Memorandum
Oregon Department of Fish and Wildlife

Date: September 24, 2020
To: Pete Baki, Katherine Nordholm
From: Alex Farrand, Assistant District Fish Biologist, SWWD
Subject: Net Benefit Analysis for ODOT culverts on Hwy 99E in Halsey on un-named tributary to Muddy Creek in Linn County, OR; Fish Passage Exemption Request

Proposal
The Oregon Department of Transportation (ODOT) is seeking an exemption from fish passage requirements for an unnamed tributary of Muddy Creek within the town of Halsey, Linn County (OAR 635-412-0025). This Analysis refers to a fish passage trigger at the culverts, which cross underneath Hwy 99E near Crowell Street. ODOT will repave the road above the existing culverts and removal of over 50% of the fill above the culverts is triggering ODFW Fish Passage Rules (OAR 635-412). The existing crossing includes three 24” culverts that convey the Unnamed Tributary under OR99E (see Photo 1). The impacted seasonal creek was determined to have historical fish use on basin/channel characteristics and known fish use of similar creeks nearby. The existing culverts do not meet current fish passage criteria. Habitat characteristics and conclusions are based on site visits conducted by ODFW program and district staff on April 3 and September 8, 2020.

Photo 1. The Exemption Request Culverts Under OR99E
**Basin/Channel Characteristics:**
Based on site visits and GIS mapping there is approximately 400 feet of historic native migratory fish habitat upstream of the impacted culverts. The culverts are located about 5.5 miles upstream from the confluence with Muddy Creek, the nearest perennial waterway, and about 400 feet from the end of historic fish use, with several barriers in between (see Figure 1). It is a seasonal drainage that flows through flat terrain of agricultural fields with no riparian buffer (see Photo 2 and 3). Flows originate from agricultural run-off with additional input from impermeable surfaces (roads, parking lots, roofs, etc.). The stream resembles a roadside ditch for much of its length with few trees or areas of natural channel formation. Riparian vegetation is mostly grasses with a few scattered shrubs. Substrate consists primarily of silt and clay with grassy vegetation growing in the channel. Determining an active channel in this area is difficult, as the channel is highly modified. Average slope is less than 0.5%. The geomorphic channel characteristics above and below the impacted culverts are similar.

Figure 1. Map of Project Area
Fish Presence and Habitat Quality:
Under historic conditions, this tributary functioned as winter refuge habitat for native migratory fish escaping high flows and velocity in the Willamette River. There is no visible spawning habitat for native migratory species in the vicinity of the trigger culverts. Cutthroat trout, Chinook salmon, and Oregon chub have been documented in Muddy Creek, along with other native cyprinids. It is likely that some of these fish utilize portions of this tributary seasonally, but it is unknown how far up they go from the confluence and whether fish have access to the exemption request site due to numerous artificial barriers downstream.

Habitat quality at the exemption request site and for a long distance downstream is poor, and appears to have been altered considerably from historic conditions. The channel form is trapezoidal or U-shaped, with little cover and almost no large rocks (see Photo 4). The range of sediment types include fines up to pebbles, with grasses as the predominant riparian vegetation.

Riparian condition is also poor with little buffering capability. Water quality is likely negatively affected by agricultural inputs such as nitrates and phosphates, and by pollution from road runoff.
Exemption Eligibility:
This site appears to meet eligibility requirements for an exemption. The roughly 400 feet of poor quality fish habitat upstream of the culverts has been altered into a simplified ditch with little fish habitat value (see Photo 5). To reach this site, native migratory fish would need to swim up several miles of poor quality ditch habitat and pass through numerous culverts, each requiring sufficient flows for passage, and then return when flows recede to prevent stranding. Based on professional judgement, fish would be able to navigate past the OR99E culvert when it is sufficiently watered.

Appreciable Benefit:
Based on the findings outlined above, ODFW sees no benefit to providing fish passage at this site. In its current condition, the habitat above this point extends 407’ and is of poor quality.
Under current conditions, providing full passage at this site will not provide any benefit to native migratory fish species.

**Conclusion:**

The ODFW mid-Willamette District Office recommends granting an exemption as requested by ODOT. The main reasons for this conclusion are:

1. The extremely limited access to this area by native migratory fish
2. The poor habitat quality that exists both above and below the culverts in question
3. The very small amount of habitat (about 400 feet of stream length) that exists above these culverts

It is hoped that the future will provide opportunity to fix some of the downstream passage issues as well as encourage improvements in land-use practices that will rehabilitate the riparian corridor. We therefore recommend that this exemption also stipulate that passage may be required at a future date if some of these conditions improve in the future regardless of whether a passage trigger exists.