BGE Environmental LLC.

Wetland Consulting and Land Use Planning

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AMMENDMENT
to
Thorndyke Resource Operation Complex Central Conveyor and Pier
Preliminary Wetland Delineation and Biological Inventory
Fred Hill Materials
Jefferson County, Washington

The following information is in response to the jurisdictional analysis and review of the Fred Hills Materials application for the Thorndyke Central Conveyor and Pier Project in Jefferson County Washington. This document is an amendment to the *Thorndyke Resource Operations Complex Central Conveyor and Pier Preliminary Wetland Delineation and Biological Inventory* prepared by Krazan & Associates, Inc. dated February 11, 2003. The response is lead by Robbyn Myers of BGE Environmental, LLC. who was the senior biologist and project manager for the project and aforementioned document. This document is a supplemental to the original 2003 preliminary report.

1.0 INTRODUCTION

The Thorndyke Resource Operations Complex (T-ROC) Central Conveyor and Pier consists of a conveyor belt that stretches from the Shine Pit to the shores of Hood Canal. This report, as amended, is an update of the federal, state and local wildlife and sensitive ecosystem databases. In addition, changes in methodologies for the assessment of critical areas is provided and discussed.

1.1 Site Description

T-ROC is located in the eastern portion of Jefferson County, Washington (Figure). Located between Port Ludlow and Dabob Bay, the project area is located within 72,000-acres of long-term forest production owned by Pope

Resources, a Deleware Limited Liability Partnership and managed by Olympic Resource Management. The project area is located in the Thorndyke Resource Management Area, part of the Thorndyke Block, an area covering approximately 21,000-acres along Highway 104. Forestry service road designations are used for reference in this report, as shown on Figure.

1.2 Land Use

The Thorndyke Resource Management Area's land use is long-term timber production. Logging of all areas is imminent over time. Logged in 1930, the predominant character is
second-growth timber. Wild fires spread through the area in 1939, and the forest reseeded naturally over the past 60 years. Many portions of the T-ROC site have been logged within the past 10 years and are either clear of vegetation or covered with forest brush and shrubs.

2.0 METHODOLOGY

2.1 Site Inspection

Field reconnaissance and wetland delineations were conducted in August through December 2001. The project site was revisited in June of 2008. The review was conducted by retracing the general path of the proposed conveyor. The objective of the field review conducted in 2008 was to observe existing conditions of the on-site wetlands, streams and associated buffers previously identified and assessed in 2001. Visual landscape characteristics and conditions were compared to the original assessment of 2001. Wetland parameters for jurisdictional determination were not repeated, nor was the existing boundary challenged or confirmed.

2.2 Wetland Classification

Wetland characteristics are described within this report according to the Fish and Wildlife Service Cowardin Classification System (Cowardin et. al 1979). No changes in this classification were deemed significant for any of the wetland areas.

2.3 Wetland Delineation

The wetland boundaries were unchanged in the 2008 review. The original wetland delineation followed the *Washington State Wetland Identification and Delineation Manual* requiring positive indicators for wetland soil, hydrology, and vegetation (Washington State Department of Ecology 1997).

2.4 State Wetland Category Rating

Wetland ratings presented here were conducted in June 2008 using the *2004 Washington State Department of Ecology's Wetland Rating System for Western Washington* (Ecology Publication #04-06-025).

2.5 Function and Value Assessment

This assessment was not readdressed in 2008 and is assumed, with professional certainty, that the functions are unchanged from the original review. In 2001,

the *Washington State Methods for Assessing Wetland Functions* was used as guidance to establish a qualitative rating of opportunity for the delineated wetlands. Best professional judgment was applied as necessary (Washington State Department of Ecology 1999).

2.6 State and Federal Habitat and Species Database

The following databases were received and reviewed in 2008, for the presence of sensitive or protected wildlife habitat and species within the project area. Agency reviews included U.S. Fish and Wildlife Service, Washington Department of Fish and Wildlife, and the Washington Department of Natural Resources.

2.7 Department of Natural Resources Forest Practice Maps

Forest Practice Maps, dated 2008, were researched to clearly identify typed streams and known drainages found within the immediate vicinity of the proposed conveyor.

3.0 DESCRIPTION OF HABITAT AND SPECIES

3.1 Wetlands

Fourteen wetlands were identified in the vicinity of the proposed Central Conveyor. Delineated in 2001, this routine data assessment remains unchanged to date (Routine Delineations Forms are found in Appendix A of the *Thorndyke Resource Operations Complex Central Conveyor and Pier Preliminary Wetland Delineation and Biological Inventory, 2003)*.

One of the primary focuses and necessity of this amendment, was to update the findings of all wetland categories using the *2004 Washington State Department of Ecology's Wetland Rating System for Western Washington*. Wetland areas were revisited in June 2008 to apply the 2004 methodology. Conditions of the wetlands went unchanged since the original delineation. Although the wetland lines were not reevaluated for jurisdiction, visual observations of wetland complexity and buffer conditions were considered in the 2008 rating exercise. Each of the fourteen identified wetlands is described below with the new 2004 rating. Rating forms are located in Appendix A.

Wetland A: Forested Riparian Ravine Wetland

This Category IV sloped wetland is located within a moderate grade ravine and contains a year-round stream. The stream slowly develops to no greater than two feet in width before plunging approximately 25-feet to a freshwater wetland (Wetland B) along the Hood Canal shore. The wetland is mostly narrow, following the topography of the ravine, allowing for some water quality function but lacks hydrologic function. Its setting within the landscape more than makes up for its inability to provide flood storage, accumulating 23 total habitat points for a total function score of 29 points.

Wetland B: Freshwater Shoreline Wetland

This depressional Category III wetland is located along the shoreline of Hood Canal, at the toe of the steep bank. Hydrologically fed by a stream cascading 25-feet from the high bluff (associated with Wetland A), the wetland spreads laterally, paralleling the shoreline along the high dune. Seeps along the high bluff help hydrate the wetland as it continues partially upslope. It is suggested that the water transport is lateral, through the sanded deposits of the shoreline. In absence of a direct outlet, water quality function is highly probable in addition to hydrologic function. Again the landscape setting of this wetland along the shores of Hood Canal apply a variety of habitat features which includes high interspersion, quality buffers and corridor connectivity. Likely to change seasonally from storm events, this wetland scored 29 habitat points for an overall of 48.

Wetland C: Open Water Hardhack Fringe Wetland

This depressional Category II wetland is located east of forestry service road T-1900. Hydrologically fed by the surrounding hillsides, this wetland is quite large and encompasses the surrounding basin. Its outlet is at the northern tip of the wetlands extent. The outlet is a well-defined stream, which is quickly crossed to the north by forestry service road T-1960. The interior is highly complex where the dominate community extends from dense hardhack to an open water emergent and submerged community. The restricted outlet allows for higher hydrologic function than water quality. The wetland has many snags and downed logs, attributing to the 28 point habitat funciton, rich in vegetation type and density.

Wetland D: Scrub-Shrub Depressional Wetland

This Category IV wetland lies northwest of forestry service road T-1950. With a wetland class of depressional, this area has at a minimum two large kettle wetlands that are likely hydrologically connected. Dominated with persistent, ungrazed vegetation along an open water interior, improvements to water quality are properly functioning. Limited in special habitat features, interspersion and vegetation structure, this wetland stands with an 18 point habitat score for a total of 28.

Wetland E: Pheasant Lake

This Category I wetland is known as Pheasant Lake. Greater than 20-acres, this system is very complex in habitat structure. It contains a dense scrub-shrub ecotone that transitions through lake fringe and emergent open water habitats. This wetland is identified as providing breeding habitat for wood duck, a Washington State Priority Species. Dense forested buffers protect a series of chained wetlands (Wetland F) which extend to the north, towards an equally large and complex wetland known as Twin Lakes.

Wetland F: Salix-Spiraea Scrub-Shrub

This wetland is a long linear, Category III system, characteristic of a mosaic, or chain of isolated wetland areas, between Pheasant and Twin Lakes. As identified in 2001, the wetlands were defined as being hydrologically

connected due to DNR mapping, associating a Type 5 stream along the series of wetland areas. This was not challenged in 2001 since one could assume that in heavy rain events these wetlands could overflow to each other providing a seasonal hydrologic connectivity. This assumption is based on professional judgment since no surface water flow indicators are present on the ground. Updated, 2008, DNR maps no longer indicate a stream through this chain of wetlands, therefore classifying it as depressional, mosaic with a high habitat value of 25 points.

Wetland G: Alder/Sedge/Fern Mosaic
This Category IV wetland lies immediately south of Wetland F, and is severed by an abandoned forestry service road along a natural ridge. Hydrologic connectivity between the two systems was not observed. The wetland is a mosaic of braided upland hummocks and depressional wetlands. Forest coverage is dense and dominated by alder. An understory is absent, but the ground cover is hummocked dense sword fern and large stands of sedge. Habitat features are sparse or absent and the hydrologic regime saturated, limiting the overall function score to 28.

Wetland H: Small Emergent Depressional Wetland
Located on the western side of forestry service road T-1900 is a small, isolated depressional, Category IV wetland. Dominant vegetation is sedge surrounded by a red alder and western red cedar ecotone. Although seasonally ponded with no apparent outlet, both water quality and hydrologic functions remains low. Approximately fifty percent of its buffers are degraded from the adjacent forestry service road and associated activities, resulting in a habitat score of 14 points.

Wetland I: Emergent and Scrub-Shrub Depressional Wetland
Located approximately 200-feet to the wetland of forestry service road T-1900, this Category III depressional wetland lies near the top of a low-grade hill. It is isolated with multiple classes of emergent and scrub-shrub vegetation. This headwater wetland has the potential to provide high water quality function. Buffers are excellent and contiguous to larger wetland systems. Habitat function scored 20 points with an overall score of 34.

Wetland J: Isolated Forested Wetland
This Category III, isolated depressional system is southeast of Twin Lakes along the eastern side of forestry service road T-1900. The wetland lies in a depressional area, bermed from the predominant gradient by the road, restricting the outlet and promoting rigid vegetation for greater than half the area of wetland. Emergents are persistent and prominent with mature conifers and deciduous trees along the ecotone. Total functional score was 32 points.

Wetland K: Alder Forested with Pockets of Sedge

This Category III wetland is located just east of forestry service road T-2932. It is characteristically an alder-forested depressional wetland, well defined by the surrounding landscape. Large open areas of pure sedge lie within the forested valley. Several skid roads traverse this wetland, altering hydrology throughout. The forestry service roads either create excessive ponding or act as a conduit during high water events, creating circumstantial functions of both water quality and hydrology, scoring 8 and 4 points respectively. DNR maps show a non-fish bearing stream in the vicinity of this wetland. No stream or indication of surface water flow was observed, with the exception of roadside swales. Rich in habitat features within the landscape, Wetland K scored 23 habitat points to obtain an overall score of 35 points.

Wetland L: Small Isolated Emergent Sedge Wetland
Isolated and quite small, this Category III wetland is dominated by persistent, ungrazed emergent vegetation. Seasonal ponding with no outlet promotes high water quality function. Estimated at only a quarter-acre in size, the wetland is well protected against a dense huckleberry and salal ecotone and received a total functional rating score of 32 points.

Wetland M: Small Alder Sedge Mosaic
This small, Category IV wetland is adjacent and north of Wetland K and is assumed, with professional judgment, to have hydrologic connectivity with Wetland K during period of high precipitation. Similar in complexity, the wetland is dominated by small sedge patches. Although mapped by DNR to be established along a non-fish bearing surface water, the evidence of such stream is absent. Total functional score was 21 points.

Wetland N: Isolated Scrub-Shrub Wetland
This small, depressional Category III wetland is due west of the Central Conveyor near forestry service road T-2932. The wetland is isolated but may outflow along the forestry roads during high precipitation events, setting up a high water quality function of 12 points. It is characteristically a monoculture of hardhack with an outer fringe of sedges and huckleberry. Habitat features are few and the resulting functional rating score is 32 points.

Table 1 summarizes the findings of the 2004 DOE rating compared to the previously used 1993 methodology. Buffer widths are included for moderate impact land uses which includes utility corridors (private or public) with a maintenance road, as defined in Title 18 of the Jefferson County Code (JCC).

This table varies from the original wetland table summary found on page 7 of the 2003 *Thorndyke Resource Operations Complex Central Conveyor and Pier Preliminary Wetland Delineation and Biological Inventory*. The changes are limited to the removal of Wetland F 2001 and Wetland Twin Lakes 2001. Conducted for the application of the Wald Extraction Project, these two wetland areas are not specific to this project. Wetland F 2001 is concluded as being part of the wetland chain, or mosaic system, identified as Wetland F in this amendment. Twin Lakes was rated with the 2004 methodology to be a

Category I, but the wetland proper is not included in this project scope due the distance between the wetland proper and the Central Conveyor projects boundaries.

Table 1.

WETLAND	2003 RATING	2008 RATING	MODERATE LAND USE BUFFER WIDTH TABLE 18.22.330(2) JCC
A	II	IV	40 ft
B	II	III	110 ft
C	I	II	110 ft
D	II	IV	40 ft
E	I	I	225 ft
F	I	III	110 ft
G	III	IV	40 ft
H	III	IV	40 ft
I	III	III	110 ft
J	III	III	60 ft
K	II	III	110 ft
L	IV	III	60 ft
M	III	IV	40 ft
N	III	III	60 ft

3.2 Water Resources

Water resource areas of significance were updated to include the Washington Department of Fish and Wildlife *Priority Habitat and Species Database* and the Washington Department of Natural Resources *Forest Practice Base Maps*, both dated 2008.

3.21 Streams

Stream typing methodology changed from a numbered system, 1 to 5, to an alphanumeric system specific to fish habitat. An **F Stream** indicates the stream supports fish. An **N Stream** lacks suitable habitat to support fish. The 2003 *Thorndyke Resource Operations Complex Central Conveyor and Pier Preliminary Wetland Delineation and Biological Inventory* report showed all streams within the vicinity of the Central Conveyor as being a Type 5. Type 5 stream classifications were defined as seasonal surface waters that do not have fish. This would be equivalent to an N Stream under todays methodology.

Figure

Stream types stayed consistently defined for most of the project area. Nearshore surface waters, specifically the stream associated with Wetland A, remains as non-fish habitat with a natural cascade barrier.

Terrestrial streams are noted as N Streams as well, with the exception of that located at the southern most end of Wetland C. Mapped as an F stream and extending a half mile to the south of Wetland C, the stream forks to the west, taking the N Stream status in both directions. Findings in 2003 indicate that the area lacks a stream channel and is not there. Field review in 2008 conclude the same in which there was no indication of surface water flow at either of the road crossings or within the immediate vicinity of the project area.

The Washington Department of Fish and Wildlife *Washington Lakes and Rivers Information System* (WLRIS) database reports from 2004 surveys the presence of Coho salmon in the stream reach north of Wetland C. This secondary stream reach converges with wetlands and streams approximately one quarter mile northeast of the project area. This stream is well outside the project boundaries of the Central Conveyor.

The eight small streams along the western side of Wetland C remain mapped in 2008 but are now typed as N Streams. The formation of these streams in 2003 were confirmed as being four surface waters along the delineated edge of Wetland C and three confirmations to the western side of forestry service road T-1900 ditches. The ditch tight-lines the runoff to three existing culverts and conveys the waters easterly, towards Wetland C.

In 2003 the presence of the mapped drainages was not conclusive due to the lack of evidence supporting surface water flow on the ground. Conditions in 2008 were relatively the same as that found in 2003. Under dry conditions the majority of the mapped N Streams go unnoticed.

3.3 Natural Heritage Flora, Fauna, and Ecosystem Presence

The Washington Department of Natural Resources *Natural Heritage Information System* (DNR 2008) identified a number of high quality plants and ecosystems within the vicinity of the project area. The list is comparable to that received in 2001 which includes low elevation sphagnum bogs, freshwater wetlands and shrublands. High quality plants are primarily hydrophytes such as Western inflated sedge (*Carex exsiccata*), bog Labrador Tea (*Ledum groenlandicum*), bog laurel (*Kalmia microphylla*) and bog cranberry (*Vaccinium oxycoccos*). There are no new rare plants or high quality ecosystems listed in the *Washington Natural Heritage Program* from the original database in 2001 to today, 2008.

3.4 Wildlife Species Occurrence

Habitat and species information was received by Washington Department of Fish and Wildlife (WDFW) and downloaded from U.S. Fish and Wildlife Service

(USFWS). The following lists Federal species known to occur or may occur in Jefferson County Washington.

3.41 U.S. Fish and Wildlife Service Listed and Proposed Species and Habitat

LISTED

Brown pelican (*Pelecanus occidentalis*) [outer coast]
Bull trout (*Salvelinus confluentus*)
Marbled murrelet (*Brachyramphus marmoratus*)
Critical habitat for the marbled murrelet
Northern spotted owl (*Strix occidentalis caurina*)
Critical habitat for the northern spotted owl
Short-tailed albatross (*Phoebastria albatrus*) [outer coast]
Critical habitat for bull trout

PROPOSED

Dolly Varden (*Salvelinus malma*) due to similarity of appearance

CANDIDATE

None

SPECIES OF CONCERN

Aleutian Canada goose (*Branta canadensis leucopareia*)
Bald eagle (*Haliaeetus leucocephalus*)
Cascades frog (*Rana cascadae*)
Cassin's auklet (*Ptychoramphus aleuticus*)
Coastal cutthroat trout (*Oncorhynchus clarki clarki*) [southwest Washington DPS]
Destruction Island shrew (*Sorex trowbridgii destructioni*)
Long-eared myotis (*Myotis evotis*)
Long-legged myotis (*Myotis volans*)
Northern goshawk (*Accipiter gentilis*)
Northern sea otter (*Enhydra lutris kenyoni*)
Olive-sided flycatcher (*Contopus cooperi*)
Olympic torrent salamander (*Rhyacotriton olympicus*)
Pacific lamprey (*Lampetra tridentata*)
Pacific Townsend=s big-eared bat (*Corynorhinus townsendii townsendii*)
Peregrine falcon (*Falco peregrinus*)
River lamprey (*Lampetra ayresi*)
Tailed frog (*Ascaphus truei*)
Tufted puffin (*Fratercula cirrhata*)
Valley silverspot (*Speyeria zerene bremeri*)
Van Dyke=s salamander (*Plethodon vandykei*)
Western toad (*Bufo boreas*)

The highlighted species or identified habitat were not listed on the 2001 database. Newly listed species and habitat are defined and assessed below.

3.411 Brown pelican (*Pelecanus occidentalis*) [outer coast]

The Brown Pelican is a coastal bird that is rarely found away from the sea. The birds on the Pacific Coast, nest on islands off the coasts of southern California and Mexico. After the breeding season, they move north along the coast, frequenting shallow marine areas such as bays, offshore islands, spits, breakwaters, and open sandy beaches. Brown Pelicans may be found along the outer Pacific Coast, at the mouth of the Columbia River and along coastal areas in Gray's Harbor. This area is over 100 miles away from the project area and therefore the project places no known impacts on Brown Pelicans.

3.412 Northern spotted owl (*Strix occidentalis caurina*) Includes Critical habitat for the northern spotted owl

The range of the Northern Spotted Owl has been defined into four physiographic provinces: the eastern and western cascades, western Lowlands, and the Olympic Peninsula. There is limited opportunity for Northern Spotted Owl nesting and foraging within the Central Conveyor project area due to the dense, even-aged, single story canopy that currently exists throughout. Northern spotted owls inhabit predominantly old growth forests (and selected second growth forests with remnants of larger trees) that have a closed canopy for the protection from predators and the elements. They prefer large open spaces for flight beneath the canopy, many downed logs and woody debris that serve as prey habitat and old, hollow trees for nesting sites. The Thorndyke Resource Management Area's land use is long-term timber production. Logging of all areas is imminent over time prohibiting habitat conditions that may be utilized by the northern spotted owl. The project area contains no suitable habitat and will not pose any known significant biological problems for the Northern spotted owl.

3.413 Short-tailed albatross (*Phoebastria albatrus*) [outer coast]

Short-tailed Albatrosses nest on islands off Japan and spend most of their lives at sea. The Short-tailed Albatross is an extremely rare bird off Washington's coastline. Breeding populations do not occur in the United States, but individuals have been seen regularly during the breeding season on Midway Atoll along the Hawaiian Islands. This project will place no known impacts on the Short-tailed Albatross based on project location within the interior of the Puget Sound uplands. The project area contains no suitable habitat for the short-tailed albatross and will not pose any known significant biological problems for the Short-tailed Albatross.

3.414 Critical habitat for bull trout

There is no designated critical habitat for bull Trout within the Thorndyke Resource Management Area. Tributaries identified within the immediate vicinity of the Twin Conveyors are upland tributaries, none of which are Type S waters. Suitable bull trout habitat is not present making the likelihood for impacts on bull trout very low.

3.415 Marbled murrelet (*Brachyramphus marmoratus*) Includes Critical habitat for the marbled murrelet

Marbled murrelets inhabit the pacific coast of North America from the Bering Sea to central California, just south of San Francisco Bay. They do not form dense colonies, and may fly 70-km or more inland to nest, generally in older coniferous forests. They are more commonly found inland during the summer breeding season, but make daily trips to the ocean to gather food, and have been detected in forests throughout the year. When not nesting, the birds live at sea, spending their days feeding close to shore and then moving several kilometers offshore at night. The murrelet's are highly dependent upon old-growth forests and the use of coastal marine feeding areas. The Central Conveyor is located within a long-term timber production area and does not yield nesting habitat for this species. The project area contains no suitable habitat for the marbled murrelet and will not pose any known significant biological problems for the species.

3.42 Washington Department of Fish and Wildlife State Monitored or Priority Species

Bald eagle (*Haliaeetus leucocephalus*)
Wood duck (*Aix sponsa*)
Great blue heron (*Ardea herodias*)

The WDFW *Priority Habitat and Species* reports nearly the same priority species as indicated in 2001. Wood duck nesting was reported and observed in 2001, but not priority at the time. The majority of observed Bald eagle nests and Great blue heron rookeries remain *priority* and are well outside the Central Conveyor project area. One exception is the presence of an active Bald eagle nest approximately one-half mile from the proposed Central Conveyor. This nest area is within a 35-acre Pope Resources parcel and in 1995, implemented a Bald Eagle Management Plan for timber harvest. As indicated in the 2003 *Thorndyke Resource Operations Complex Central Conveyor and Pier Preliminary Wetland Delineation and Biological Inventory* a Bald Eagle Management plan will be developed prior to project implementation to ensure that the species is protected accordingly.