AI permit demands, which are founded on WRD regulations. Granted, the duty rate will be used in the water right (which would be sourced from WVP conservation storage), though the analysis clearly states that use is expected at a volume less than 2.5 acre-feet per acre.	None

35	To estimate future agricultural demand, the draft study used 2.5 acre-feet per acre duty as the basis for its analysis. This is a higher duty than the actual use of most current irrigators, thus it builds in an amount that may accommodate increased demand as a result of climate change. This estimate could instead reflect potential improvements in agricultural demand with advanced irrigation technologies.	Refer to comment #34	None
36	The Willamette Basin has limited water conveyance infrastructure and Willamette Valley soils are not particularly suited to irrigated agriculture. The Corps should not encourage speculative new investments that may end up stranded.	The reallocation of WVP conservation storage does not encourage speculative new agricultural irrigation investments. The AI reallocation of WVP conservation storage is based on the growth in irrigated acreage expected through the year 2070. Prior to the issuance of the BiOp, AI contracts totaled just over 50,000 acre-feet. The comment is merely reflects an assumption that the reallocation would encourage "speculative new investments". There are still class 1-4 soils near the reservoirs that are not irrigated.	None
<b>Fish and Wildlife Demands</b>			
37	Wrong assumption that the BiOp minimum flow targets address all F&W needs or that these are even the right flows for ESA listed fish. The Report should better assess all fish and wildlife needs. The 2008 BiOp flows are bare minimum needs. They are not the optimal flows that would support healthy populations of fish & wildlife, or the total potential water needs as were estimated for municipal, industrial and agriculture.	The 2008 BiOp instream flows were based upon best available information. Gaps in our understanding of how flows affect basic aspects of the river ecosystem and many fundamental objectives remain. For native riparian vegetation, and native herpetofauna, flow recession rate and lower volume in summer as compared to the 2008 BiOp objectives were identified as potentially beneficial. For other taxonomic groups, there was not clear evidence that changing flow targets from the 2008 BiOp would result in measurable biological benefits, in part due to high summer temperatures which cannot be regulated by WVP dams. For the mainstem Willamette River, the most influential parameter in a decision model was water year type. The FR/EA does not seek to establish optimal flows, nor does the FR/EA assume that the BiOp minimum flow objectives address all FW needs. Rather, the FR/EA seeks to develop an allocation of WVP conservation storage that achieves compliance with BiOp minimum flow objectives to the maximum extent possible while providing WVP conservation storage for consumptive uses.	Refer to comment 10 response.
38	Report should estimate maximum needs for fish as was done for M&I and irrigation.	New science is available to inform flow needs for fish and a summary will be added into the FS/EA. In 2016 and 2017 a multi-disciplinary scientific team developed and analyzed fundamental objectives for instream flow management which included diverse taxonomic groups. There was not clear evidence that changing flow targets from the 2008 BiOp would result in measurable biological benefits for listed fish in the mainstem Willamette River, in part due to high summer temperatures which cannot be regulated by WVP dams. In the tributaries, analysis of flow-habitat relationships for Chinook salmon and steelhead spawning, incubation, fry and juvenile life stages was completed in the North and South Santiam, and for spawning and incubation needs in the McKenzie and Middle Fork has been completed.	A summary of the percentage of maximum habitat values provided by the 2008 BiOp flows for these species will be added to the report. Incorporate brief discussion of SWIFT and PHABSIM results.
39	Evaluation of fish needs may have underestimated current and future diversions.	Future diversions were estimated for municipal users that have existing rights without conditions related to streamflows. These diversions were included in the no action and TSP model runs. New AI diversions are not expected as the assumption is these users are currently using the full water right.	None.
40	The draft study does not project any change in demand for ESA-listed fish that would be comparable to the future demands projected for agricultural, municipal, and industrial uses. This oversight could be partially corrected with appropriate consideration of how climate change is likely to affect reduce instream flow or examining whether the 2008 BiOp targets are the correct flows to sustain fish.	This is incorrect. The draft study included Appendix K, which discussed climate change impacts on future regulation and provided an estimate for additional stored water needs for BiOp flows to cover expected reductions in streamflows in the future under changed climate conditions. The appendix provided an estimate of this additional stored water needed for twenty-year increments. Future demands for AI and M&I have their foundation in historical demand growth and anticipated future demand growth. Growth in AI demand is based on the historical growth in permit applications, and growth in M&I demand is based on Oregon's Office of Economic Analysis population growth estimates into the future. Throughout the BiOp, there is no mention of growth or a change in minimum flow objectives into the future. None of the estimates incorporate climate change induced impacts.	None.
41	We recommend the Corps consider calculating current demand for ESA-listed fish as the volume of water required to meet 2008 flow objectives as often as they were predicted to be "equaled or exceeded" in the jeopardy opinion, and adding in future demand predicted under climate change as well as the potential need for higher flows to maintain suitable water quality and habitat. This peak demand could then be used for the determination of an appropriate allocation volume for fish and wildlife.	2020 was selected as the base year since that is the earliest anticipated date for congressional approval of the project. There has been growth in consumptive uses since 2008 so it is inappropriate to compare to 2008. There is insufficient stored water to reallocate each sector at their peak volume plus climate change. Additional demand due to climate change was not included in the proposed allocation for any sector.	None.
<b>Climate Change</b>			
42	Allocations should be based on needs which include climate change impacts.	Peak demand volume estimates without climate change already exceed the conservation storage in the reservoirs. There is insufficient storage to reallocate to meet peak demands plus climate change.	None.
43	Need to consider how climate change is likely to affect / reduce instream flow.	This was considered and documented in appendix K of the report.	None.
44	Recommends adding in future demand predicted under climate change for the fish and wildlife demand volume.	Peak demand volume estimates without climate change already exceed the conservation storage in the reservoirs. There is insufficient storage to reallocate to meet peak demands plus climate change.	None.
<b>Affected Environment/Existing Conds/FWOP Conds</b>			
45	The No-Action Alternative should limited AI contracts to 95,000 af as required in the 2008 BiOp.	Refer to comment #17.	None.
<b>Modeling</b>			
46	The ResSim model as a driver of policy should be viewed with considerable caution.	The ResSim model was used as an analysis tool and not a driver of policy. The Water Management and Reallocation Studies Planning Center of Expertise determined that the ResSim modeling and post-processing tools are not considered planning models under the definition of EC 1105-2-412. The ResSim modeling for the WBR reallocation alternatives and scenarios provided insight to the PDT for possible ranges of streamflows throughout the basin based on the Period of Record flow inputs and demands associated with alternatives. ResSim is used to assess the possible pitfalls and benefits to different reservoir operations, and to obtain statistical likelihood of an outcome, but it is not used to drive policy.	None.
47	Report does not account for changes in the hydrograph since 2008.	The flow dataset used for the analyses covered the Period of Record 1928-2008. Basin-wide datasets, including all reservoir inflows and local flows downstream of the dams, along with irrigation use estimates, will not be available for modelling use until approximately 2020 or 2021, when the 2020 Level Modified Flows will be available. Potential hydrograph changes associated with projected climate change are addressed in Appendix K.	None.

48	Modeling of TSP performance relative to the BiOp, and the key assumptions, should be better explained.	The TSP is evaluated relative to the BiOp. The TSP and the No Action Alternative are evaluated independently to gauge the performance of each in meeting the BiOp flow objectives. See appendices for extensive discussions of the key assumptions used in the evaluation of the TSP and No Action Alternative in meeting BiOp minimum flow objectives. Note that Appendix G, for ResSim Analyses, contains additional modeling results. The main report presents a summary of the results, but this appendix contains more individual analysis details.	Appendix G will be updated to include some additional results, such as the flow at Oregon City above Willamette Falls.
<b>Environmental Affects</b>			
49	Need to assess impacts below Salem, as well as fish needs and impacts to fish flows.	Flows down to Oregon City were analyzed in the ResSim model. This flow information will be documented in the final draft of the report, in the revised Appendix G, which documents the ResSim analyses. The technical analysis shows flows are higher at Oregon City than at Salem despite the additional withdrawals in this reach.	The final report will include non-exceedance plots at Salem and at Oregon City above Willamette Falls. These will be included in the revised Appendix G, which documents the ResSim analyses. The main report will not be revised to include these curves.
50	Stored water released under a water supply contract is protected from the point of release to the point of diversion, therefore M&I and AI stored water contracts will directly reduce the deficits identified in Appendix C.	Stored water released for consumptive purposes is protected from the point of release to the point of diversion from other consumptive uses, though returned to the system at a diminished amount. Please see Appendices E, F, G, and H for analyses that describe the impacts of M&I and AI stored water contracts in meeting the BiOp minimum flow objectives for the No Action Alternative and the TSP.	None.
51	Analysis of the impacts to ESA-listed fish species is woefully inadequate; comparison does not substitute for the required "hard look" at how the TSP will impact threatened salmonids as NEPA demands. Corps' analysis of impacts to temperature in the mainstem Willamette River and tributaries is problematic and confusing. The Report does not explain the basis for its conclusion that these effects won't be "significant."	New scientific information developed since 2008 supports the flow objectives analyzed in NMFS 2008 BiOp. Analysis of the impacts to ESA-listed fish involved extensive modeling of adjusted historic Willamette River flows for the No Action Alternative and the TSP. Six appendices of the FR/EA are dedicated to answering the question of how implementation of the TSP will impact ESA-listed fish as NEPA demands. Analyses of impacts to temperature in the mainstem Willamette River and tributaries is described in Section 6.5 of the FR/EA.	Refer to comment 10 response.
52	The agency does not consider or disclose the potential impact that changes in flows will have on water quality standards and water-quality limited waterways.	New analysis of water temperatures relating to river volume is available. A summary will be added to the FS/EA. As described in FR/EA Section 2.3, water quality in the upper, mid, and lower Willamette River showed a consistent overall improvement in water quality over a 30-year period despite a population increase of more than 1,000,000 people over the same time period. FR/EA Section 6.5 discusses the potential impact that changes in flows will have on temperature. The analysis found that the TSP provided cooler temperatures than the No Action Alternative in the North and South Santiam rivers in July and August, and warmer temperatures in September and October, however these differences were small. Temperature differences between the TSP and No Action Alternative were estimated to be less than 1.5°C, and usually less than 0.5°C. Little difference would be expected since flow differences in the four major tributaries affected by WVP operations are estimated to be minimal between the No Action Alternative and the TSP. While there would be slightly more flow under the TSP, it is not expected that water temperature, DO concentrations, nutrients, and bacteria would measurably increase or decrease in response to TSP implementation – changes in flow under the TSP are likely to not be sufficient to result in measurable changes to these parameters.	Refer to comment 10 response.
53	Report assumes without explanation that small and/or infrequent misses of BiOp flow targets are not significant. Since the targets are minimum flows, any miss should be considered significant.	Misses are not statistically significant and do not represent change in available habitat or temperatures.	Refer to comment 10 response.
54	The timing of flows, not just the range, has significant impacts on the health of riparian vegetation such as black cottonwood trees. By changing who could control the timing of reservoirs, the TSP could affect the timing of flows and therefore could affect riparian vegetation.	In 2016 and 2017 a multi-disciplinary scientific team developed fundamental objectives for instream flow management which included native riparian vegetation. Although limited data was available. Non Concur. Reservoir pool elevations were examined to determine the extent of timing differences between the No Action Alternative and the TSP. Of particular interest was the difference in the rate of drawdown of the pool during the conservation season. In general, it was found that average reservoir pool elevations under the TSP would occur from hours to days prior to the same pool elevation occurring under the No Action Alternative. The timing differences identified the maximum number of days that reservoir pool elevations under the No Action Alternative lagged reservoir pool elevations under the TSP during the conservation season, and ranged from 0 days to 6 days with an average and median of 2.5 days	Refer to comment 10 response.
55	Modify the analytical approaches used in the draft study to better predict how well the various alternatives will perform to meet the 2008 instream flow objectives and compare alternatives to a baseline of the frequencies with which instream flow targets were originally predicted to be met for the 2008 consultation, to better evaluate the impacts of any alternative on the Corps' ability to carry out its commitments to ESA-listed fish.	The analytical approach incorporates the best available information on expected streams flows by estimating changes in flows to occur with implementation of each alternative, based on flow records from October 1928-September 2008. The WBR did not attempt to recreate predictions made over 10 years ago and evaluated performance of the 2008 BiOp flow objectives based on a robust POR data set. Appendix G provides additional information about flow objective performance, including exceedances of these flow objectives.	None
56	The ResSim model first specified withdrawals to meet allocation volumes for future agriculture, municipal, and industrial uses, then attempted to meet the 2008 instream flow objectives using the storage remaining in the system. This approach assumes all of the "joint use" allocation would be available for ESA-listed fish and thus contradicts the stated purpose of joint use storage as a flexible pool to "accommodate unforeseeable changes to demand trends." It is unlikely that ESA-listed fish would be the only use accessing this joint use water in adequate or abundant years, and further, the draft study is also unclear about how the Corps determined the volume of the proposed joint use allocation. As a result, the draft report may overestimate how often the 2008 flow objectives would be met under any allocation alternative in adequate and abundant water years.	This description of ResSim modeling does not accurately depict the methodology used. Irrigation and M&I demands were converted to diversion and return flow quantities that varied by water year type and alternative, which were applied to the ResSim network. The reservoir releases to cover these demand diversions were included in minimum release rules at each project. The BiOp specified both minimum tributary flow targets at each project and minimum mainstem flow targets at both Salem and Albany. The BiOp minimum tributary targets are also specified in ResSim as minimum release rules at each project, while the mainstem flow targets are input to project rules as downstream minimum flow rules. Minimum release rules at projects are project specific rules, while downstream minimum flow rules are used by multiple projects to proportion each project's share of release to meet a target. This modeling approach does not favor any particular demand's use of the joint use space. The joint use space is not needed to meet any demands in the normal and wet years, and the space does not fill in the drier years (which means that no user gets any joint use water).	An allocation to Joint Use is no longer part of the Recommended Plan.

57	The Corps does not fully ascertain the extent of effects to fish and wildlife and excluded effects to downstream riparian habitats from detailed consideration. As a result, while ESA-listed Chinook salmon and steelhead are the only fish or wildlife taxa specifically mentioned in the report, the effects on them are not fully described.	New science is available to inform flow needs for fish and a summary will be added into the FS/EA. In 2016 and 2017 a multi-disciplinary scientific team developed and analyzed fundamental objectives for instream flow management which included diverse taxonomic groups. There was not clear evidence that changing flow targets from the 2008 BiOp would result in measurable biological benefits for listed fish in the mainstem Willamette River, in part due to high summer temperatures which cannot be regulated by WVP dams. In the tributaries, analysis of flow-habitat relationships for Chinook salmon and steelhead spawning, incubation, fry and juvenile life stages was completed in the North and South Santiam, and for spawning and incubation needs in the McKenzie and Middle Fork has been completed. Predicted changes to water levels downstream of WVP reservoirs is the primary influencing factor in considering the potential for changes that could affect the environmental resources of the riparian corridor. The riparian corridor's environmental resources that could be affected by changes in water elevations are at risk during periods of draw-down as part of flood risk management operations. Bank-full flows occur as part of flood risk reduction operations and generally do not occur during the conservation season. The proposed changes to releases from reservoirs would accumulate slowly over the period of analysis and even when fully realized (as of 2070), would result in changes to riverine flows that would be within the range of observed flows and associated water surface elevations under current conditions. Because of the overt inability of implementing the TSP to effect change to the physical environment that would be different from the range of conditions currently observed, effects to downstream riparian habitats were eliminated from detailed consideration.	Refer to comment 10 response.
58	Corps should prepare EIS.	Study results in a draft Finding of No Significant Impact. EIS is not needed.	None.
<b>Implementation</b>			
59	In low water years, threatened salmon and steelhead need to take priority.	The Corps is consulting with NMFS to ensure ESA obligations, regarding threatened salmon and steelhead, are met with implementation of the reallocation.	None.
60	Flexibility will be available without the joint use pool since any water not under contract will be available for joint-use management.	This addresses annual flexibility, not long term-flexibility to deal with change changing conditions. If joint-use is eliminated and distribution of demands change in the future, then a more complicated reallocation will be necessary.	None.
61	Existing BOR contracts should not be impacted.	This project will not drive changes to the existing water service contracts. Conversations among the Corps, BOR and OWRD are ongoing.	None.
62	The Corps needs to work with the State and BOR to answer questions regarding implementation and prioritization of existing rights and new water rights, including how existing rights could be impacted by conversion of MPSFs and how existing users may be impacted by the reallocation.	Conversion of MPSF is outside the scope of this project; however, the volume of storage that may be affected by the conversion of MPSF was included in the Agricultural Irrigation demand estimate and the reallocation volume. Conversations among the Corps, BOR and OWRD are ongoing.	None.
63	The interplay of federal contracts, state water rights, and district held water rights are woefully understated in the Draft Study and the resulting TSP. Report does not adequately recognize possible conflict and uncertainty in protecting stored water releases for fish. Report needs to distinguish between instream water rights in live flow and in-stream water rights in stored water.	Appendix G details the amount of diversions, return flows, and project releases of stored water used for new demands as appropriate. Appendix G also shows the increases in live flow from already permitted water rights as developed in Appendix F. ResSim output does not distinguish between live flow and stored flow releases. Protection of instream flows will occur after the use is changed on the storage certificates.	New section on Risk and Uncertainty added to the implementation section of the report.
64	This change in character of use on the storage rights will impact established water rights.	Changing the character of use is done by submitted a water right transfer application. During the application review process, injury to an existing water right is examined. "Injury" or "Injury to an existing water right" means a proposed transfer would result in another, existing water right not receiving previously available water to which it is legally entitled. The OWRD must evaluate whether the proposed transfer would result in injury to an existing water right. <a href="https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=3202">https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=3202</a>	None.
65	Concerns with transparency of people managing water. How well will the results be communicated, reviewed and measured, and ultimately identifying who gets to make the decisions and be held accountable?	No change to existing interagency team. Information is available from the Corps' public website.	None.
66	Report does not provide an adequate explanation of why the reallocation is a necessary precursor to a "transfer" to change the character of use under the storage certificates held by the Bureau of Reclamation ("BOR"). Suggested change: Provided a detailed explanation whether and why the reallocation is required before a change in the character of use under the water storage certificates and whether other options are available to permit contracting for needs other than irrigation. Include in the explanation a discussion of the transfer for the City of Creswell. The Report also should address whether BOR could change the certificates to provide for joint use without assigning specific amounts to specific uses and whether that would allow contracting for needs other than irrigation without a reallocation.	The study is necessary to understand how much storage (and by extension, stored water) is available from the federal projects to transfer to other uses, like fish and wildlife, future irrigation, and future municipal or industrial use. Reallocation of storage is required for the M&I purpose as federal storage agreements for M&I use can only be for storage specifically dedicated to this purpose. Irrigation contracts from BOR can be written on joint-use storage space, as is currently being done.	None.
<b>Other</b>			
67	Climate change analysis did not account for impacts to groundwater.	Concur. Climate impact analyses are based on stream flow with the exception of AI, which was based on climate change-induced impacts to ambient temperature.	None.
68	Public review period was insufficient. Stakeholders should have been provided an additional 30 days to comment.	Typical public review period for an Environmental Assessment is 30 days. The public was provided 59 days to review the draft integrated feasibility study report/environmental assessment.	None.