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ENVIRONMENTAL SERVICES

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To: Wapato Task Force Committee Members

From: Chee Choy, Project Manager

RE: Draft Executive Summary of Wapato Wetlands Testing Results

Date: February 12, 1997

Enclosed you will find a Draft Summary of Wapato Wetlands Testing Results. As these results will be the presented in our February 19, 1997 Wapato Wetlands Task Force meeting we are sending them to you in advance. We look forward to your discussion, questions and comments in the meeting. Please feel free to call me (823-5310) with any of your questions or concerns.

See you at the meeting.

Executive Summary

The Wapato Wetland is a relic channel of the lower Columbia Slough that is characterized by lush seasonal growth of the wapato plant (*Sagittaria latifolia*). The wapato plant provides important benefits to organisms that depend on wetlands for food and habitat. The achenes are eaten by waterfowl; muskrats and mallards consume the tubers; and the entire plant is subject to herbivory by insects, waterfowl, and other animals. Since wetlands dominated by the wapato plant are locally uncommon, the area is considered a valuable natural resource. A screening level ecological assessment (SLRA) for the Columbia Slough raised a concern that discharges from a City of Portland stormwater outfall (outfall 55A), which discharges directly into the wetland, might pose a threat to the wetland ecosystem. Organisms in contact with wetland sediment, such as bottom-dwelling invertebrates and aquatic plants, were predicted to be at greatest risk, and the risks were largely associated with chromium and other metals, which appeared to be highly elevated in sediment near the outfall.

In an effort to define the extent of contamination near outfall 55A and to determine if risks predicted in the SLRA were real, additional field studies were conducted in the Wapato Wetland in October 1996. The field studies were deemed necessary to avoid unneeded and costly sediment remediation that could potentially damage the wetland and to determine the degree of source control needed to prevent further contaminant entry. The field studies included measurement of the following parameters along a gradient from outfall 55A into the main body of the wetland: (1) six metals (chromium, cobalt, copper, manganese, molybdenum, and nickel) in sediment that appeared highly elevated at the outfall based on data collected for the SLRA, (2) key sediment parameters that affect trace-metal speciation and bioavailability in sediment, (3) sediment toxicity to laboratory-reared benthic organisms, (4) metals in wapato plant foliage and tubers, and (5) indicators of wapato-plant health, such as plant density. For comparison, these parameters also were measured at a wetland with wapato plants on Sauvie Island that was not impacted by a storm water outfall or, presumably, metals contamination.

The results of the October 1996 studies showed that metals contamination in sediment at the Wapato Wetland was not widespread. Chromium, copper, and manganese contamination in sediment extended from the outfall only approximately 6 meters (20 feet) into the wetland. Cobalt, molybdenum, and nickel concentrations were not elevated in the vicinity of outfall 55A in October 1996. The sediment bioassays showed that benthic-invertebrate survival and growth were not

significantly affected by metals contamination in the Wapato Wetland, even in the immediate vicinity of the outfall. This result suggests that sediment metals in the Wapato Wetland are largely not bioavailable to benthic invertebrates, perhaps because the metals are being discharged from the outfall in a particulate form of low solubility. Wapato-plant health also appeared to be unaffected by metals contamination from outfall 55A, and metal concentrations in plant foliage from the Wapato Wetland were no different than in plants from the reference area. Lastly, risks to herbivorous wildlife were found to be insignificant when the measured concentrations of metals in plants from the Wapato Wetland were used as input for risk assessment scenario with the mallard and muskrat, two animals known to consume the wapato plant.

In summary, the October 1996 studies at the Wapato Wetland suggest that benthic invertebrates, wapato plants, and herbivorous wildlife are not adversely affected by current levels of sediment metals in the wetland. This perhaps is not unexpected since sediment metals contamination in the wetland is restricted to the immediate vicinity of outfall 55A. Nevertheless, the presence of sediment contamination in this area suggests that the outfall is a potential source of contamination. In order to prevent further contamination of the Wapato Wetland, future work at the site should be focused on contaminant source identification and control.