



CITY MANAGER'S OFFICE

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January 12, 2026

Delivered via Electronic mail and U.S. Post

U.S. Army Corps of Engineers
 Attn: CENWP-PME-E / Willamette SEIS
 P.O. Box 2946
 Portland, OR 97208-2946

Re: City of Salem Public Comments on Draft Supplemental Environmental Impact Statement

The purpose of this letter and its supporting attachment is to provide comments from the City of Salem (City) regarding the *Willamette Valley System Operations and Maintenance Draft Supplemental Environmental Impact Statement* (Draft SEIS) that was issued by the U.S. Army Corps of Engineers (USACE) in November 2025. The Draft SEIS fulfills two directives contained in the 2024 Water Resources Development Act: (1) It identifies options to permanently end federal hydropower production at eight Willamette Valley Dams; and (2) It evaluates options to comply with the Biological Opinion (BiOp) by the National Marine Fisheries Service (NMFS) regarding annual deep drawdowns of Detroit Reservoir. The City's comments are specific to the deep drawdowns, in which the level of Detroit Reservoir is proposed to be dropped to a historically low elevation each year to facilitate the out-migration of threatened fish species.

First and foremost, the City continues to support the actions of the USACE, NMFS, and other federal, state, and local agencies intended to enhance habitats and support out-migration of spring Chinook and winter steelhead, both of which are listed as threatened under the Endangered Species Act (ESA). The City also recognizes and respects the historic, cultural, and spiritual interests these species represent to members of the Tribal Nations. Finally, the City acknowledges and appreciates that the Draft SEIS addresses many of the concerns we have expressed to the USACE over the past 12 months. Among the significant commitments made by the USACE in the Draft SEIS that are responsive to our concerns:

- (1) The USACE will "initiate the drawdown closer to late November or early December" (Page 18).
- (2) The deep drawdown will be conducted "in a stepwise manner" (Pages ES-9, 210).
- (3) The duration of the deep drawdown "is set to last for two weeks" (Page 18).
- (4) The incremental deep drawdown approach "would span over three years" (Page 90).

However, the City remains deeply concerned at the absence in the Draft SEIS of any reference to turbidity triggers and accompanying action measures. As described and justified in our comments

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below and in our previous comments (see Attachment), these two important operational factors must be incorporated into the Final SEIS.

Key Recommendation: Establish a Turbidity Trigger of 10 NTU/12 hours to Cease the Drawdown

It is critical that the USACE adopt a turbidity trigger which, if exceeded over a specified period of time, will cause the immediate cessation of drawdown operations and the resultant return of Detroit Dam and Detroit Reservoir to normal operating conditions. The purpose of the turbidity trigger is to protect human health, protect the City’s water treatment system, and protect the City’s customers. Once drawdown operations cease, it is anticipated that turbidity levels in the river will decrease over time and normal operations at the City’s water treatment plant will be able to resume. Further, to provide time to restore normal operations and to evaluate lessons learned, once the turbidity trigger has been exceeded, drawdown operations should not resume again until the following year. This recommendation is based on years of operational experience coupled with scientific research conducted over the past 12 months.

Additionally, a turbidity trigger should be the minimum safeguard for downstream water users to protect from reasonably foreseeable environmental effects of the proposed action. The Thomas R. Carper Water Resources Development Act of 2024 (WRDA 2024) required that the Corps complete a report on instances in which turbidity concerns have arisen following a drawdown at a reservoir in the Willamette Valley, including “identify(ing) lessons learned associated with turbidity resulting from drawdowns and ... how changes based on those lessons learned are being implemented.” Absent completion of the report, the Corps should proceed with the drawdown of Detroit Reservoir under strict guidelines for downstream water quality while data is being collected and analyzed from similar operations in the Willamette Valley. Given that the Corps failed to analyze specific turbidity level effects from the proposed action on downstream users, a strict turbidity trigger that protects downstream users is a reasonably prudent alternative.

The specific recommendation is that the turbidity trigger should be set at a reading of 10 NTU¹ or above, experienced over a period of 12 consecutive hours, as measured at the United States Geological Survey’s (USGS) Niagara gauge. (USGS-14181500).

ADDITIONAL BACKGROUND INFORMATION.

The City’s Responsibilities as Regional Water Provider

The City is the only regional water provider in the Mid-Willamette Valley. We are responsible for supplying safe and reliable drinking water to approximately 220,000 individuals and thousands of properties that include hospitals, schools, businesses, industries, irrigators, multifamily housing units, and

¹ Nephelometric Turbidity Units (NTU) and Formazine Nephelometric Units (FNU) are measures of the clarity of the water. The City typically reports turbidity levels in NTU; the USACE typically reports turbidity levels in FNU. Although the two units reflect the same characteristics, the analytical methods used to determine FNU and NTU are different and the two are not numerically interchangeable. Generally, water with turbidity of 10 NTU or 10 FNU or less looks clear. Water with turbidity of 50 NTU or 50 FNU looks cloudy; water with turbidity exceeding 500 NTU or 500 FNU looks muddy.

single-family homes. The City's water service area includes the City of Salem, the City of Turner, four water districts, and portions of unincorporated Marion and Polk counties. In addition, the City must provide water in sufficient quantities for firefighting and other emergency needs. Moreover, the City is the *only* emergency source of drinking water to the 48,000 citizens of the cities of Stayton and Keizer should either, or both, municipalities suffer impairment to their own drinking water systems.

High Turbidity Endangers Treatment System, Places Customers at Risk, Limits Future Growth

At issue is the fact that the deep drawdown of Detroit Reservoir will increase the presence of fine particles in the North Santiam River, the source of drinking water for the region served by the City. These particles pose a significant risk to the City's slow sand filtration treatment system that is located on Geren Island on the North Santiam River near downtown Stayton.

Highly turbid water, if allowed into our treatment system, will clog the sand filters. Run times between filter maintenance periods will be significantly reduced, the cost and time to recondition each filter will substantially increase, and drinking water production from our treatment plant will be considerably diminished. If, to protect the sand filters, the City closes the intake gates from the North Santiam River, our ongoing ability to meet water demand will depend solely on the amount of water stored in reservoirs, water drawn from a handful of wells, and water provided through interties with the City of Keizer. At this writing, the City has embarked on substantial capital investments, expected to cost approximately \$8 million, to prepare for potential disturbances caused by the drawdown. These improvements are not yet complete. With these significant investments, the City believes we can meet winter demand during the 2026 deep drawdown but there is *no assurance* that we will be able to meet future demands, which are expected to grow higher with each passing year. Further, under this mode of operation there is *limited redundancy* in the system. Should a critical component of one or more of these alternative sources of drinking water fail, our ability to supply water may fall below the demand of our many customers. Depending on the severity and duration of the shortfall, the consequences range from temporary inconvenience to untenable and unsustainable risks to life, property, and livelihood.

In addition to limited potentially life-saving redundancy, operating a regional water supply system at or near capacity with no back-up will also create a significant and highly consequential condition – it could *limit opportunities for future growth*. Economic growth invariably relies on a region's ability to reliably provide essential services, water being the most critical of these. No housing deficiency can be addressed if there is insufficient water for new residential development. No new businesses, small or large, will locate in our service area if our ability to provide drinking water is questionable. No water-dependent industry seeking a new location will select Salem if we cannot provide assurances of reliable, year-round water for its production.

How the City Treats Water under Normal Turbidity Conditions

Under normal operating conditions, the City draws raw water from the North Santiam River through intake gates at our facility on Geren Island. This water is treated using slow sand filtration, a highly

reliable, time-tested method for producing drinking water. For sand filters to properly operate, the intake water must have very low levels of turbidity. Typically, the water drawn from the North Santiam River has a turbidity level of less than 10 NTU. At this level, our sand filters can operate for about three months before the filter must be taken offline for cleaning (scraping 0.25 to 0.5 inches from the top layer of sand) and reconditioning (allowing a biological layer of microorganisms to regrow on the surface of the sand).

How the City Treats Water under Elevated Turbidity Conditions

There are naturally occurring, short-term periods during which the turbidity levels in the North Santiam River increase well above 10 NTU. High turbidity is typically caused by storm events, which increase runoff volumes and sediment transport from up-river creeks and streams. The City's operational procedure in anticipation of high turbidity in the river involves filling the slow sand filters to their maximum capacity prior to the arrival of high turbidity and then closing the intake gates. With the gates shut, the filters can operate for about three days until low water levels in the filters required them to be taken offline. Historically, high turbidity levels triggered by storm events have lasted less than three days.

Results of Research on the Consequences of High Turbidity

There is little question that the deep drawdown will elevate turbidity levels in the North Santiam River, both during the initial drawdown, during subsequent drawdowns, and for a significant period of time after each drawdown operation has ended. As stated earlier, typical turbidity levels in the North Santiam River at our intake gates is less than 10 NTU. Of concern is information collected by the USACE during initial drawdowns in 2023 impacting the South Santiam River. Data provided by the USACE showed turbidity levels ranging from roughly 50 FNU (see footnote on Page 2) to over 450 FNU. Data from the most recent drawdown conducted in 2025 indicate sustained turbidity levels had decreased but still ranged between approximately 20 and 80 FNU. The adverse impacts of sustained elevated levels of turbidity in the City's intake from the North Santiam River are summarized below.

1. **Short-term Impacts to Our Filters**

The City conducted extensive research in 2025 to determine the risks of keeping the intake gates open and allowing highly turbid surface water into a slow sand filtration system. Based on this bench-scale scientific testing, we now know that turbidity levels as low as 50 NTU will reduce the runtime of a slow sand filter from approximately three months to three weeks. Higher turbidity levels will result in even lower runtimes, some of which are less than 24 hours. Additionally, fine particles from highly turbid intake water can penetrate deep into a sand filter, essentially fouling the entire depth of the sand bed well beyond the typical 0.25-0.5 top inches. This will significantly increase the cost and complexity of reconditioning a filter and measurably reduce the life cycle of a filter from four years to less than two months. Restoring a filter to full operational status once the filter has been terminally fouled can require up to six months to drain the water, remove the clogged layer of sand, procure and then replace the bed with new sand, and restore the biological layer in the rebuilt filter bed. The time required to return a filter from failure to full operational status is expected to extend beyond winter drawdown and into the summer months, a period during which water demand will be at its highest. The estimated cost to replace

a filter bed ranges between \$3 million and \$4 million *each*. The City will have no choice but to pass this cost burden to our customers in the form of rate increases.

2. The Longer-term and Recurring Impacts

The adverse impacts of highly turbid water entering the City’s sand filtration system extend well beyond the immediate period of the deep drawdown. Rehabilitating filters lost to sustained turbidity is a labor-intensive and expensive endeavor. There are long-term consequences related to increases in operating and capital budgets which will drive utility rates higher. There are challenges related to limited staffing, uncertainty in supply chains and procurement, and indeterminate planning timelines. The time required to restore filters to full operation may extend into the spring and summer months, a period during which water demand is at its highest. Among the potential consequences is the real possibility of compromising the City’s ability to meet peak summer demands while, concurrently, adversely impacting the City’s ability to prepare for the next deep drawdown later in the same year.

3. Risks of Total Reliance on Alternative Water Sources

If the intake gates remain shut because of high turbidity in the river, or if the sand filters are offline for cleaning and reconditioning post-drawdown, the City must rely on water drawn from groundwater wells, water stored in our reservoirs, and water provided via an intertie with the City of Keizer. Depending on the time of year, the duration of the high turbidity, and the time needed to restore operations of slow sand filter(s), these alternate sources may not be able to meet the demand of our water customers. We estimate that existing alternative water sources – wells, reservoirs, and interties – will meet the projected water demand during the timeframe of the first proposed drawdown. However – and this is a significant consideration – under this mode of operation there is *limited redundancy in the system*. Should a critical component of one or more of these alternative sources fail, our ability to supply water will fall below the demand, creating an unacceptable risk to human health and safety.

Advantages of Implementing Turbidity Triggers and Action Measure

Among the advantages to having turbidity triggers.

Frames Intergovernmental Collaboration

Including this turbidity trigger level and action measure in the Final SEIS will require the City and USACE engage in follow-up conversations to establish details such as: communication protocols, pre-approved authorities for implementation of action steps, reporting requirements, and specific details regarding the immediate and follow-on measures to be taken.

Facilitates Compliance with the Federal Clean Water Act

Adopting turbidity triggers would also allow USACE to reconcile the proposed drawdown action with potential violations of the federal Clean Water Act (CWA). The CWA addresses, among many other things, contaminants in water resources. There is no doubt that causing high levels of turbidity

should be considered a violation of the CWA. Water quality sampling data show that typical turbidity levels at the City’s intake from the North Santiam River are well below 10 NTU. In the EPA-approved Oregon Water Quality Standards “turbidity” is defined as “pollution” and the standard in ORS 340-041-0036 states, in part:

Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities may be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity.

The turbidity levels reported by the USACE during drawdown operations on the South Santiam River clearly violated federally approved state water quality standards. There is little doubt that turbidity levels in the North Santiam River during the deep drawdown will rise above “natural stream turbidities” by more than 10 percent. From a regulator perspective, once a violation in water quality standards has occurred, among the correction actions is to cease the activity causing the violation. The Oregon Department of Environmental Quality may consider a turbidity trigger and corrective action to stop the drawdown as appropriate measures which will allow the USACE to avoid liability related to violations of state and federal law.

Supports Compliance with the Federal Safe Drinking Water Act

Adopting turbidity triggers would also allow USACE to reconcile the proposed drawdown action with potential violations of the federal Safe Drinking Water Act (SDWA). The Safe Drinking Water Act (SDWA) requires persons to protect public water systems. The Draft SEIS does little to address potential violations of the SDWA. The proposed drawdown is expected to contaminate the City’s source of drinking water, potentially contaminate the City’s water treatment system, and generally impair the City’s ability to provide safe drinking water, any one of which could constitute a violation of the SDWA.

SUMMARY OF RECOMMENDATIONS AND CONCLUSION

Six Recommendations

While there is much to be commended in the Draft SEIS, the City presents to the USACE six specific recommendations for incorporation into the Final SEIS.

Recommendation #1: Acknowledge the Significance of Increased Turbidity

The City disputes that the proposed drawdown of Detroit Reservoir, even following a stepwise approach, would cause only a “moderate increase in sediment and turbidity levels” in the North Santiam River (see Page ES-9). The word “moderate” is subjective and situational. Based on our best professional judgement, which is now backed up by extensive research and bench-scale testing, levels of turbidity as low as 50 NTU – a measure potentially viewed as “moderate” by some – will have

significant and sustained consequences to our treatment systems. For the Final SEIS, a more accurate sentence would read:

For water quality and drinking water, the deeper drawdown of Detroit Reservoir would cause ~~a moderate~~ an increase in sediment and turbidity levels downstream of Detroit Reservoir during the operation. This increase will threaten the operation of the slow sand filtration systems operated by the City of Salem and the City of Stayton.

Recommendation #2: Establish the Need for a Turbidity Trigger and USACE Response

A stepped approach alone is insufficient to protect human health and safety for communities relying on the North Santiam River for drinking water, firefighting, industrial production, and commercial purposes. The USACE *must* adopt in the Final SEIS a clear turbidity trigger consisting of a NTU level that, if exceeded over a specific period of time, will require cessation of the drawdown operation. A turbidity trigger with mandated actions will provide a degree of certainty and significantly enhance the City's ability to develop contingency and recovery plans. This recommendation comes with a commitment by the City to work with the USACE and to share information, data, and research results to help support a turbidity trigger that protects public health, lowers risks, supports long-term objectives of the drawdown, and reflects current scientific research and sound engineering practices.

Recommendation #3: Establish a Turbidity Trigger of 10 NTU over 12 Hours to Cease Operations

The City's specific recommendation, which is consistent with multiple conversations with the USACE and supported by scientific research, is that a firm turbidity trigger of 10 NTU should be established in the Final SEIS. Based on the anticipated variability of turbidity in the North Santiam River during the drawdown, the City further recommends that a time duration of 12 hours be incorporated as part of the trigger. Once this trigger is reached, the USACE should cease all drawdown activities for that year and allow the City's water treatment system to recover and resume full operation. Based on the studies and research conducted, the City strongly recommends that the USACE establish in the Final SEIS a turbidity trigger as follows:

The USAC will immediately take steps to cease the deep drawdown operation and restore Detroit Dam and Detroit Reservoir to normal operations the moment turbidity levels in the North Santiam River, as measured at the USGS Niagara gauge, have been at or above 10 NTU for 12 consecutive hours.

Recommendation #4: Evaluate Merits of Delaying Implementation

The Final SEIS should evaluate potential environmental impacts if the deep drawdown is delayed for one, two, or three years hence. Doing so would provide the City additional time to develop and test

wells currently under construction to determine if they have sufficient yield to provide resiliency and mitigate risks to life, property, and livelihood.

Recommendation #5: Focus on a Long-term Strategy of Implementing Structural Solutions

Our read of the BiOp, the Final Programmatic Environmental Impact Statement², the Draft SEIS, and various reports and evaluations, is that the long-term strategy does not focus on year over year deep drawdowns. However, the long-term strategy *requires implementation* of structural remedies designed to facilitate out-migration of threatened species. The current Draft SEIS considers annual deep drawdowns of Detroit Reservoir as an “Interim Operation” that will occur “until the long-term solution for downstream fish passage and water temperature management at the respective location is in place and operational” (Page 17). We agree, but as written in the Draft SEIS, as implied in recent public meetings, and as demonstrated by the years that have passed since the structural solutions were first proposed, implementation of structural measures have not been a priority. The Final SEIS should clearly state the intention of the USACE to pursue all means available to secure funding, initiate project planning, and ultimately construct what is expected to be the long-term strategy to support the out-migration of threatened species. Until these measures are in place, the financial burden and high-risk scenarios are being borne not by the responsible federal agencies but by local jurisdictions and our ratepayers.

Recommendation #6: Employ Adaptive Management with Each Annual Drawdown

The underlying Biological Opinion for the Willamette Valley System requires development of an Adaptive Management Plan that includes “decision criteria” that guide strategies (see Section 2.5.10 of the BiOp). At issue for the City is a pressing need for the USACE to incorporate decision criteria that can be modified over time based on new information, changes in conditions, and lessons learned. More specifically, decision criteria should consider changes in risks and consequences from year to year. To illustrate, consider two scenarios:

- (1) The City’s risk assessment is based, in part, on historic winter water demand. If the City adds a new industrial customer with a high, year-round water demand, the risks/consequences assessment must be reevaluated.

- (2) The City’s water system relies on a wide range of factors and components to deliver safe drinking water to our customers. If, prior to commencing a deep drawdown, one or more of our critical components has failed, decision criteria should be in place that delays or cancels that year’s deep drawdown.

² “Willamette Valley system operations and maintenance: Final environmental impact statement.” United States Army Corps of Engineers. Portland District. April 2025.

In the context of Adaptive Management, there is the ambiguity in the Draft SEIS regarding the duration of the drawdown, which “is set to last two weeks” (Page 18) and the timespan of the incremental steps toward the ultimate desired elevation in the reservoir which “would span over three years” (Page 90). For our purposes of operational planning and risk management, the City requires assurances that the duration of the deep drawdown “~~is set to last~~ will not exceed two weeks” and the incremental drawdown approach “would span ~~over~~ at least three years.” Further, a requirement for the USACE to conduct additional analysis, reviews, and consultation with affected parties should be incorporated into the Final SEIS to provide assurances that the USACE will employ both science-based *and* risk-based decision making during the course of adaptively managing the drawdown operations over the years.

Conclusion

In conclusion, the City is grateful that the Draft SEIS addresses several of the concerns we have expressed over the past year in our conversations with the USACE regarding the risks each deep drawdown will present to our water treatment plant and our customers. However, the absence of any references to turbidity triggers and action measures is deeply troubling. Clear triggers and actions are essential for the City’s operational and contingency planning. Establishing mutually acceptable triggers and action measures also represents the best way forward for providing assurances to our current and future regional customers that safe drinking water will continue to be reliably delivered. Lastly, turbidity triggers and action measures will facilitate the USACE’s compliance with the federal Clean Water Act, federal Safe Drinking Water Act, and Oregon State Water Quality Standards, among other regulations. Simply put, the risks to the City’s water supply created by the deep drawdown are too high and consequences of failure are too staggering to accept without some kind of documented assurances that the drawdown operations will cease before the high levels of turbidity have resulted in highly consequential harm to our treatment system and our customers have been placed at risk.

The City is committed to working with the USACE and others to evaluate and, ultimately, to implement measures that support downstream passage of juvenile species, protect habitat and water quality, ensure water demands are met, and provide for the many users of the North Santiam River.

Sincerely,



Krishna Namburi
City Manager

Attachment: “City of Salem Public Comments on USACE’s Proposed Detroit Reservoir Drawdown.”
Letter. Salem, Oregon. June 20, 2025