MEMORANDUM

Prepared by: Todd Alsbury, Altap Restoration LLC Todd Alsbury

Date: August 4, 2023

Project: Bull Run Water Filtration Project (#W02229)

Re: Best Management Practices Proposed to Protect Aquatic Resources in Johnson Creek and Beaver Creek During Development and Operation of the Bull Run Water Pipeline and Filtration Facility

My work as a professional fisheries biologist with over 25 years' experience conducting monitoring, restoration, and management of fish population and their habitats provides me with the knowledge and understanding of fish populations and risks posed by development actions in watersheds where they are present. I managed fish and fisheries in the Portland/Metro region for 14 years (2005-2019) and I am intimately familiar with their status and trends from impacts related to habitat, harvest in fisheries, hatchery fish production, and hydropower development. I worked closely with local watershed councils to identify priority habitats and restoration actions that can potentially reverse the region wide downward trend in fish populations related to ongoing development in local watersheds. I have been involved in Filtration Project planning since 2021, including field review of project proposals on subject properties and in rights of way, assisting with development of BMPs, and in field review in preparation of this memorandum.

Johnson Creek and Beaver Creek support several species of native migratory and resident fish that are common to Oregon rivers and streams including: coho salmon (ESA listed – threatened), fall Chinook salmon (ESA listed – threatened), winter steelhead (ESA listed – threatened), cutthroat trout (Oregon – sensitive species), lampreys, minnows (e.g., dace, shiners), and sculpins. Non-native fish species are present in the lower reaches of both watersheds where warmer water and habitat conditions are suited for their persistence through harsher winter stream conditions.

The upper reaches of both streams are impacted by development in the area including agriculture, roads, and expansion of the urban/rural interface. Despite ongoing development in the area, cutthroat trout are known to be present as far upstream as Cottrell Road (Wild Fish Conservancy, 2012) in Johnson Creek[1]. Cutthroat trout are distributed upstream to Lusted Road in all upper tributaries of Beaver Creek[1]. Cutthroat trout are the native fish species that typically occupies the uppermost reaches of regional streams. ESA listed fish species (coho and winter steelhead) are considered present (ODFW, 2023) up to an instream dam/pond that is ~600 feet upstream of 307th Ave. in Johnson Creek. It is unclear why distribution of ESA listed fish ends at

[1] Upstream distribution of cutthroat trout in Johnson Creek is based on actual observation of fish, Upstream distribution of cutthroat trout in Beaver Creek is historical distribution based on concurrence of professional opinion.

this location, but it may be due to the presence of 14 barriers to migration (dams, fords, road culverts) that are documented between 307th Ave. and Cottrell Road. All the barriers are deemed to be partial barriers to upstream migration so there may be occasions when they are passable to ESA listed fish but based on ODFW'S determination, ESA listed fish would not persist upstream of 307th Ave. ESA listed fish species are considered present up to 302nd Ave. in the South Fork Beaver Creek and ~0.3 miles upstream of 302nd Ave. in the North Fork Beaver Creek. ODFW's determination of the upper extent of ESA listed fish presence is based on "Concurrence of Professional Opinion" and not based on actual observations of fish except for the North Fork Beaver Creek where ESA listed winter steelhead were documented during juvenile fish surveys (Wild Fish Conservancy, 2012).

Concerns are being expressed in public testimony regarding the potential impacts to water quality, fish, and fish habitat in Johnson Creek downstream of the proposed filtration facility and in Beaver Creek along the proposed pipeline alignment. The concerns expressed are legitimate as they are like those expressed whenever a large development is proposed in proximity to area streams and rivers. Facilities that are designed without regard to their potential impacts can have significant effects on the instream and riparian habitat of local streams and fish that occupy those streams suffer accordingly. Impacts from sedimentation, reduced water quality, and altered hydrology can directly affect fish by reducing growth, limiting spawning success, and restricting access to important habitats.

The Bull Run Water Filtration Project is a large development that could lead to direct impacts to Johnson and Beaver creeks if not for consideration in the Filtration Project design for all potential impacts to these water bodies that could occur, and inclusion of best management practices (BMP's) intended to specifically address the concerns raised by others. The filtration facility construction and pipelines construction are designed to maintain pre-development stormwater discharges and protect water quality, as required by DEQ and Multnomah County. BMP's included in the Filtration Project design directly address concerns related to sedimentation, water quality, and altered hydrology. The BMP's as designed mitigate potential impacts to instream habitat and fish in the following manner (Graham, 2022; Tortora, 2022a; Tortora, 2022b):

<u>Sedimentation</u>

- Sequencing clearing and grading to the maximum extent practical to prevent exposed inactive areas from becoming a source of erosion to the maximum extent possible.
- Applying temporary and/or permanent soil stabilization measures immediately on all disturbed areas as grading progresses. Soil stabilization measures include establishing vegetation, permanent erosion control blankets, grassy swales, stilling basins, planters with underdrains, sediment fences, and straw waddles.
- Temporarily stabilizing soils with blown straw and a tackifier, loose straw, or an adequate covering of compost mulch at the end of the shift before holidays and weekends, if needed. Ensuring that soil is stable during rain events at all times of the year as needed based on weather conditions.

- Stabilizing or covering soil stockpiles at the end of each workday as needed based on weather conditions to prevent discharges to surface waters or conveyance systems leading to surface waters.
- Temporarily stabilizing portions of the site where construction activities cease for 14 days with a covering of blown straw and a tackifier, loose straw, or an adequate covering of compost mulch and applying temporary seeding until work resumes on that portion of the site.
- Not removing temporary sediment control practices until permanent vegetation or other cover of exposed areas is established. Once construction is complete and the site is stabilized, all temporary erosion controls and retained soil will be removed and disposed of properly, unless needed for long term use.
- Removing trapped sediment from the sediment fence before it reaches one third of the above ground height and before fence removal. Sediment will be removed to an approved disposal site. Removing trapped sediment from other sediment barriers such as biobags before it reaches two inches depth above ground height and before BMP (Best Management Practices) removal.
- Cleaning Catch Basins before retention capacity has been reduced by fifty percent. Removing trapped sediments from sediment basins and sediment traps before design capacity has been reduced by fifty percent and at the completion of project. Sediment will be removed to an approved disposal site.
- Initiating temporary stabilization measures, final vegetation cover, or permanent stabilization measures immediately whenever any land disturbing activities have permanently ceased or will be temporarily inactive on any portion of the site for 14 or more calendar days. The day activities cease, and the location of the land disturbing activities will be documented in the visual monitoring report. The installation of stabilization measures will be completed as soon as practicable, and no later than seven calendar days after stabilization has been initiated.
- Erosion control BMPs along the pipelines have been designed to minimize construction phase sediment load. BMPs include use of sediment fences and straw wattles at the limits of disturbance and dewatering sediment bags for stormwater runoff within pipeline excavation.
- During pipeline construction, dewatering systems will be required to filter the discharge through at least two sediment barriers including a filter bag and sediment fence and will be required to limit discharge quantity to meet stormwater predevelopment rates.

<u>Reduced water quality</u>

- The water treatment process is designed to be "zero liquid discharge" (ZLD) - all waste streams are treated so that concentrated solids are trucked off site, and liquid streams are recycled to the head of the plant. Two overflow/recycle basins are provided so that plant overflows or water drained from basins during maintenance operations is captured and returned to the head of the plant. Therefore, the only discharge to Johnson Creek

will be stormwater from the site, which will not exceed pre-development flows of stormwater from the site.

- All chemical handling and storage facilities include secondary containment, with provisions to safely remove spilled chemicals by pumping them into a truck for off-site disposal. Secondary containment areas are designed to hold, at a minimum, the full volume of the largest storage tank within the area plus additional volume for fire sprinklers.
- Chemical loading bays include collection and monitoring features allowing any chemicals spilled during delivery to be contained so they can be removed and disposed off-site.
- The drinking water treatment process has been designed as a closed system, with all waste streams recycled.
- During construction, water collected and stored by the temporary stormwater management system will be analyzed, treated, and discharged to Johnson Creek by an Enhanced Sand Filtration Active Treatment System (ATS), designed to maintain water quality. Stormwater will only be allowed to discharge to Johnson Creek if the effluent has no visible turbidity or if it does not exceed water quality standards established in OAR 340-041-0036.
- Erosion control BMPs along the pipelines have been designed to minimize construction phase sediment load as described above.
- At the one pipe crossing of Beaver Creek at Cottrell Road, the pipe will be located within the developed road ROW and will be bored 7-12 feet below the Beaver Creek culvert; no ground surface or vegetation disturbance will occur within 100 feet of Beaver Creek.

<u>Altered hydrology</u>

- The filtration facility project is proposing to use dry detention ponds, one sloped basin, and an ecoroof to achieve the stormwater flow control requirements.
- The design of the proposed site satisfies both stormwater quality treatment and stormwater flow control standards as outlined in the City of Portland SWMM (Stormwater Management Manual).
- The flow control implemented in this project exceeds what is required by the SWMM, which requires the post development runoff rates to be less than or equal to the pre-development runoff rates for the 2-year through 25-year storm events. This project is providing flow control to the extent that the 2-year storm event is being detained while releasing one-half the total flow from the pre-developed 2-year storm event.
- The site's post-construction improvements meet local and state stormwater quality treatment and flow control requirements, minimizing hydromodification in accordance with Portland SWMM Section 1.3.5.
- Water will be discharged in the SW corner of the filtration facility site at pre-development rates via a flow spreader, located more than 200 feet from Johnson Creek. The system's ultimate discharge point within Johnson Creek will be sampled/observed to ensure flow rates are not causing scour and/or generating local turbidity within the channel.

- During construction, stormwater will be captured through a system of temporary drainage ditches and diverted to a series of detention ponds. The combined overflow basins can provide adequate detention for all stormwater and groundwater flow up to the 25-year design event.
- During construction, inlet protection will be established for any inlets that discharge into Beaver Creek. Energy dissipators are proposed to spread flows, reduce release water velocity, and avoid point discharge.

The Bull Run Water filtration facility is being proposed to address a 2006 U.S. Environmental Protection Agency order that requires municipal drinking water sources be treated for the pathogen Cryptosporidium. Construction, operation, and maintenance of the filtration facility in the Johnson Creek watershed is designed specifically to reduce potential impacts to the creek's fish and aquatic resources currently present or could be present in the future if habitat and fish passage improvements are implemented on a large scale in the watershed. The Johnson Creek Watershed Council has identified the passage barriers present throughout the watershed and targets their work at improving instream and riparian conditions for fish so they can survive and flourish. Development of the project is necessary for the region and will be an improvement over the existing conditions (Tortora, 2022a) that likely contribute high levels of sediment and reduced water quality to Johnson and Beaver creeks. Based on my work as a fisheries biologist with over 25 years of experience implementing stream restoration projects and working for ODFW as the local district fish biologist with the responsibility of managing regional fish populations, I am confident the proposed development and operation of the Bull Run Water Filtration Facility, and associated pipeline improvements, will not impact Johnson Creek or Beaver Creek.

References

Graham, 2022. Technical Memorandum. Potential Discharges to Johnson Creek. Bull Run Water Filtration Project.

ODFW, 2023. Oregon Fish Habitat Distribution Data. Oregon Department of Fish & Wildlife, Salem, OR. https://nrimp.dfw.state.or.us/nrimp/default.aspx?pn=fishdistdata

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Tortora, 2022a. Technical Memorandum. Stormwater Drainage Report. Bull Run Water Filtration Project.

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Wild Fish Conservancy, 2012. Fish Species Composition, Distribution, and Biotic Integrity in Johnson Creek, a Tributary to the Willamette River in Multnomah County, Oregon. Page 8.