

**DETERMINATION OF NONSIGNIFICANCE (DNS)**

**Proposed Project: DNS 17-012: CLARKS CREEK HATCHERY REHABILITATION**

**DATE:** April 4, 2017

**TO:** Washington Department of Fish and Wildlife (WDFW)

**FROM:** Pierce County Surface Water Management (SWM)

**RE:** Comments Concerning the Determination of Non Significance for the Puyallup Hatchery Rehabilitation Project

The Washington State Department of Fisheries and Wildlife (WDFW) operates a hatchery (State Hatchery) at Maplewood Springs (NPDES permit number WA0039748). As neighboring NPDES Permittee, Pierce County would like to remind WDFW staff of the provisions and comments attached to their hatchery facility as part of the Clarks Creek TMDL. As shared on the next pages, the Hatchery has been issued two WLAs, one for Dissolved Oxygen Deficit (DOD kg/day) and one for Sediment. The County urges WDFW to represent more comprehensively in its design plan how this proposed project will improve the facility's future ability to effectively manage its WLAs as part of its NPDES Permit. The County is also concerned the proposed project's SEPA checklist (response to questions) failed to identify the obligations created by the current TMDLs now assigned to Clarks Creek.

Ecology issued a fecal coliform bacteria TMDL (2008) and in 2014 a Dissolved Oxygen and Sediment TMDL was issued to the Watersheds NPDES permittees. The entire length of Clarks Creek is assigned the designated beneficial uses for: 1) Core Summer Salmonid Habitat, 2) Primary Contact, and 3) Water Supply and Use. Clarks Creek, from its mouth to Maplewood Springs, is part of the Salmonid species' critical habitat. Several salmonid species are known to use Clarks Creek for spawning, rearing and foraging. These include ESA-threatened Chinook, steelhead, and bull trout, as well as Coho which are designated a species of concern." The non-listed species that use Clarks Creek include pink, chum and cutthroat trout. In the state water quality standards, fresh water aquatic life use categories are described using key species (salmonid species) and life-stage conditions (spawning or rearing). Minimum concentrations of DO are used as criteria to protect different categories of aquatic communities [WAC 173-201A-200; 2011 edition]. Table 602 of WAC 173-201A-600 and 602 lists the designated uses for waters in the state (<https://fortress.wa.gov/ecy/publications/SummaryPages/0610091.html>). The entire length of Clarks Creek and its tributaries have the preceding aquatic life use designations.

Historic monitoring in Clarks Creek indicated the stream is impaired (which means it's not meeting applicable water quality standards for dissolved oxygen (DO) and sediment, thus Clarks Creek has been deemed not to be protecting its designated beneficial uses). Sediment oxygen demand (SOD), untreated

stormwater, the overgrowth of macrophytes (*Elodea nuttallii*), and the lack of riparian shade have all been identified in Ecology’s TMDL as playing a pivotal role in the DO and Sediment load impairments. Secondary factors, such as removal of riparian canopy and increased temperatures, also contribute to the DO impairment.

Numeric Wasteload Allocations (WLAs) have been assigned to the following NPDES permittees: Pierce County municipal separate storm sewer systems (MS4), City of Puyallup MS4, WDFW Puyallup Hatchery permit, WSDOT, and the Construction Stormwater General Permit. Numeric Load Allocations (LAs) have been assigned to tribal hatcheries and those properties located adjacent to the creek. The portion of the receiving water’s loading capacity assigned to a particular source is a WLA (point source) or LA (nonpoint source). If the pollutant comes from a discrete (point) source subject to a National Pollutant Discharge Elimination System (NPDES) permit, such as a municipal or industrial facility’s discharge pipe, that facility’s share of the loading capacity is called a WLA. If the pollutant comes from diffuse (nonpoint) sources not subject to an NPDES permit, such as general urban, residential, or farm runoff, the cumulative share is referred to as an LA.

Additionally, under the Dissolved Oxygen Deficit (DOD kg/day) and Sediment load TMDL, construction related stormwater discharges (which are covered by NPDES permits) are also cited as needing to maintain their compliance with their presumptive Waste Load Allocation assignment (i.e. 2 tons annually for sediment). The County wants to stress to WDFW the need to develop a particularly robust Stormwater Pollution Prevention Plan (SWPPP) to manage any stormwater discharges expected from the clearing, grading and excavation associated with the Project’s construction. Any activity disturbing one or more acres is regulated under the federal NPDES permit program. Such regulated construction activity is subject to Ecology’s Construction Stormwater General Permit (most recently issued on December 1, 2010).

Under its NPDES permit number WA0039748, the following WLAs have been assigned by Ecology and need to be reflected and commented on further in the new Hatchery’s’ design and operations.

**Table ES 1. Dissolved Oxygen Waste Load Allocations Expressed as Dissolved Oxygen Deficit (kg/day)**

DOD (kg/day) = TMDL (kg/d) = WLA + LA + MOS	719 DOD (kg/day)
Total WLA (kg/d)	625 DOD (kg/day)
WLA: State hatchery (WDFW)*	24 DOD (kg/day)
WLA: City of Puyallup MS4	318 DOD (kg/day)
WLA: Pierce County MS4	263 DOD (kg/day)
WLA: WSDOT	21 DOD (kg/day)
Total LA (kg/d)	94 DOD (kg/day)

LA: Properties adjacent to creek	90 DOD (kg/day)
LA: Diru Creek Tribal Hatchery	2.4** DOD (kg/day)
LA: Clarks Creek Tribal hatchery	1.6*** DOD (kg/day)

\*This translates to a CBOD-5 of 47.7 kg/day.

**Table ES 2. Sediment Waste Load Allocations**

Annual Load (tons/year) = TMDL (tons/year) = WLA + LA + MOS	209 tons
Total WLA (tons/year)	173 tons
WLA: City of Puyallup MS4	85 tons
WLA: Pierce County MS4	70 tons
<b>WLA: WDFW Puyallup Hatchery</b>	<b>10 tons</b>
WLA: WSDOT	6 tons
<b>WLA: Construction Permittees</b>	<b>2 tons</b>
Total LA (tons/year)	26 tons
LA: Properties adjacent to creek	26 tons
Reserve Capacity (tons/year)	10 tons

The County would like to provide the following excerpts from Ecology’s TMDL report (2014) to bring forward the concerns associated with the proposed hatchery’s design and operations. (TMDL pg. 9)  
 “While the portion of Clarks Creek immediately below the sediment pond near the Washington Department of Fish and Wildlife (WDFW) hatchery (state hatchery) provides suitable habitat for spawning for all species (a total of approximately a quarter of a mile), the remaining stream channel below this portion contains little gravel, and the substrate consists of fine sand and mud. The WDFW sediment pond hinders the fluvial movement of gravel further downstream to the remaining stream channel, while the transport of finer sediment past the pond fills in existing gravel with fine sand and silt. Subsequently, little or no spawning has been observed below this point. In addition, this small segment exceeds its carrying capacity for spawning. When the carrying capacity is exceeded, the spawning nests (redds) are disturbed by subsequent females, which can cause increased embryo mortality in the eggs that were already deposited. This event, referred to as superimposition of redds, and has been observed from multiple species of salmon in this segment (Marks, 2008).”

(TMDL pg. 24) "The primary water pollution control issue at the hatchery facilities is organic fish waste, including uneaten food. The state hatchery uses a waste pond to treat organic solids. The combined discharges from the juvenile rearing raceways and waste pond result in a relatively small pollutant discharge to Clarks Creek below Maplewood Springs (Clarks Creek Fecal Coliform TMDL 2008 - ECY). According to Ecology 2005 – 2010 monitoring, TSS concentrations are generally less than 2 mg/L and average ammonia concentrations are 0.14 mg/L taken by monthly composite. As explained later in this document, excessive TSS can increase BOD and lead to low DO; sediment loading can also promote excessive aquatic vegetation, which also has been linked to low DO in the watershed. BOD5 measurements are mostly at non-detectable levels. The monitoring data suggest that the average discharge rate is about 6.3 million gallons per day (MGD) (9.7 cfs)." (TMDL Pg. 41) "...analysis of data variability and central tendency (Figure 12) indicates a small decline in DO below the state hatchery, followed by a gradual recovery downstream to Diru Creek, then a decline below Rody Creek. The decline below the hatchery is not necessarily associated with the hatchery itself, but could instead reflect lower velocities and greater macrophyte growth in this reach." The County would like to recommend to WDFW to please confirm these assumptions and clarify whether these operational questions and design concerns have been adequately addressed as part to the State hatchery's new design and future operations.

(TMDL pg. 46) "During baseflow conditions, flow in Clarks Creek is primarily derived from springs (such as Maplewood Springs) that emerge from the base of hillslopes at the edge of the glacial till. The DO concentration in these springs helps determine instream DO concentrations. Measurements are not directly available for DO concentrations in groundwater emerging through these springs. However, their net impact on DO is known to be small based on the relatively high DO concentrations observed during baseflow conditions in monitoring near the state hatchery, in the groundwater discharge zone. These springs are fed by high permeability sand layers in the till, which has a low organic matter content and is likely to maintain well-oxygenated conditions, with additional reaeration occurring at the discharge points." The Country would like request WDFW to confirm this DO groundwater to surface water discharge assumption since its source waters for Hatchery operations are from intakes located just downstream of Maplewood Springs. Does this low DO create an operational requirement that must be rectified before it can be used for hatchery operations? (DOD; defined as the difference between DO saturation and observed DO concentration) is a useful way of expressing how much a given source depletes DO from its natural condition (DO at saturation). A positive DOD shows that DO is being depleted from its natural condition or in this case, groundwater discharge.

The County would also like to request assurances (through further Project scale design and impact analysis) as to whether any additional organic material can be expected to escape into the receiving waters of Clarks Creek due to the hatchery's future operations. Organic matter which is washed into water bodies is gradually consumed by bacteria, fungi, and other organisms. The process of digesting and reducing the organic material and converting it to cellular energy consumes oxygen and reduces DO in the stream. The potential for oxygen reduction by such processes is measured as biochemical oxygen demand (BOD), given in terms of milligrams of oxygen per liter over a given time period. In natural

streams, most organic material is present in refractory forms that break down slowly. The total BOD is composed of both carbonaceous and nitrogenous components, where the carbonaceous component represents the oxidation of fixed organic carbon to carbon dioxide and the nitrogenous component represents the oxidation of ammonia to nitrite and nitrate. And this condition can contribute significantly to increased biochemical oxygen demand and sediment oxygen demand. Both conditions are identified as the major contributing factors to the DO impairment.

The County wants to extend its sincere appreciation for the opportunity to provide these comments based on what it did not see addressed in the DNS or provided through the responses to the SEPA checklist questions. The County looks forward to reviewing (commenting) on the proposed Projects Permits that will be sought from the City of Puyallup, Pierce County's Shoreline Permit, the State's 401 Water Quality Certification (JARPA), the WDFW Hydraulics Permit (HPA) and the U.S. Army Corps of Engineers 404 Permit.