

# Council Study Session

February 1, 2021

<b>Agenda Item</b>	Update on NPDES Permit Renewal for the Wastewater Treatment Plant	
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<b>Item Type</b>	Requested by Council <input checked="" type="checkbox"/> Update <input type="checkbox"/> Request for Direction <input type="checkbox"/> Presentation <input type="checkbox"/>	

## **SUMMARY**

Before Council is an update on the City's multi-year effort to obtain a renewal of the National Pollution Discharge Elimination System (NPDES) Permit for the Wastewater Treatment Plant (WWTP). The WWTP currently discharges treated effluent into Ashland Creek under a prior NPDES permit that expired in 2008 but has been administratively extended through present. NPDES permits are issued under the Federal Clean Water Act and are administered by the Oregon Department of Environmental Quality (DEQ). The City expects DEQ will issue a new NPDES permit by the end of the first quarter of 2021. This staff report is intended to inform the Council on the remaining process, the anticipated requirements of the new NPDES, and the actions the City will take to meet those requirements.

## **POLICIES, PLANS & GOALS SUPPORTED**

City Council Goals:

Essential Services

- Sewer

Continue to leverage resources to develop and/or enhance Value Services

Climate Energy Action Plan Goals:

- Reduce solid waste and wastewater greenhouse gas emissions

Department Goals:

- Maintain existing infrastructure to meet regulatory requirements and minimize life-cycle costs
- Deliver timely life cycle capital improvement projects
- Maintain and improve infrastructure that enhances the economic vitality of the community
- Evaluate all city infrastructure regarding planning management and financial resources

## **BACKGROUND AND ADDITIONAL INFORMATION**

### ***Permit Renewal Process***

The City has long been planning for the renewal of the NPDES permit for the WWTP. Planning has included both master plans and refined studies to ensure regulatory compliance by sound capital investments. Renewal of an NPDES permit for the WWTP was not previously a complex process, but water quality regulations in the Bear Creek watershed became increasingly stringent in 2007, when DEQ adopted revised water quality regulations established by the Bear Creek Watershed Total Maximum Daily Load (TMDL) publication. The new regulations included revised criteria that affects the continued discharge of treated effluent to Ashland Creek, including revised criteria for ammonia and metals such as copper, more stringent limitations on mixing zones and new regulations on temperature.

DEQ began developing draft permit conditions near the end of Spring 2020. In November 2020, DEQ provided the City with proposed thermal limits, as well as applicable limits for regulated toxins. The City and members of Jacobs and The Freshwater Trust consulting teams reviewed the proposed limits and DEQ's supporting calculations. These proposed limits were utilized by the City to develop a comprehensive compliance schedule which identifies the capital projects the City will undertake to achieve compliance with permit limits and associated scheduling of activities. The compliance schedule will be included in the NPDES permit, where it will establish regulatory milestones for the major phases in each anticipated project needed to ensure regulatory compliance. A draft of the compliance schedule has been submitted to DEQ and will be finalized in early 2021. The following process will be initiated once DEQ has completed writing a draft permit.

1. The draft permit goes through an internal review process at DEQ – typically about 2 weeks.
2. The review draft permit is sent to the permittee for a 14-day applicant review period. This is where the permittee has a chance to review the permit and provide comments to DEQ.
  - a. The City has enlisted the assistance of Jacobs and The Freshwater Trust to participate in the review process.
3. DEQ reviews comments, makes any needed changes and then puts the permit on a 35-day public notice. Sometimes DEQ can schedule a hearing if they anticipate significant public interest. The permittee and anyone from the public can comment on the permit during this period.
4. DEQ reviews and responds to any public comments, makes any needed changes to the permit and then issues the permit.
5. Once the permit is formally issued with a compliance schedule the City will take the pertinent next steps to ensure regulatory compliance within the approved timelines.

### ***Requirements***

The new requirements that present the greatest compliance challenge to the City pertain to the temperature of the treated effluent, the in-stream mixing zone, and certain toxins found in the treated effluent.

#### ***Anticipated NPDES Requirements***

1. **Mixing Zones** – DEQ regulates how rapidly the effluent needs to mix with receiving waters in order to protect water quality for aquatic and human health. A regulatory mixing zone can be broadly described as a fixed area in a stream where water quality standards are relaxed to allow the discharged effluent to rapidly mix with receiving waters. Mixing zones provide an opportunity to dilute the effluent sufficiently so that it will not cause acute impairment to aquatic or human health within the mixing zone, nor cause chronic impairment beyond the boundary of the mixing zone. Selecting a mixing zone location requires careful study and analysis to demonstrate that the mixing zone will meet specific water quality criteria. Currently, the WWTP outfall discharges to Ashland Creek, where flows and channel characteristics do not promote effective or rapid mixing. There is no mixing zone for effluent discharge into Ashland Creek in the existing permit, nor would one be provided in the new permit.
2. **Thermal Plume Provisions** – The thermal plume is a water temperature standard associated with the regulatory mixing zone. Within the boundaries of the mixing zone, additional temperature limits apply to protect salmonid spawning and prevent acute impairment, lethality, thermal shock, and/or migration blockage. Currently, it is not possible to comply with thermal plume regulations at the outfall's current location in Ashland Creek, where warm effluent comprises the majority of stream flow during certain times of the year.
3. **Toxic substances** – DEQ has established limits on ammonia and various toxic metals. A “reasonable potential analysis” (RPA) was performed by the City's consultants to quantify the potential of

exceeding anticipated permit limits on toxic substances in treated effluent. The RPA found that the levels of ammonia and copper in the effluent required dilution beyond what could be provided by the relative low flows in Ashland Creek.

4. Temperature TMDL and Biologically Based Numeric Criteria - The Bear Creek Watershed TMDL allocates a human use allowance (HUA) of 0.1°C for the wastewater treatment plant effluent. This means the City may discharge effluent that raises the temperature of Bear Creek *not more than* 0.1°C above existing temperature criteria established to protect migratory salmonids. Discharges that cause temperatures to increase beyond the 0.1°C HUA are Excess Thermal Load (ETL) exceedances. ETL exceedances must be mitigated. The City has calculated that it will need to offset a maximum ETL exceedance of 65 million kilocalories per day.
5. Cold Water Protection Criteria – Cold water protection criteria are temperature limits that restrict warming above ambient conditions during salmonid spawning periods. Essentially, these criteria are more restrictive temperature limits than the biologically based numeric temperature criteria, and they apply between November 15 and April 15. Cold water protection criteria do not apply to the mixing zone, but rather to the nearest spawning habitat downstream. In practice, this means that a mixing zone must be located where it will not impair downstream salmonid spawning habitat.

### **Compliance Strategies**

1. Outfall Relocation - Relocating the outfall from the relatively small Ashland Creek to the much-larger Bear Creek would provide sufficient receiving flows and mixing to achieve compliance with regulations pertaining to mixing zones, thermal plume provisions, toxic substances, and some components of cold water protection criteria. These compliance standards pertain to “near-field” impacts, which are measured as the localized effects of discharging effluent to a receiving water. Outfall relocation resolves most “near-field” impacts.
2. Water Quality Temperature Trading Program - Establishment of a water quality trading program within the Bear Creek watershed allows the City to offset ETL exceedances with riparian restoration in areas where streamside shade is lacking. The shade provided by restoring a native riparian forest ecosystem reduces the solar load in the water, thus reducing excess warming. Water quality trading allows the City to achieve compliance with the TMDL temperature criteria and biologically based numeric criteria, as well as some provisions of cold water protection criteria. The City has a “target thermal reduction need” of 131.5 million kilocalories per day, which includes a 2:1 trading ratio of the 65 million kCal/day base ETL exceedance to account for a time lag following initial planting of the shade-producing trees. Compliance standards that can be achieved by water quality trading resolve the “far-field” impacts, measured at the point of maximum impact, which in this case is the ETL exceedance near the confluence of Bear Creek and the Rogue River.
3. Treatment Wetlands - If necessary, the City is prepared to further mitigate temperature and thermal plume impacts via use of treatment wetlands to cool effluent prior to release into receiving waters. The City purchased additional land in 2017 in preparation for this mitigation strategy. At this time, the City believes it can comply with proposed ETL limits using the two strategies described above but is prepared to initiate a treatment wetland project if needed.
4. Cold Water Releases - The City may utilize limited cold water releases from Reeder Reservoir during brief periods when conditions render the other mitigation efforts insufficient. The City approaches cold water releases as a last resort contingency plan for achieving temperature compliance.

### ***Status of Compliance Projects***

In 2008, the City and DEQ began exploring a strategy to achieve compliance with anticipated water quality limits based on the TMDL criteria. Compliance planning started years before a NPDES permit was issued because significant capital improvements, requiring many years to plan and complete, would be needed to obtain compliance with the anticipated terms of the new permit. The following two projects are currently being implemented:

1. The Outfall Relocation Project is in design phase. Predesign, including environmental permitting and public outreach, are complete. A Basis of Design Report has been developed, which provides a preliminary construction cost of \$1,200,000 (this estimate does not include soft costs). The design is currently about 30 percent complete, so additional engineering will be required to develop biddable documents. Public Works will not advance the design until it has received the final NPDES permit from DEQ, including the final compliance schedule.
2. The Water Quality Temperature Trading program has been fully designed and accepted by DEQ as consistent with the agency's water quality trading regulations. The City has five years to complete all new riparian restoration sites, and then must ensure long-term maintenance for another 15 years. Implementation began in late fall of 2019. At present, one site has been restored to native riparian forest and is generating "thermal credits", one site is being treated for invasive plants prior to restoration planting, and two sites are in the advanced stages of land lease negotiations for upcoming restoration activities. The City's consultant continues recruiting efforts of landowners whose riparian lands have high potential for shade generation. The cost of implementing restoration is approximately \$2.7M, including development of program architecture and completion of all restoration activities. This cost does not include long-term maintenance.

### **FISCAL IMPACTS**

In July 2020, the City sought technical support from Jacobs Engineering Group, Inc. during the NPDES permit renewal process. Jacobs' fee for technical support was \$15,850. The City has liquidated nearly \$5,000 of this contract to date. Staff expects that the contract will be fully liquidated by March 2021 due to the complexity of analysis required to develop a compliance schedule for the new NPDES permit.

In terms of compliance spending, the City has spent approximately \$617,000 on the Outfall Relocation Project to date, and approximately \$264,000 on the Water Quality Temperature Trading program. These two projects are funded, in part, by a Clean Waters State Revolving Fund (CWSRF) Loan, administered by DEQ. The CWSRF provides below-market rate loans to public agencies for planning and implementing water pollution control activities. The City's loan is for \$4,829,000. It has a twenty-year repayment period and an interest rate of one percent per annum.

### **DISCUSSION QUESTIONS**

Does the Council have any clarifying questions regarding the status or direction associated with compliance of the NPDES permit?

### **SUGGESTED NEXT STEPS**

N/A

### **REFERENCES & ATTACHMENTS**

[March 15, 2011](#) – DEQ and Keller Associates (consultant) presented effluent temperature compliance solutions.

[April 17, 2012](#) – Council adopted a Comprehensive Sanitary Sewer Master Plan (and complimentary 2014 Wastewater Facilities Plan) that recommended a combination of relocating the outfall from Ashland Creek to

Bear Creek, effluent discharge through constructed wetlands during various times of the year, selective discharges from Reeder Reservoir, and water quality temperature trading to meet excess thermal loading exceedances.

[May 21, 2013](#) - City secured initial DEQ Clean Water State Revolving Fund (CWSRF) Loan [R11751](#) (revised and replaced in 2018 with R11754). The loan has (and continues to) enable the City to fund certain compliance activities identified in the Comprehensive Sanitary Sewer Master Plan at a very low interest rate.

[May 6, 2014](#) – City hired CH2M Hill (now Jacobs) to complete an outfall relocation study. The study investigated and recommended the best outfall relocation spot on Bear Creek that could comply with the mixing zone, thermal plume and toxics requirements anticipated in the updated NPDES permit.

[December 5, 2017](#) - City hired CH2M Hill (now Jacobs) to complete pre-engineering for the Outfall Relocation project. Predesign, including environmental permitting, was complete in early 2020.

[May 15, 2018](#) – Council approved the purchase of property adjacent to the treatment land for potential future use, in part, as wetlands.

[September 4, 2018](#) – Council approved a contract with The Freshwater Trust to initiate Phase 1 the Water Quality Trading Partnership. Development of a water quality temperature trading plan, in consultation with DEQ, was complete during Phase 1.

[September 3, 2019](#) – Council approved a contract with The Freshwater Trust to initiate Phase 2 of the Water Quality Trading Partnership. Phase 2 is characterized by a six-year agreement during which the contractor will implement water quality temperature trading plan accepted by DEQ.